Newsletter

Industrial Automation Products

Edition 2023-Q1

Contents

1 News

1.1 FTP-Site Link & Update

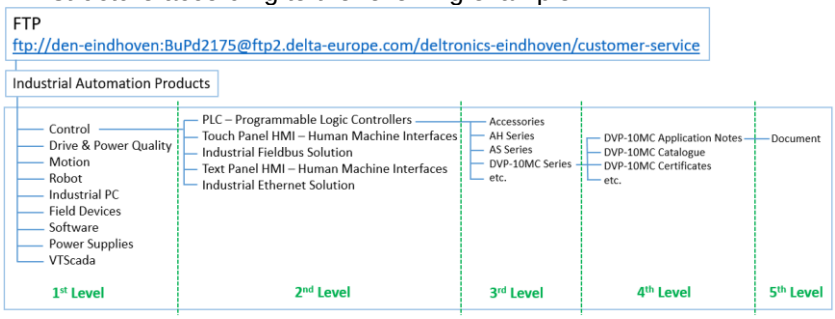
Our FTP server provides product information that is not available in Delta's Download Center on the global website, e.g. datasheets, technical notes, presentations, software, etc. Please visit our FTP site with below account info.

ftp://den-eindhoven:BuPd2175@ftp2.delta-europe.com/deltronics-eindhoven/customer-service

Name and password are included in the link.
Name: den-eindhoven
Password: BuPd2175

- **NOTE** It is only possible to access our FTP via TCP port 22/23. Therefore, please use common FTP clients such as FileZilla, Win SCP or Total Commander. Access with standard web browsers, like Edge, Chrome, Opera, etc. is not possible.

- **Update** To align the data categories with Delta's official Download Center, we adjusted the folder structure according to the following example.



1.2 Retiree

Well deservedly, Jean-Charles Cuzin, our FAE in France retired. He is the third from the left in the photo taken during his farewell dinner, for those who have not met him.

Hopefully, he will have a great time in the next stage of his life as well as fun and success in pursuing nothing but his personal goals from now on.

Good-bye, Jean-Charles. We wish you all the best!

A new FAE will soon start to cover the technical support to our business partners in France. Until then, the FAE Team in Helmond will take care.

2 Product update

2.1 NEW – AS100 Series CPU

To enhance the cost performance of AS Series PLCs, Delta releases the AS100 CPUs. Based on AS200/300 series hardware platform, AS100 inherits the high execution speed and multiple on-board communication interfaces. It features 32, 48 or 64 built-in IOs and AC power input, which meets the cost performance demand of OEM market in small-scale applications.

Users can complete the AS100 system programming and configurations with DIADesigner* V1.2.0 or higher. AS100 provides users with more user-friendly development environment and more on-board IOs to reduce the system cost for OEM customers while taking the user experience to the next level.

AS100 is compatible with AS series expansion modules.

*ISPSoft is not compatible with AS100.

Features

- Brick type CPU with 32, 48 or 64 integrated I/O offers best cost performance for applications within this I/O range
- Offers AC power input for direct wiring to reduce overall cabinet cost
- For other specifications, refer to *Product Specifications* of AS100/200/300 CPUs as below

Product Specifications

Name	Model	Instruction Speed / Performance		Max. Inputs & Outputs / Extension Module (Max. Extension Racks)	Memory Card	Certification
CPU	AS100 NEW AS200 AS300	LD: 25 ns MOV: 0.15 µs	40 k Steps / 1 ms (LD 40%, MOV 60%)	1,024 inputs & outputs / 32 modules (Max. 15 extension racks)	Micro SD Max. 32 GB	CE / UL

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. / PNP		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*	NPN			3 Axes / 200 kHz (6 CHs / 200 kHz)		
	AS218PX-A			PNP					
	AS218RX-A			Relay			-		
	NEW AS132T-A		16 DI / 16 DO	NPN			6 Axes / 200 kHz (12 CHs / 200 kHz)		
	NEW AS132P-A			PNP					
	NEW AS132R-A			Relay			-		
	NEW AS148T-A		24 DI / 24 DO	NPN			6 Axes / 200 kHz (12 CHs / 200 kHz)		
	NEW AS148P-A			PNP					
	NEW AS148R-A			Relay			-		

	NEW AS164T-A NEW AS164P-A NEW AS164R-A		32 DI / 32 DO	NPN PNP Relay			6 Axes / 200 kHz (12 CHs / 200 kHz) -		

* Built-in AIO specifications
AI: 12-bit, 3 ms, supports ±10 V, ±20 mA, 4…20 mA
AO: 12-bit, 2 ms, supports ±10 V, ±20 mA

Ethernet Specifications

Item			AS300 Series	AS200 / AS100 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 (Unconnected Type)	32 (Client + Server) shared with Class 3	16 (Client + Server) 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	500 bytes (IO Connection) 400 bytes (Explicit Message)		
		Requested Packet Interval (RPI)	5 ms…1,000 ms		
	CIP_Consumed TAG	Max. CIP Connections	32 (Client + Server)	16 (Client + Server)	Shared with IO connection
		Max. Capacity	400 bytes		
		Requested Packet Interval (RPI)	5 ms…1,000 ms		
	AS00SCM (RTU) + AS-FEN02 Connection Nodes		15	8	AS RTU Mode

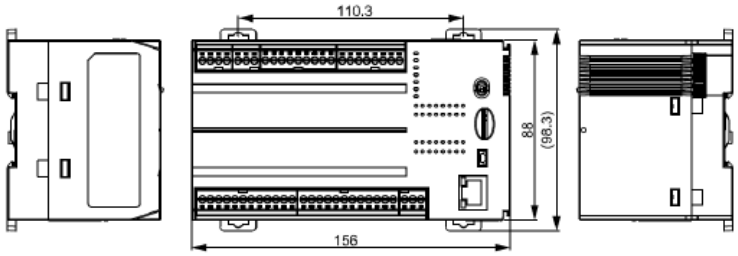
Electrical Specification

Item	Specification
Operating Temperature	-20…60 °C
Storage Temperature	-40…80 °C
Operating Humidity	5…95%, non-condensing
Storage Humidity	5…95%, non-condensing
Vibration	IEC61131-2, IEC60068-2-6 (TEST Fc); 5 Hz ≤ f ≤ 8.4 Hz, constant amplitude 3.5 mm; 8.4 ≤ f ≤ 150 Hz, constant acceleration 1 g;
Shock	IEC 61131-2, IEC60068-2-27 (TEST Ea); 15 g peak, 11 ms duration, half-sine
Operating Environment	Non-corrosive gas
Installation	Inside of a control panel
Pollution Degree	2
Protection Rating	IP20
Conformal Coating	Yes

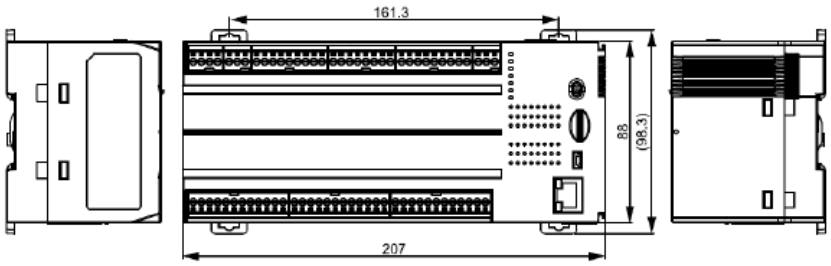
Dimensions

(Unit: mm)

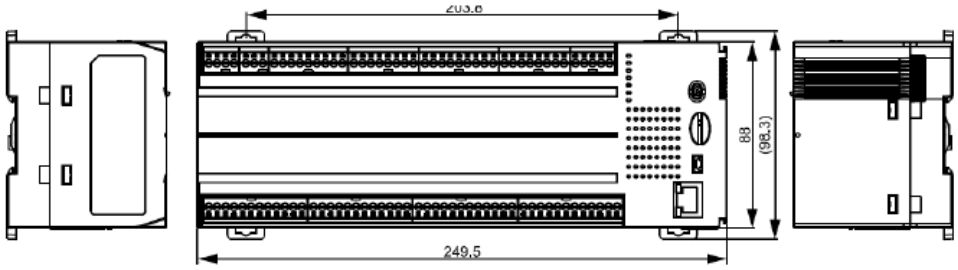
AS132P-A、AS132T-A、AS132R-A New



AS148P-A、AS148T-A、AS148R-A New



AS164P-A、AS164T-A、AS164R-A New



Ordering Information

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	NEW AS132T-A	64k Steps	16 DI / 16 DO	NPN	EU	4 CHs / 200 kHz	6 Axes / 200 kHz (12 CHs / 200 kHz)	USB RS-485*2 Ethernet CANopen	-
	NEW AS132P-A			PNP					
	NEW AS132R-A			Relay			-		
	NEW AS148T-A		24 DI / 24 DO	NPN			6 Axes / 200 kHz (12 CHs / 200 kHz)		
	NEW AS148P-A			PNP					
	NEW AS148R-A			Relay			-		
	NEW AS164T-A		32 DI / 32 DO	NPN			6 Axes / 200 kHz (12 CHs / 200 kHz)		
	NEW AS164P-A			PNP					
	NEW AS164R-A			Relay			-		

2.2 NEW – AX-3E Motion Controllers, Programmable with CoDeSys

The AX-3E series is a range of professional PLC-based motion controllers. It provides an advanced EtherCAT motion solution, based on the established AS PLC hardware platform. That allows expanding the system with AS series IO modules.

The CoDeSys-based DIADesigner-AX software provides a convenient development environment and excellent product experience.

Delta releases five new AX-3E motion controllers to cover different application requirements.
The AX-3E possesses the prevalent EtherCAT, Ethernet/IP and Modbus TCP fieldbuses as well as integrated OPC UA server functionality. The results are easy system integration and high-speed communication.
CPUs from four to 64 axes with built-in IO ensure that you always encounter the best matching controller for any application scenario.

Features

AX-3N logic controller

- Support up to 4/ 8 /16/64 EtherCAT servos
- Min EtherCAT sync. time 2ms@8 axes
- Min execution time of basic instruction: 5ns
- Built-in encoder interface: Incremental x2 and SSI x1 (exclude AX 304EL)
- Built-in communication ports: EtherCAT, Ethernet, RS-232, RS-485
- Built-in 16DI (200KHz x4) and 8DO (200KHz x4 , supp ort pulse train servo
- Drives
- Supported protocols: EtherCAT, OPC UA (server), EtherNet/IP, MODBUS and
- Modbus-TCP

Hardware Specifications

Specification	AX-308EA0MA1P
Motion Network	EtherCAT
Max. Real Axes	8 (+4 PTO)
Max. Total Axes (Real + Virtual)	16
Motion Instruction	Synchronization axis / Position axis*
Execution Speed	5 ns for basic instruction
Program Capacity	8 MB
Data Capacity	16 MB
Module Expandability	32 IO modules
Max. IO Points	1,024 Pts.
Built-In IO Points	16 DI (6 support 200 kHz) 8 DO PNP (4 support 200 kHz)
Built-In Communication Ports	USB, EtherCAT, Ethernet, RS-232, RS-485
Supported Protocols	EtherCAT, OPC UA (Server), Modbus, Modbus-TCP, Ethernet/IP
Power Input	24 V DC

Specification	AX-316EA0MA1T
Motion Network	EtherCAT
Max. Real Axes	16 (+4 PTO)
Max. Total Axes (Real + Virtual)	32
Motion Instruction	Synchronization axis / Position axis*
Execution Speed	5 ns for basic instruction
Program Capacity	8 MB
Data Capacity	16 MB
Module Expandability	32 IO modules
Max. IO Points	1,024 Pts.
Built-In IO Points	16 DI (6 support 200 kHz) 8 DO NPN (4 support 200 kHz)
Built-In Communication Ports	USB, EtherCAT, Ethernet, RS-232, RS-485
Supported Protocols	EtherCAT, OPC UA (Server), Modbus, Modbus-TCP, Ethernet/IP
Power Input	24 V DC

Specification	AX-304ELA0PA1T AX-304ELA0PA1P
Motion Network	EtherCAT
Max. Real Axes	4
Max. Total Axes (Real + Virtual)	8
Motion Instruction	Position axis*
Execution Speed	5 ns for basic instruction
Program Capacity	8 MB
Data Capacity	16 MB
Module Expandability	32 IO modules
Max. IO Points	1,024 Pts.
Built-In IO Points	16 DI (6 support 200 kHz) AX-304ELA0PA1T: 8 DO NPN (4 support 200 kHz) AX-304ELA0PA1P: 8 DO PNP (4 support 200 kHz)

Built-In Communication Ports	USB, EtherCAT, Ethernet, RS-232, RS-485
Supported Protocols	EtherCAT, OPC UA (Server), Modbus, Modbus-TCP, Ethernet/IP
Power Input	24 V DC

Specification	AX-364ELA0MA1T
Motion Network	EtherCAT
Max. Real Axes	64 (including 4 PTO)
Max. Total Axes (Real + Virtual)	64
Motion Instruction	Synchronization axis / Position axis*
Execution Speed	5 ns for basic instruction
Program Capacity	8 MB
Data Capacity	16 MB
Module Expandability	32 IO modules
Max. IO Points	1,024 Pts.
Built-In IO Points	16 DI (6 support 200 kHz) 8 DO NPN (4 support 200 kHz)
Built-In Communication Ports	USB, EtherCAT, Ethernet, RS-232, RS-485
Supported Protocols	EtherCAT, OPC UA (Server), Modbus, Modbus-TCP, Ethernet/IP
Power Input	24 V DC

* Note

- Position axis: Supports position control like MC_MoveAbsolute, MC_MoveRelative and MC_MoveVelocity
- Synchronization axis: Supports all position control functions and synchronization control functions like E-cam, E-gear, axis group, etc.
- AX-364EL supports up to 8 synchronization axes

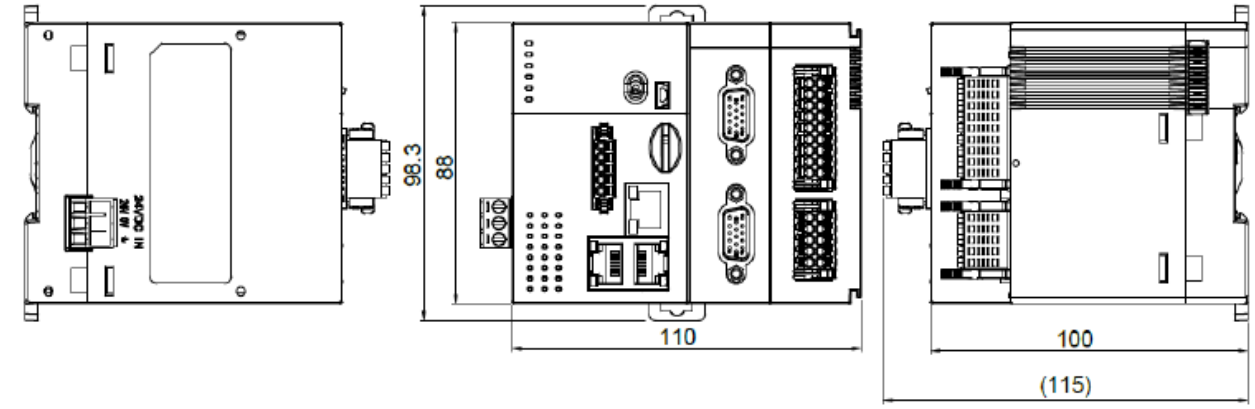
Electrical Specifications

Item	Specification
Operating Temperature	-20 – +55 °C
Storage Temperature	-40 – +80 °C
Operating & 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 ≤ f ≤ 150 Hz, constant acceleration 1 g
Shock	IEC 61131-2, IEC 60068-2-6 (TEST Ea); 15 g peak, 11 ms duration, half-sine
Operating Environment	Non-corrosive gas
Installation	Inside of control panel
Pollution Degree	2
Protection Rating	IP 20
Conformal Coating	Yes
Conformity	CE, UL

Dimensions

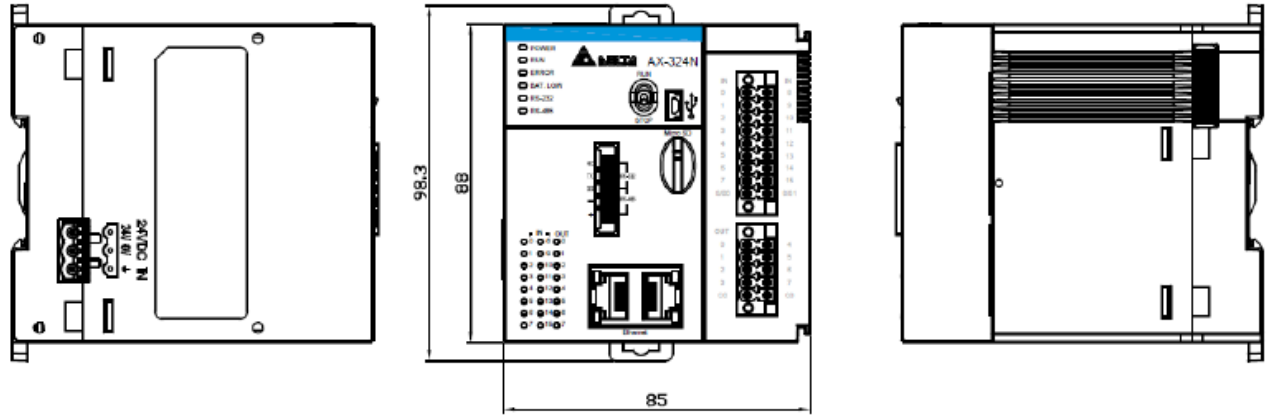
(Unit: mm)

AX-308EA0MA1P, AX-316EA0MA1T, AX-364ELA0MA1T



(Unit: mm)

AX-304ELA0PA1T, AX-304ELA0PA1P



Ordering Information

Model	Description	Certification
AX-308EA0MA1P	AX 3 series EtherCAT motion controller, 8 axis, built in 16DI/8 DO , PN P output , CODESYS	CE, UL
AX-316EA0MA1T	AX 3 series EtherCAT motion controller, 16 axis, built in 16DI/8DO, N PN output , CODESYS	CE, UL
AX-304ELA0PA1T	AX 3 series EtherCAT motion controller, 4 axis, built in 16DI/8DO, N PN output , CODESYS	CE, UL
AX-304ELA0PA1P	AX 3 series EtherCAT motion controller, 4 axis, built in 16DI/8DO, N PN output , CODESYS	CE, UL
AX-364ELA0MA1T	AX 3 series EtherCAT motion controller, 64 axis, built in 16DI/8DO, N PN output , CODESYS	CE, UL

2.3 NEW – DIAView License Versions

In order to make it easier to distinguish between the two SCADA systems DIAView and VTScada, Delta introduced new DIAView license versions on January 1, 2023.

DIAView will be limited to 5,000 tags and focus on machine and factory automation. VTScada provides solutions for larger projects and process automation.

Please check the discontinuation announcement of previous versions to find the most suitable replacement.

Ordering Information

DIAV - 01 064 00 00 A

Product Name
Delta Industry Automation View

Product Type
00 = Universal Version
01 = Stand-alone Version
02 = C/S Version
03 = B/S Version

I/O Tags
064 = 64 licensed tags
128 =128 licensed tags
256 = 256 licensed tags
512 = 512 licensed tags
01K = 1,000 licensed tags
1K5 = 1,500 licensed tags
03K = 3,000 licensed tags
05K = 5,000 licensed tags

Amount of C/S & B/S Licenses
00 = N/A
05 = 5 Clients
10 = 10 Clients

Versions
00 = Standard Version
UP = Upgraded Version

Product Type	Model Name	Description
Stand-Alone Version	DIAV-0105K0000A	5,000 tags, USB dongle key
C/S Version*	DIAV-0205K0500A	5 clients (C/S), 5,000 tags, USB dongle key
	DIAV-0205K1000A	10 clients (C/S), 5,000 tags, USB dongle key
B/S Version **	DIAV-0305K0500A	5 clients (B/S), 5,000 tags, USB dongle key
	DIAV-0305K1000A	10 clients (B/S), 5,000 tags, USB dongle key
Upgraded Version	DIAV-0005K00UPA	3,000 upgraded to 5,000 tags, USB dongle key

* C/S Version = Client/Server
** B/S Version = Webbrowser/Server

2.4 NEW – Ultra Slim DIN Rail Power Supply LYTE II Series - New 480 W Model Saves Cabinet Installation Space

Delta expands the LYTE II Series ultra slim DIN Rail power supply by adding a new 480 W model. The new 480 W model is 56 mm in width and 35% slimmer than the previous generation to save cabinet installation space. It offers single outputs of 24 V (DRL-24V480W1EN) and 48 V (DRL-48V480W1EN) with an efficiency up to 93.5%. The convection-cooled LYTE II series provides full power across a wide operating temperate range of - 30 to + 50 °C and with de-rating up to + 70 °C at 230 Vac. It can operate in constant current mode, making it suitable for reactive load such as robotic arms, CNC machines, control cabinets, and charging applications.

The LYTE II Series is certified with safety standards IEC/EN/UL 62368-1 and IEC/EN/UL 61010-1/-2-201, and the electromagnetic radiated and conducted emission is compliant to heavy industrial EN 61000-6-4 Class B Emission standard and EN 61000-6-2 Immunity standard. As to environmental protection, the product complies with RoHS Directive to fulfill the requirement.

Highlights & Features

- Universal AC input voltage range
- Built-in constant current circuit for reactive loads
- High power density
- Operating temperature from - 30 °C to + 50 °C, cold start from - 40 °C
- Slim design
- Reduced no-load power consumption
- Compliant with SEMI F47 @ 200 Vac

Ordering Information

Model Name	Input	Output
DRL-24W480W1EN	90…264 Vac	24 Vdc, 20 A, 480 W
DRL-48W480W1EN		48 Vdc, 10 A, 480 W

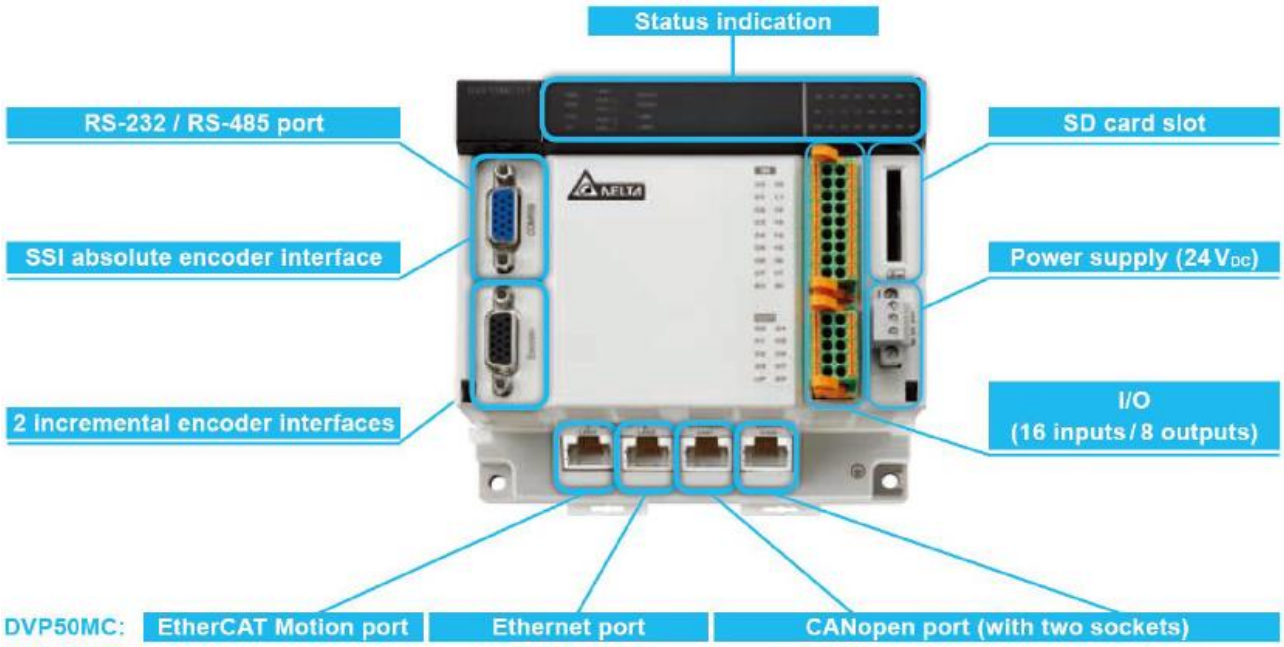
2.5 NEW – DVP50MC PLC-Based EtherCAT Motion Controllers with PNP Outputs

To enhance the competitiveness of DVP-MC series products, Delta will release new EtherCAT motion controllers with PNP output, DVP50MC11P and DVP50MC11P-06, to fulfil additional market requirements.

New EtherCAT cables, UC-EMCxxx-02C will be released at the same time to replace the discontinued EtherCAT cables (UC-EMCxxx-02A).

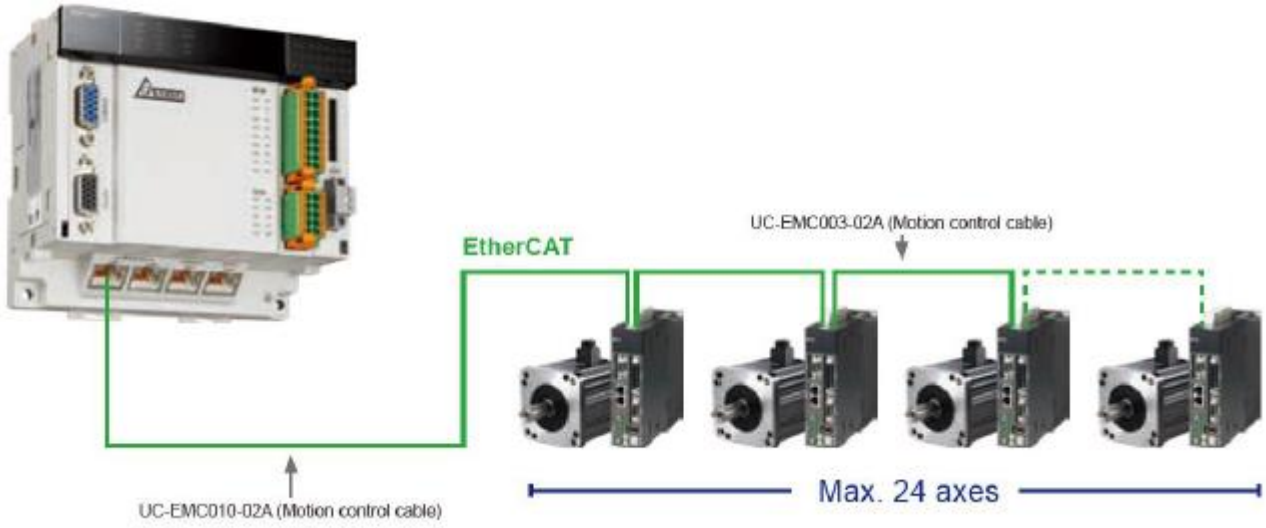
Features

- 16 DI + 8 DO on board
- EtherCAT
- CANopen DS301 up to 32 slaves
- 2 serial ports: RS-232 and RS-485
- Ethernet
- 2 Incremental Encoder Interfaces
- SSI Encoder Interface
- SD Card Slot



Support of DVP-S extension modules

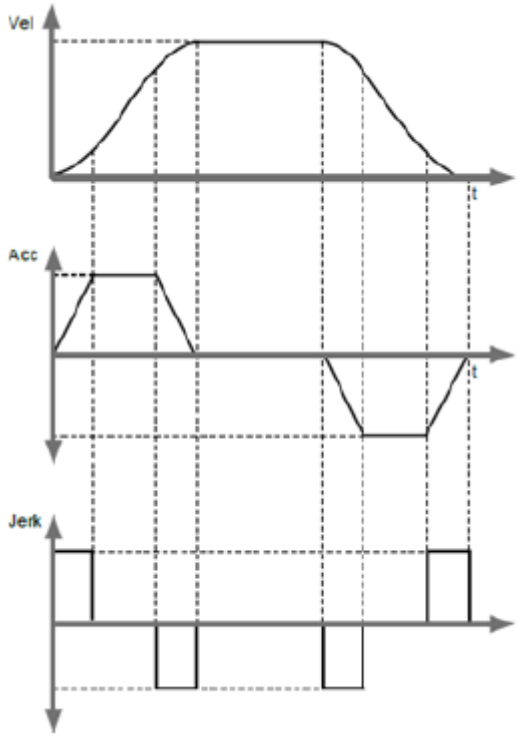
Easy wiring, Plug-&-Play motion network, up to 24 or 6 axes



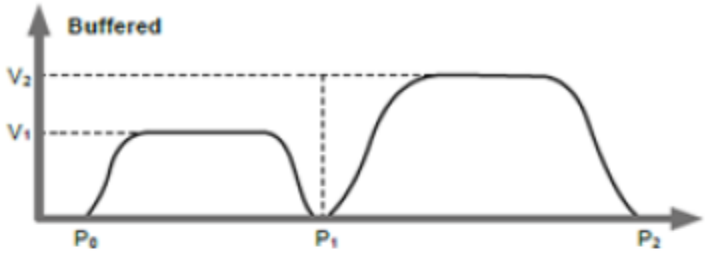
Enhanced motion control functions

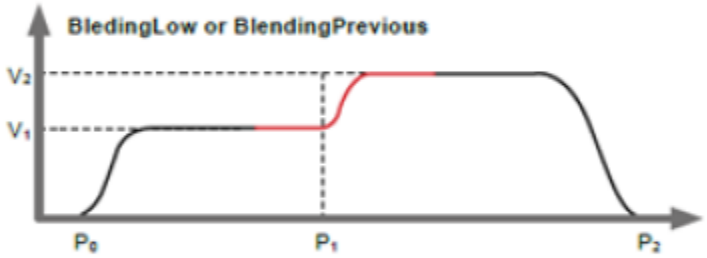
- PLCopen Motion function blocks
- Position / velocity / torque / homing modes
- E-gear / E-CAM / rotary cut functions

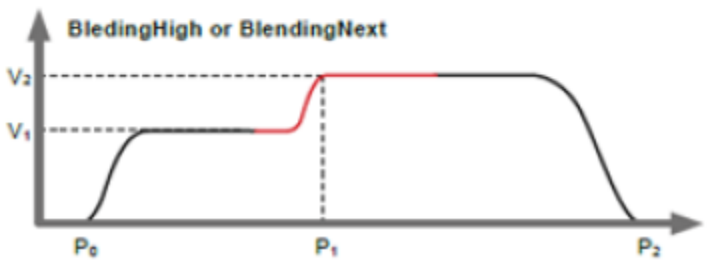
- Supports jerk control



- Supports buffer mode



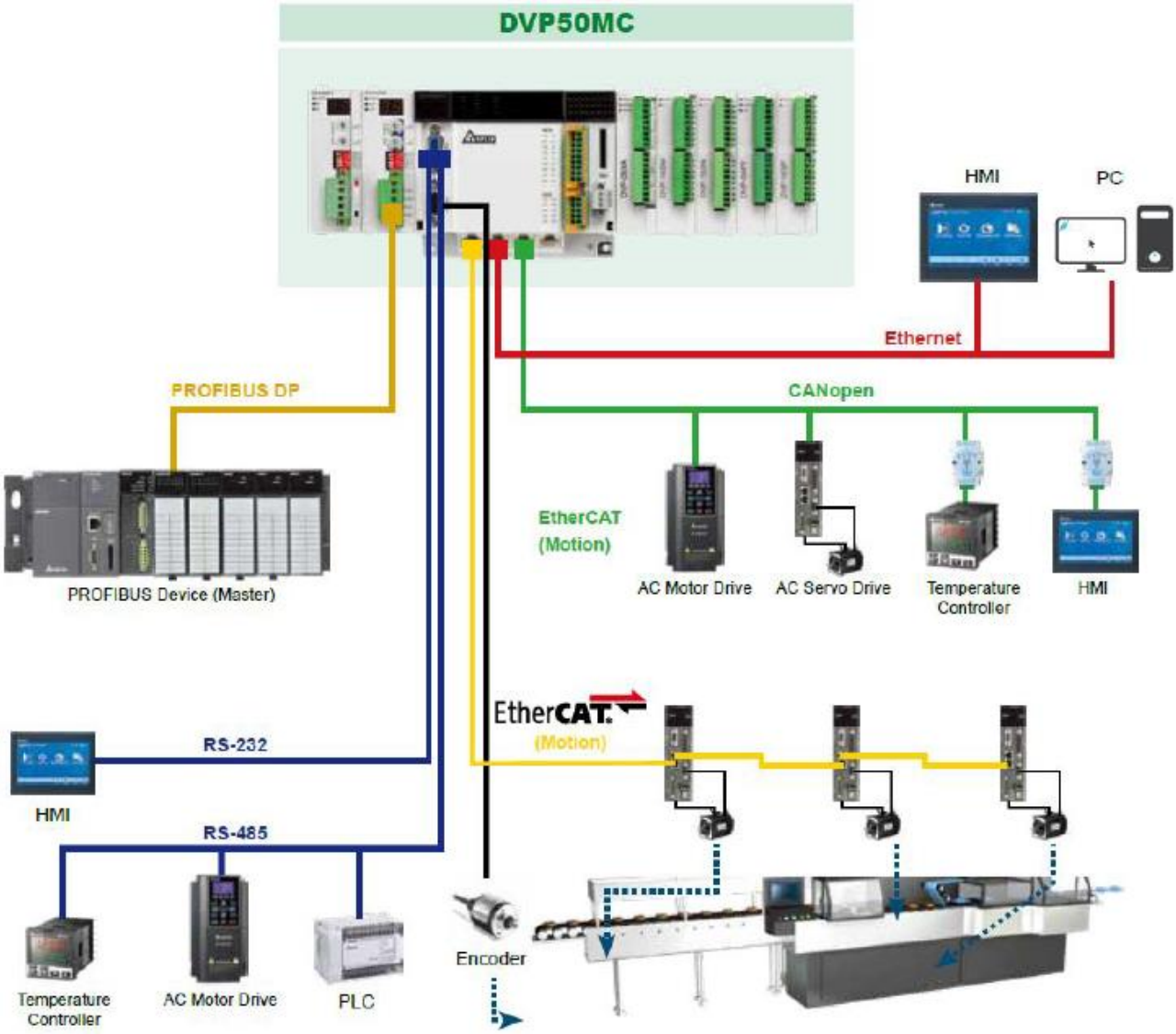




Other features

- Faster execution performance
- Supports LREAL data type

System structure example



CPU

- 1 GHz CPU
- Program Capacity: 20 MB, Data Capacity: 20 MB, G-Code: 16 MB
- Axes
  - DVP50MC11P: 24 real + 8 virtual axes
  - DVP50MC11P-06: 6 real + 10 virtual axes
- Built-In I/Os
  - 16 DI, supporting high-speed input and interrupt

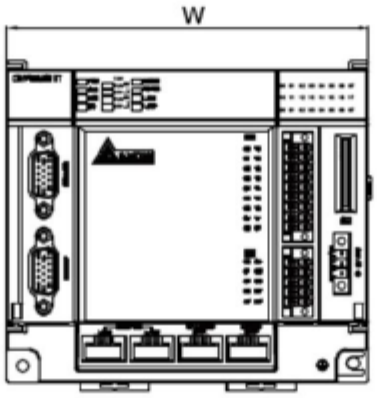
  - 8 DO (PNP)
- Built-In RS-232 and RS-485 (master / slave)
  - Modbus-TCP / Modbus-RTU
- Built-In Ethernet
  - Modbus-TCP
  - Ethernet/IP (Adapter mode)
- Built-In EtherCAT
  - Supports only Delta servos
  - 1 ms / 32 axes
  - Max. Baud rate is 100 Mbps
- Built-In CANopen Motion (DS301)
  - Up to 32 slave devices
- Built-In Encoder Interface
  - 2 x incremental
  - SSI
- Built-In SD card slot
- Supports DVP-S extension modules
  - 8 x left side (AIO modules, Profibus slave module)
  - 14 x right side (up to 240 IO points, up to 8 special modules)
- Supports LREAL data type
- Motion Control functions
  - PLCopen function blocks
  - Linear, arc and helical interpolation
  - Position, velocity, torque and homing modes
  - E-gear, E-Cam and rotary cut
  - G-Code
  - Jerk and buffer modes

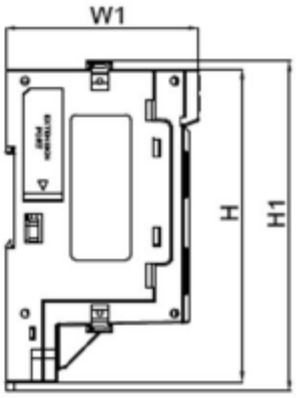
Electrical Specifications

Item	Specification
Power Supply Voltage	24 VDC -15%/+20%
Spike Voltage Durability	1500 VAC primary-secondary 1500 VAC primary-PE 500 VAC secondary-PE
Insulation Resistance	> 5 MΩ (All I/O points to ground: 500 VDC)
Noise Immunity	ESD: 8 kV air discharge EFT: Power line, 2 kV Digital I/O: 1 kV Analog & communication I/O: 1 kV RS: 26 MHz…1 GHz, 10 V/m
Grounding	The diameter of the grounding wire shall not be smaller than that of the power supply. When using several PLCs in the system, ensure proper grounding of each of them.
Storage / Operation	Storage temperature: -25…70 °C, 5…95% humidity, non-condensing Operation temperature: 0…55 °C, 5…95% humidity, non-condensing, pollution degree 2

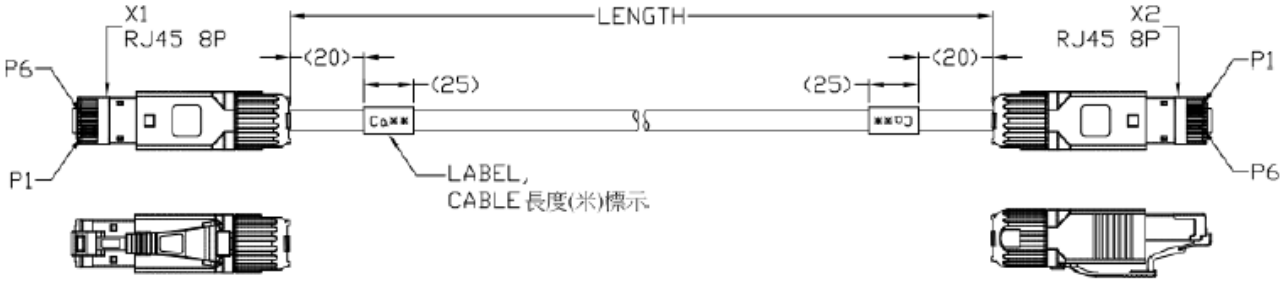
Dimensions

Model (mm)	H	H1	W	W1
DVP50MC11P	110	116.2	128	68.4
DVP50MC11P-06	110	116.2	128	68.4





Len. (Unit: m)	Model
0.3m	UC-EMC003-02C
0.5m	UC-EMC005-02C
1m	UC-EMC010-02C
2m	UC-EMC020-02C
5m	UC-EMC050-02C
10m	UC-EMC100-02C
20m	UC-EMC200-02C



Ordering Information

Model	Power Supply	Total Axes	Real Axes	Digital Input Points	Digital Output Points	Program Capacity	Data Capacity	Certification
DVP50MC11P	24 V_{DC}	32	24	16	8 (PNP)	20 MB	20 MB	CE, UL
DVP50MC11P-06		16	6					

Model	Length [m]	Description	Certification
UC-EMC003-02C	0.3	EtherCAT cable (high anti-interference)	CE
UC-EMC005-02C	0.5		
UC-EMC010-02C	1.0		
UC-EMC020-02C	2.0		
UC-EMC050-02C	5.0		
UC-EMC100-02C	10.0		
UC-EMC200-02C	20.0		

2.6 NEW – PMR Panel Mount Power Supply Series - New 240 W Models

Delta expands the PMR panel mount power supply series by adding 240 W models with universal input voltage of 90 Vac to 264 Vac and output voltages of 12, 24, 36 or 48 Vdc. The new models allow customers to save even more space and better match specific power requirements.

The PMR series operates from -30 °C to +70 °C and obtains shock and vibration certification IEC 60068-2. Even with its 30 mm low profile design, it features integrated PFC power factor correction and conforms to harmonic current emission standards IEC/EN 61000-3-2 Class A and Class D.

Highlights & Features

- Universal AC input voltage range
- Built-in active PFC and conforms to harmonic current IEC/EN 61000-3-2, Class A and Class D
- Lower no-load power consumption
- Low profile design: 30 mm height
- Household appliance approvals according to IEC/EN 60335-1, IEC/EN 61558-1 and IEC/EN 61558-2-16
- Wide operating temp -30°C ~70°C (Support -40°C cold start)

Ordering Information

Model Name	Input	Rated Output Voltage	Rated Output Current
PMR-12V240W1AT	90…264 Vac	12 Vdc	20.0 A
PMR-24V240W1AT		24 Vdc	10.0 A
PMR-36V240W1AT		36 Vdc	6.7 A
PMR-48V240W1AT		48 Vdc	5.0 A

2.7 UPDATE – AHCPU5x1-EN Firmware Upgraded to Version 2.04, AHCPU5x1-RS Firmware Upgrade to Version 1.06

Related Models

Series	Model	Firmware Version	Release Date
AH	AHCPU501-EN AHCPU511-EN AHCPU521-EN AHCPU531-EN	2.04	March 6, 2023 (Week 10/2023)
	AHCPU501-RS AHCPU511-RS AHCPU521-RS AHCPU531-RS	1.06	

API Related

1. Added a new instruction MDEL. Refer to the attachment for more details
2. Modified the length of a file name for the instructions MREAD, MWRIT, and MTWRIT. Up to 200 characters can be used in the file name
3. Modified the length of a string from 32 to 255 characters for all the APIs for AHCPU5X1 Series PLC
4. Fixed an issue that the following executions for the parameter S6 in EIPRW may cause syntax errors, and the error code 16#2010 will be stored in SR4
5. Declaring symbols and using auto allocation to assign addresses for the symbols
6. Using the devices D or L
7. Fixed an issue that when executing instruction SOPEN, if the remote IP address is illegal, the error does NOT record in the system error log
8. Fixed an issue that when executing instruction SSEND, the value in the data transmission counter is incorrect
9. New memory mode, the device type “%M” is available for DDF V1.04.0 or later. Users can set a range for %M. and the variable type can be defined by the setting range of the %M. (works with DIADesigner-AX V1.4)

Functional Application Related Issues

1. Fixed an issue that after resetting the PLC and then turning the power off and on again, an error code (16#000E) will be generated

2. Added a new function to set delay time for the COM port to transmit data

3. Fixed an issue that it may fail to use Modbus function code 0x0F (Force Multiple Coils) to write OFF into the devices T, C or HC and that may cause incorrect values shown in the devices T, C or HC

4. Fixed an issue that the states of Port 2 and Port 4 on every redundant backplanes can only be refreshed, when the redundant extension backplanes are fully connected to its maximum (7)

5. Fixed an issue that if a large number of servers are created for Modbus TCP data exchange, the scan time will be significantly increased during the first execution of data exchange

6. Ethernet/IP related

   - Below registers are newly added to display the quantity of various connections. The values are updated along with each scan time

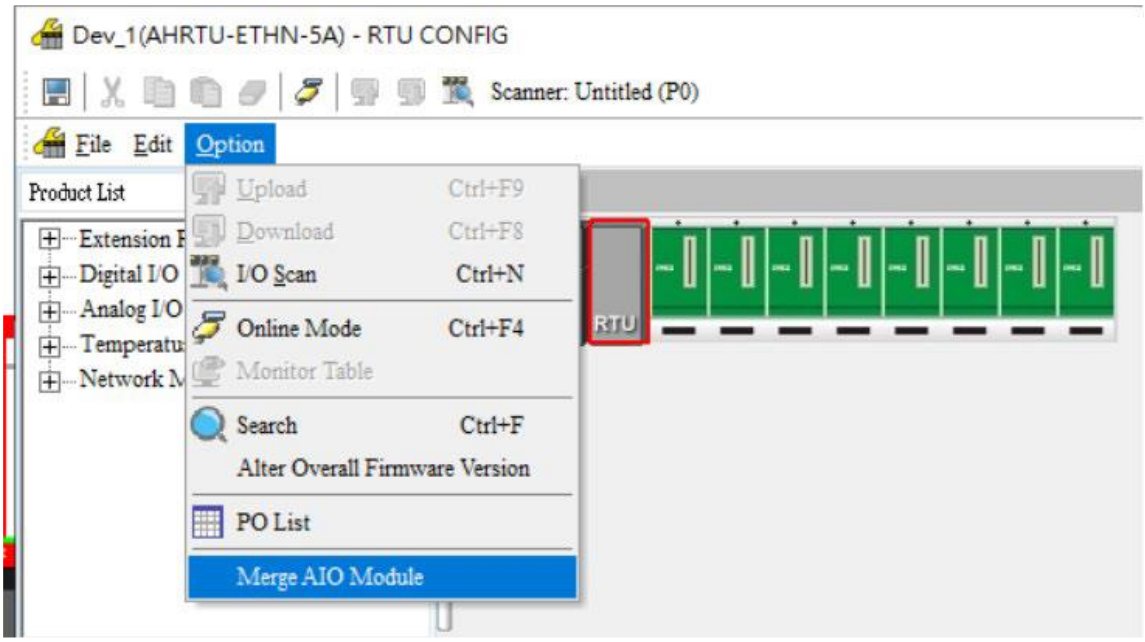
Register Number	Description
SR1013	Number of Ethernet/IP Adapter TCP connections
SR1014	Number of Ethernet/IP Scanner TCP connections
SR1016	Number of Ethernet/IP Adapter CIP connections
SR1017	Number of Ethernet/IP Scanner CIP connections

   - Below registers are newly added to display the IO Connection states and error states for Ethernet/IP Adapter. The values are updated along with each scan time

Register Number	Description
SM2304	Error state of Ethernet/IP Adapter I/O Connection 1
SM2305	Error state of Ethernet/IP Adapter I/O Connection 2
SM2306	Error state of Ethernet/IP Adapter I/O Connection 3
SM2307	Error state of Ethernet/IP Adapter I/O Connection 4
SM2308	Error state of Ethernet/IP Adapter I/O Connection 5
SM2309	Error state of Ethernet/IP Adapter I/O Connection 6
SM2310	Error state of Ethernet/IP Adapter I/O Connection 7
SM2311	Error state of Ethernet/IP Adapter I/O Connection 8
SM2312	Connection state of Ethernet/IP Adapter I/O Connection 1
SM2313	Connection state of Ethernet/IP Adapter I/O Connection 2
SM2314	Connection state of Ethernet/IP Adapter I/O Connection 3
SM2315	Connection state of Ethernet/IP Adapter I/O Connection 4
SM2316	Connection state of Ethernet/IP Adapter I/O Connection 5
SM2317	Connection state of Ethernet/IP Adapter I/O Connection 6
SM2318	Connection state of Ethernet/IP Adapter I/O Connection 7
SM2319	Connection state of Ethernet/IP Adapter I/O Connection 8

   - Fixed an issue that if the Scanner creates a large number of connections in one time, the scan time will be significantly increased during the current execution of powering on and downloading

   - If there are more than one connection between RTU and AIO modules, the connections can be combined into one. The connections of AHRTU-ETHN-5A and AIO modules can be combined and the connections of AS00SCM-RTU (AS-FEN02) and AIO modules can also be combined


Dev_1(AHRTU-ETHN-5A) - RTU CONFIG
Scanner: Untitled (P0)
File
Edit
Option
Product List
Extension F
Digital I/O
Analog I/O
Temperatu
Network M
Upload Ctrl+F9
Download Ctrl+F8
I/O Scan Ctrl+N
Online Mode Ctrl+F4
Monitor Table
Search Ctrl+F
Alter Overall Firmware Version
PO List
Merge AIO Module
RTU

ATT1_MDEL

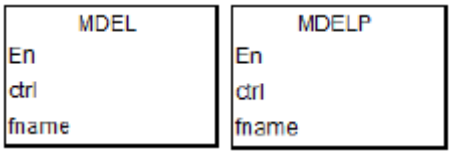
API	Instruction code			Operand	Function
2304		MDEL	P	**ctrl, fname**	Deleting files on the memory card

Device	X	Y	M	S	T	C	HC	D	FR	SM	SR	E	K	16#	"$"	F
ctrl								●					○	○		
fname								●	●						○	

Data type	BOOL	WORD	DWORD	LWORD	UINT	INT	DINT	LINT	REAL	LREAL	TMR	CNT	STRING
ctrl		●				●							
fname													●

Pulse instruction	16-bit instruction	32-bit instruction
AH500	AH500	-

Symbol

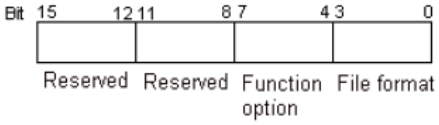


ctrl Control Parameter

fname File name

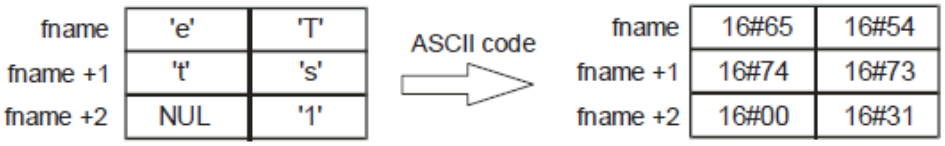
Explanation

1. This instruction writes data from the PLC to the memory card. The operands are described as follows
   - **ctrl**: The control parameter



Item	Code	Description
File format	0	The file name extension is .dmd.
	1, 2	The file name extension is .cvs.
	3, 4, 5, 6	The file name extension is .txt.
Reserved	-	The value here is fixed to 0.

   - **fname** supports up to 200 characters; the ending character 16#00 is included. If the string does not end with 16#00, an error occurs. When the instruction reads the ending character, it stops reading, and checks if the file name is legal. The characters in the file name can be A–Z, a–z, and 0–9. The file name extension depends on the file format. The file that the instruction creates is in the default folder. If the file name is "Test1", the instruction writes the characters into the devices as follows.



- The default folder path

Model Name	Folder Path
AHCPU5X0 AHCPU5X1 AHCPU560	PLC CARD\AH500\UserProg

2. Instruction Flags:

Flag	Description
SM450	ON: the memory card is in the CPU module
SM451	ON: the memory card is write protected OFF: the memory card is not write protected
SM452	The data is being written from the PLC to the memory card, or the data is being read from the memory card to the PLC
SM453	ON: an error occurs during the operation on the memory card. If the flag is ON, you must reset it to OFF. The error code is stored in SR453

3. Related Error Codes

Error Code	Description
16#005E	An error occurs when the memory card is initialized
16#005F	The path is incorrect, or the file does not exist
16#0060	The default folder cannot be created
16#0061	The memory space is insufficient
16#0062	The memory card is write protected
16#0063	An error occurs when the data is written into the file
16#0064	The file cannot be read
16#0065	This is a read-only file

Example

SM450 is ON when you insert the memory card into the CPU module; SM452 is ON when this instruction executes; SM452 is OFF when this instruction completes.

Additional Remarks

1. If the value in **ctrl** exceeds the range, an operation error occurs, the instruction is not executed, SM0 is ON, and the error code in SR0 is 16#2003
2. If the value in **fname** exceeds the range, an operation error occurs, the instruction is not executed, SM0 is ON, and the error code in SR0 is 16#2003

2.8 UPDATE – AS02 and DVP Series PLC Label Change

Objective

Change of the product labels on the DVP & AS Series PLC

Purpose

In order to automate the manufacturing process further, the product labels will be laser-printed on the devices and the boxes for DVP and AS Series PLC. Manual labeling is no longer necessary.

Series	Applicable Model	Effective Date	Remarks
AS DVP	All Models	October 3, 2022 (Week code 2241)	The effective date is the manufacturing date of the first batch. There will be no notifications for the later batches

Description

1. **Example of product information on the device**

Before	After
	

2. **Example of product information on the box**

Before	After
	

3. **How to scan the 2D barcode on the laser-engraved product information**
Tilt the barcode scanner to 45 degree and then scan the barcode as shown below.

2.9 UPDATE – CP2000 Firmware Update to Version 2.08

Correcting Functions

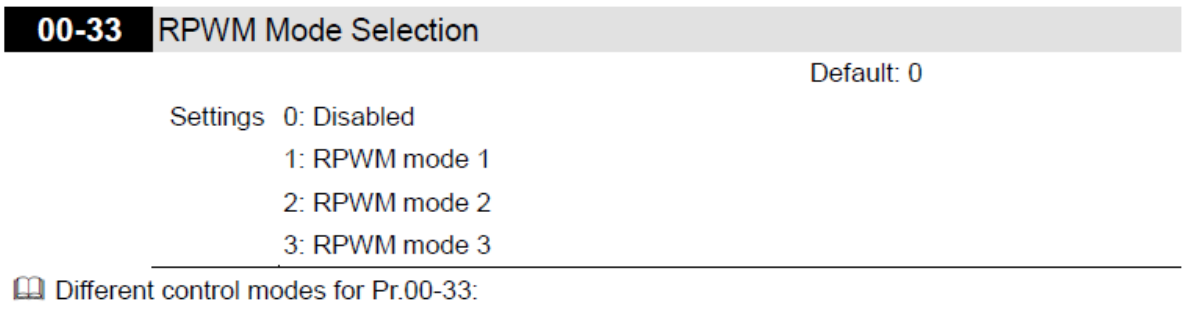
No.	Issues in Version 2.07.02	Version 2.08
1	Some customers want to strengthen the elastic overload protection function according to special working conditions.	Optimize the elastic overload protection function under special working conditions.
2	The fire mode function (06-80=1 or 2) is enabled regardless of whether the fire mode bypass is enabled (06-82=0 or 1), if the inverter restarts after OV, OC and other faults are removed. When the above situation occurs repeatedly in a very short period of time, it may cause damage to the internal components of the inverter, resulting in failure of the inverter hardware.	The fire mode function (06-80=1 or 2) is enabled regardless of whether the fire mode bypass is enabled (06-82=0 or 1), if the inverter restarts after OV, OC and other faults are removed. When the above situation occurs repeatedly in a very short period of time, the inverter can continue to work normally.
3	Due to lightning strikes, the quality of the mains power supply has sudden and transient interruptions, which temporarily stop the output of the inverter. When the mains power supply is restored, the inverter continues to run, which may cause the DC bus voltage to rise rapidly and cause an OV fault.	Due to lightning strikes, the quality of the mains power supply has sudden and transient interruptions, which temporarily stop the output of the inverter. When the mains power supply is restored, the inverter can continue to run normally without fault.

Changing Functions

1. The upper limit of the maximum operating frequency in each control mode of all CP models is adjusted to 599Hz

New Functions

1. Pr 00-04 multi-function display selection, sub-menu new option 54: PMFOC Ke estimated value.
2. Add RPWM function



Motor	Induction Motor (IM)		Permanent Magnet Synchronous Motor (PM)		Synchronous Reluctance Motor (SynRM)
Control Mode	VF	SVC	PM SVC	PM FOC	SRM FOC
0: RPWM mode 1	✓	✓	✓	✓	✓
1: RPWM mode 2	✓	✓	✓	✓	✓
2: RPWM mode 3	✓	✓	✓	✓	✓

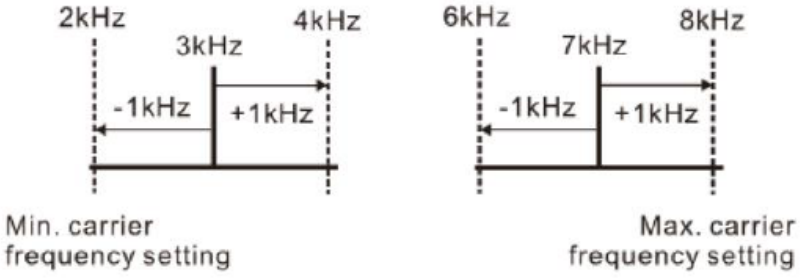
- When the RPWM function is enabled, the drive randomly distributes the carrier frequency based on actual Pr.00-17 carrier frequency settings.
- The RPWM function can be applied to all control modes.
- Once the RPWM function is enabled, particularly high frequency audio noise is reduced, and the audio frequency produced by the running motor also changes (usually from a higher to lower).
- Three RPWM modes are provided for different applications. Each mode corresponds to different frequency distribution, electromagnetic noise distribution, and audio frequency.

00-34 RPWM Range

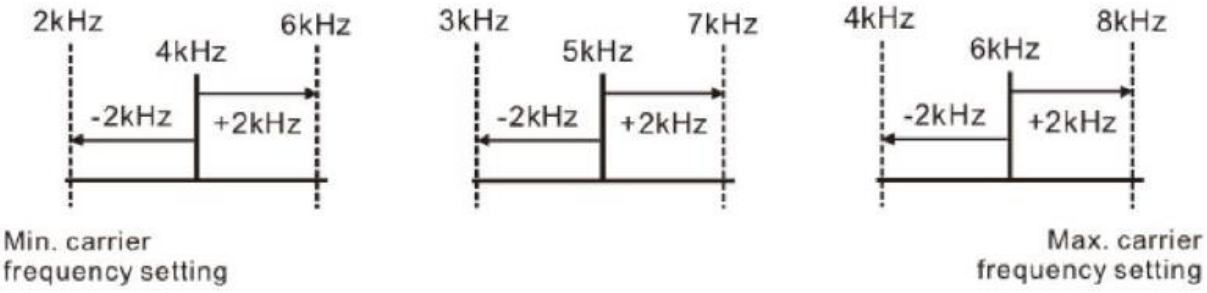
Default: 0.0

Settings 0.0–4.0 kHz

- When the RPWM function is enabled, the minimum carrier frequency setting for Pr.00-17 is 3 kHz, and the maximum is 7 kHz.
- Pr.00-34 is valid only when the RPWM function is enabled (Pr.00-33 ≠ 0).
- Example:
  When Pr.00-17 = 4 kHz, Pr.00-33 is enabled (= 1, 2, or 3), Pr.00-34 = 2.0 kHz, then the carrier frequency outputs on the basis of 4 kHz, and the random frequency distribution tolerance is ±2 kHz, that is, the carrier frequency randomly fluctuates from 2 kHz to 6 kHz.
- When Pr.00-17 = 3 or 7 kHz, the maximum setting for Pr.00-34 is 2.0 kHz (±1 kHz). The carrier frequency fluctuation range is according to the diagram below.



- When Pr.00-17 = 5, 6, or 7kHz, the maximum setting for Pr.00-34 is 4.0 kHz (±2 kHz). The carrier frequency fluctuation range is according to the diagram below.



Firmware Version and Switching Period

Firmware Version	Switching Period	
Version 2.08	Taoyuan	T2301
Version 2.08	Wujiang	W2301
Version 2.08	Hosur	H2308

2.10 UPDATE – CliQ M DC UPS Modules Product Change Notice

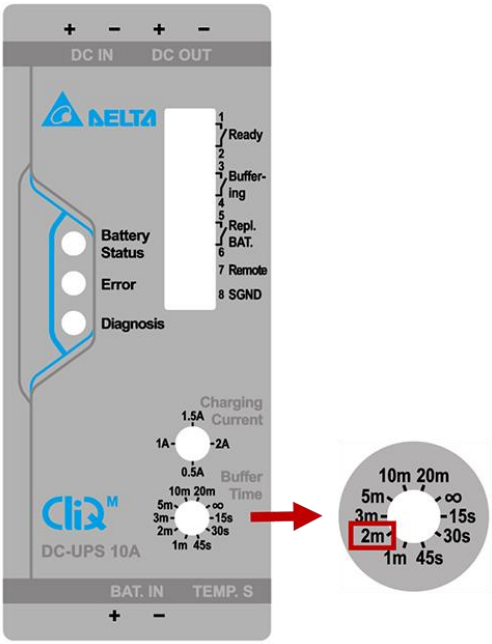
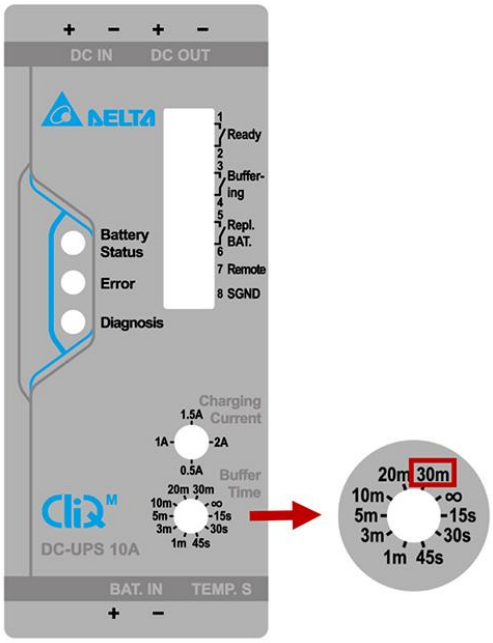
The buffer time for CliQ M DC-UPS modules will be revised from “2 min” to “30 min”

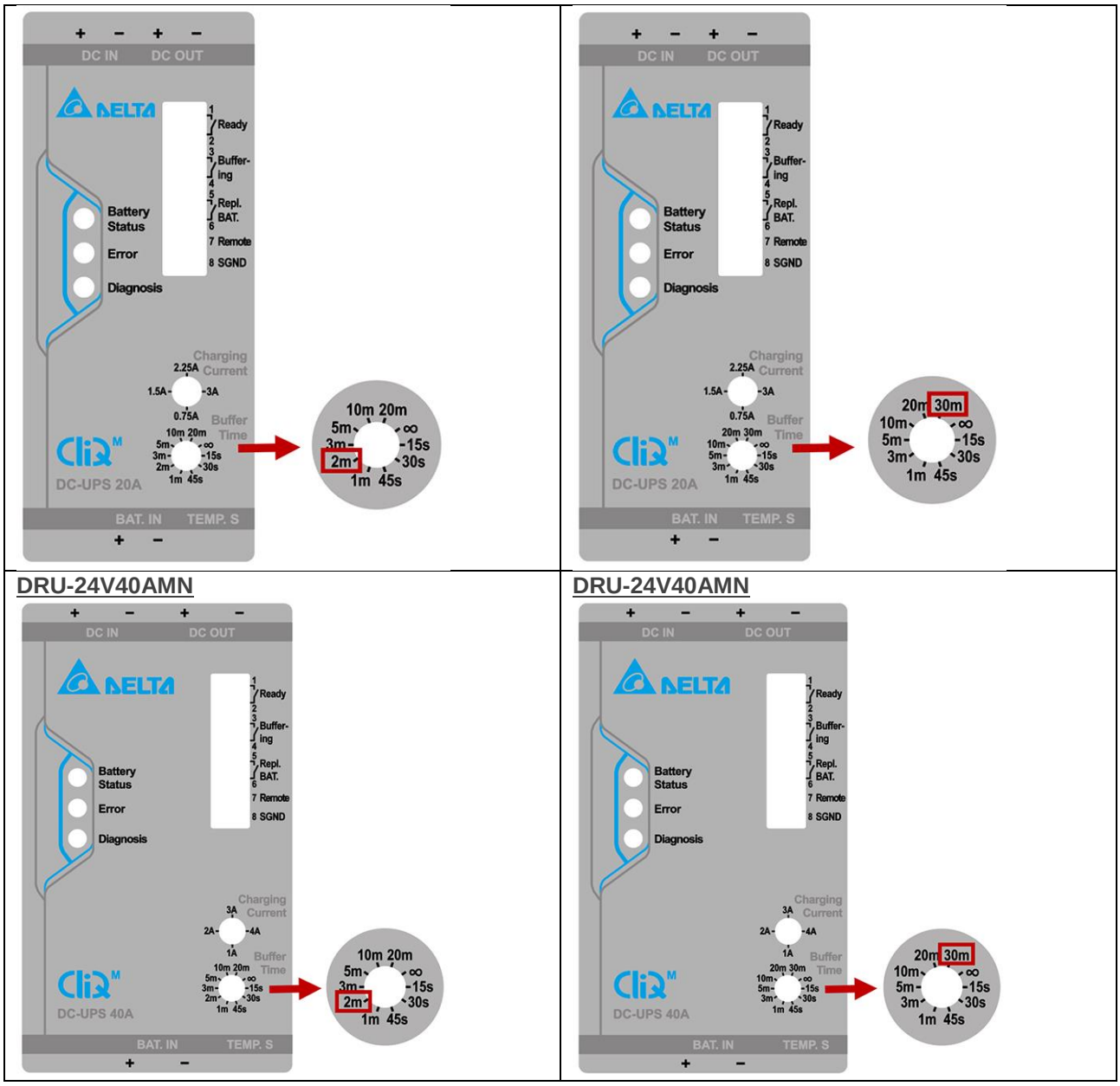
Implementation Date: Jan-2023

Model List

Model Name	Revision
DRU-24V10AMN	02
DRU-24V20AMN	02
DRU-24V40AMN	02

Change Details

Original	Revised
DRU-24V10AMN 	**DRU-24V10AMN** 
DRU-24V20AMN	**DRU-24V20AMN**



2.11 UPDATE – DIAVH Modified Wiring Method

Description

The current wiring method for DIAVH PPC series may cause either Windows 10 built-in driver or the touch panel driver fail to run. And that may lead to Windows On Screen Keyboard (OSK) not working on the touch panel.

After modifying the wiring method for DIAVH PPC Series, you can execute Windows 10 built-in driver and then Windows On Screen Keyboard (OSK) on your touch panel can work.

Applicable Models

PPC	DIAVH-PPCxxxxxx

Release Date: April 10, 2023 (Week 2315)

You can find the serial number on the Core-i series product label of the IPC/PPC. If the serial number is IPCxxxxxxxW2236xxxx or PPCxxxxxxxW2236xxxx (indicating year 2022, week 36) or later, it means the package is equipped with Intel® 7th Gen Core™ i CPU.

2.12 UPDATE – DVP-EC3 PLC Firmware Update to Version 9.02

Related Products

Series	Model Name*	Firmware Version	Release Date
DVP-EC3	DVPxxEC00T3	V9.00 → V9.02	April 10, 2022 (W2315)
	DVPxxEC00R3		

* The "xx" used in the model name indicates the number of built-in I/O points in the model, with the following options: 10, 14, 16, 20, 24, 30, 32, 40, 48 and 60.

Purpose

The functions which are modified and the functions which are added are described below. All the issues below can be fixed by upgrading firmware to V9.02 or above (no tools are required). Contact Delta technical support team or the distributors in case a firmware upgrade is needed.

Corrected Functions and Instructions

No.	Functions / Instructions	Description
1	Handling method on unstable power supply	If there is any sign of unstable power supply shown on the PLC, even after the power supply becomes stable again, it is possible that the execution and communication might NOT be carried out as requested.

New Functions and Instructions

No.	Functions / Instructions	Description
1	Online Edit	To provide the convenience of editing in Online Edit, added a new function that after editing in Online Edit, the PLC source code is also updated so that the PLC program can be uploaded after editing in Online Edit. Note: This function requires ISPSoft V3.17 or later versions.

2.13 UPDATE – DVP28SA2 PLC Firmware Update to Version 2.90

Related Products

Series	Model Name*	Firmware Version	Release Date
DVP-S	DVP28SA211T	V2.88 → V2.90	April 12, 2023 (W2315)
	DVP28SA211R		
	DVP28SA211S		

Purpose

The functions which are modified and the functions which are added are described as below. All the issues below can be fixed by upgrading firmware to V2.90 or above (no tools are required). Contact Delta technical support team or the distributors in case a firmware upgrade is needed.

Notice: When there is a need to upgrade the firmware from firmware version 2.88, you need to make a copy of your PLC programming and parameters for backup. After the firmware upgrade is complete, you need to reset the settings to default and then use the backup file to restore the PLC programming and parameters.

Corrected Functions and Instructions

No.	Functions / Instructions	Description
1	LDZ / DLDZ	Fixed an issue that even after executing LDZ/DLDZ instruction and successfully compiling the program in ISPSoft, once downloading the program to PLC, it responses with a syntax error.
2	MC, MCR and STL	Fixed an issue that if STL (step ladder) instruction is used in MC/MCR instructions, the program can NOT be downloaded to PLC.
3	DCNT (A/B phase counter using one time frequency input)	During the execution of DCNT instruction, if A/B phase counter uses one time frequency input and Z phase signal to clear the counted value to zero, the retainable values and the absolute position of Z phase may be offset after turning the CPU power on and then off for a dozen of times.
4	Handling method on unstable power supply	If there is any sign of unstable power supply shown on the PLC, even after the power supply becomes stable again, it is possible that the execution and communication might NOT be carried out as requested.
5	Right-side DIO module	The DIO module connected right next to AIO-S2 is not working properly. Note: The AIO-S2 module includes DVP04AD-S2, DVP04DA-S2, and DVP06XA-S2.

New Functions and Instructions

No.	API No.	Functions / Instructions	Description	Reference
1	343	$MOV	Strings are editable in the instruction. (available for ISPSoft V3.13 or later)	Attachment B-1
2	315	XCMP	Setups for comparing the inputs of multiple workstations	Attachment B-2

3	316	YOUT	Comparing the outputs of multiple work stations	Attachment B-3
4	-	Online Edit	To provide the convenience of editing in Online Edit, added a new function that after editing in Online Edit, the PLC source code is also updated so that the PLC program can be uploaded after editing in Online Edit. Note: This function should work with ISPSoft V3.17 or later versions.	
5	-	Mark alignment function	Added new flags M1680~M1683. When the flag is ON, no limit on the target output frequency. (Before: When the number of output pulses in the ramp-down is fewer than the ones with mark alignment, there is a limit on the target output frequency.)	Attachment B-5
6	80	RS	Executing RS instruction with the newly added M1263, you can set the data receiving to be seen as completed, when the data receiving stops for a period of time that is longer than what you have set in D1168.	Attachment B-6

Modified Functions and Instructions

No.	Functions / Instructions	Description
1	M1035	When M1035 is ON, you can use it to enable the input point X7 to act as a switch for PLC to Run or Stop.
2	Filtering time (D1020, D1021)	If the value is set less than 0, the CPU corrects the invalid value to 0 automatically.
3	SCLP (API 203)	A restriction is added to avoid errors: the value 0 cannot be used as a divider in SCLP instruction.
4	Enhance security	The PLC programming section is now password protected to prevent data stored on the internal memory being copied.

Note:
When there is a need to upgrade the firmware from firmware version2.88, you need to make a copy of your PLC programming and parameters for backup. After the firmware upgrade is complete, you need to reset the settings to default and then use the backup file to restore the PLC programming and parameters.

Attachment B-1

API	Mnemonic		Operands	Function	Controllers			
343	$MOV	P	(S) (D)	Transferring a string	ES2/EX2/ EC5	SS2	SA2 SE	SX2

OP \ Type	Bit Devices				Word devices											Program Steps
	X	Y	M	S	K	H	KnX	KnY	KnM	KnS	T	C	D	E	F	
S											*	*	*			$MOV, $MOVP: 5~12 steps
D											*	*	*			

PULSE				16-bit				32-bit
ES2/EX2/ EC5	SS2	SA2 SE	SX2	ES2/EX2/ EC5	SS2	SA2 SE	SX2	-

Operands:

S: Data source (string can be used) **D**: Data destination

Explanation:

1. Availability

Model	ES2 / EX2	ES2_C	EC5	ES2-E	12SA2 / SX2	SS2	SE	28SA2
Firmware Version	V3.68	V3.68	V1.00	V1.46	V3.02	V3.62	V2.02	V2.90

2. Strings can be used in **S**, e.g. “abcd”. 16 words of string can be used

3. This instruction transfers the string in **S** to **D**, and adds the code 16#00 to the end of the string

4. If the value in **S** is not in the string format ($), you need to add the ending code 16#00 in the end. Up to 256 words (including the ending code 16#00) can be stored in **S**

5. When the ending code16#00 cannot be found in **S** for 256 words in a row or even beyond the device range, the instruction is not executed. And M1067/M1068=ON, the error code 16#0E1A is stored in D1067

6. When the operand **S** is not a string and the instruction is executed, the string starting with the data in the device specified by **S** (including 16#00) is transferred to **D**. When the instruction is not executed, the data in **D** is unchanged

7. If **D** is not sufficient to contain the string composed of the values in **S**, the instruction is not executed. And M1067/M1068=ON, the error code 16#0E1A is stored in D1067

8. Suppose the operand **S** is not a string. When the instruction is executed and the first character in **S** is the code 16#00, 16#00 is still transferred to **D**

9. When 16#00 appears in the low byte, the execution of the instruction is as follows

Before the instruction is executed:

	b15~b8	b7~b0
S	16#31	16#30
S+1	16#33	16#32
S+2	16#35	16#34
S+3	16#30	16#00

	B15~b8	b7~b0
D	16#38	16#39
D+1	16#36	16#37
D+2	16#34	16#35
D+3	16#32	16#33

After the instruction is executed:

	b15~b8	b7~b0
S	16#31	16#30
S+1	16#33	16#32
S+2	16#35	16#34
S+3	16#30	16#00

	b15~b8	b7~b0
D	16#31	16#30
D+1	16#33	16#32
D+2	16#35	16#34
D+3	16#00	16#00

16#30 in the high byte is not transferred.

16#32 in the high byte turns into 16#00.

10. When 16#00 appears in the high byte, the execution of the instruction is as follows. The transfer stops when the code 16#00, leaving the remainder of **D** unchanged

Before the instruction is executed:

	b15~b8	b7~b0
S	16#31	16#30
S+1	16#33	16#32
S+2	16#00	16#34
S+3	16#37	16#36

	b15~b8	b7~b0
D	16#38	16#39
D+1	16#36	16#37
D+2	16#34	16#35
D+3	16#32	16#33

After the instruction is executed:

	b15~b8	b7~b0
S	16#31	16#30
S+1	16#33	16#32
S+2	16#00	16#34
S+3	16#37	16#36

	b15~b8	b7~b0
D	16#31	16#30
D+1	16#33	16#32
D+2	16#00	16#34
D+3	16#32	16#33

11. When **S** overlaps **D** and the device number of **S** is less than the device number of **D**, the transfer of the data to **D** starts form the ending code 16#00

Before the instruction is executed:

	b15~b8	b7~b0
D0	16#31	16#30
D1	16#33	16#32
D2	16#35	16#34
D3	16#30	16#00

⇒

	b15~b8	b7~b0
D1	16#33	16#32
D2	16#35	16#34
D3	16#30	16#00
D4	16#38	16#37

After the instruction is executed:

	b15~b8	b7~b0
D0	16#31	16#30
D1	16#33	16#32
D2	16#35	16#34
D3	16#30	16#00

⇒

	b15~b8	b7~b0
D1	16#31	16#30
D2	16#33	16#32
D3	16#35	16#34
D4	16#00	16#00

Example 1

Suppose the data in **S** is the string “1234” (even number of bytes). When M0 is enabled, the data 1234 and the ending code 16#00 is transferred to D0–D3 and 16#00 is added to the high byte in **D**, as follows.

The operand **S**:

String	‘1’	‘2’	‘3’	‘4’
Hexadecimal Value	16#31	16#32	16#33	16#34

After the instruction is executed, the data in **D** is as follows

Device	High Byte	Low Byte	Note
D0	16#32	16#31	‘1’ = 16#31; ‘2’ = 16#32
D1	16#34	16#33	‘3’ = 16#33; ‘4’ = 16#34
D2	16#00	16#00	The ending code 16#00 is in the low byte. 16#00 is automatically added in the high byte.
D3	Unchanged	Unchanged	

Example 2

Suppose the data in **S** is the string “12345” (odd number of bytes). When M0 is enabled, the data 12345 is transferred to D0–D3 as follows.

The operand **S**:

String	‘1’	‘2’	‘3’	‘4’	‘5’
Hexadecimal Value	16#31	16#32	16#33	16#34	16#35

After the instruction is executed, the data in **D** is as follows

Device	High Byte	Low Byte	Note
D0	16#32	16#31	'1' = 16#31; '2' = 16#32
D1	16#34	16#33	'3' = 16#33; '4' = 16#34
D2	16#00	16#35	The ending code 16#00 is in the high byte.
D3	Unchanged	Unchanged	

Example 3

When the data in **S** is not a string and the ending code 16#00 appears in the low byte, the execution of the instruction is as follows.

The operand **S**:

Device	High Byte	Low Byte	Note
D100	16#31	16#30	'1' = 16#31; '0' = 16#30
D101	16#33	16#32	'3' = 16#33; '2' = 16#32
D102	16#35	16#34	'5' = 16#35; '4' = 16#34
D103	16#30	16#00	'0' = 16#30; 16#00 is the ending code.

After the instruction is executed, the data in **D** is as follows

Device	High Byte	Low Byte	Note
D0	16#31	16#30	'1' = 16#31; '0' = 16#30
D1	16#33	16#32	'3' = 16#33; '2' = 16#32
D2	16#35	16#34	'5' = 16#35; '4' = 16#34
D3	16#00	16#00	The ending code 16#00 is in the low byte. 16#00 is automatically added in the high byte.
D4	Unchanged	Unchanged	

Attachment B-2

API	Mnemonic	Operands	Function	Controllers			
				ES2/EX2	SS2	SE	SA2/SX2
315	XCMP	S_1, S_2, S_3, S_4, D	Setting up to compare the inputs of multiple work stations				

Type / OP	Bit Devices				Word devices										Program Steps
	X	Y	M	S	K	H	KnX	KnY	KnM	KnS	T	C	D	E	F	
S_1	*															XCMP: 11 steps
S_2												*				
S_3													*			
S_4													*			
D													*			

PULSE				16-bit				32-bit			
ES2/EX2	SS2	SE	SA2/SX2	ES2/EX2	SS2	SE	SA2/SX2	ES2/EX2	SS2	SE	SA2/SX2

Operands:

S_1: Trigger input point

S_2: High-speed counter number

S_3: Setting for the number of work station and objects

S_4: Reference value for comparison and observational error

D: First corresponding device for the comparison result in the stack area

Explanation:

1. Use **S_1** for setting the trigger input points; for ES2 series, use built-in inputs X4 and X6 for immediate trigger input points and other inputs from X0 to X17 for general trigger input points. Executing the instruction enables the external interrupts for the inputs. Therefore, it is suggested that you not use the inputs with interrupt tasks; otherwise, when the instruction is executed, the interrupts are disabled and resumed only after the instruction completes. The general type inputs are affected by the scan time though they are suitable for the environments where the inputs are not as stable

2. **S_2** works with 32-bit counters (C200–C255) and is limited to accumulated count. When the inputs are the high-speed trigger input type, it is suggested that you implement the hardware high-speed counter such as C251 or C253 and use the DCNT instruction to enable the counter. When you need high-speed output, you can use the DMOV instruction to copy the output current position, e.g. copying the current output position D1030 to C200

3. **S_3** occupies seven consecutive 16-bit devices. **S_3**+0 is n (the work station number) and **S_3**+1 is m (the maximum object number). **S_3**+2 is the result of the object being filtered. **S_3**+3 (Low word) and **S_3**+4 (High word) are the result of rising-edge triggered number (32-bit). **S_3**+5 (Low word) and **S_3**+6 (High word) are the result of rising-edge triggered number (32-bit). The range for n and m is between 1–32. The range for n and m is between 1–32. When this value is out of range, the value used is the maximum (32) or the minimum (1). The range for **S_3**+2 (the number of filter) is between 0–32767. Zero is used for any value less than 0 ; and a value of 0 disables the filtering function. It is suggested that you declare

an array of 3 words or 3 consecutive word type variables

4. It is suggested that you set the maximum number for **S_3**+1 (m). If m < n, note the objects and make sure they are sufficient on the production line

5. For **S_3**, the supported range in n, and m is 1 to 64

Module	ES2 / EX2	ES2-C	ES2-E	12SA2 / SX2	SS2	12SE	26SE	28SA2
Firmware Version	V3.68	V3.68	V1.48	V3.02	n/a	V2.08	V2.08	V2.90

6. **S_4** occupies 3*n consecutive 32-bit devices (6*n 16-bit devices). If the required space exceeds the range of device D, the instruction is not executed. The value of n is the workstation number set in the operand **S_3**. The following table lists the functions for each device and the corresponding number for **S_4**. It is suggested that you declare an array of 3*n double words or 3 consecutive double word type variables for **S**

Function	Workstation 1	Workstation 2	…	Workstation n
Reference value for comparison	**S_4** + 0	**S_4** + 1	…	**S_4** + (n – 1) * 2
Observational error when entering (32-bit)	**S_4** + 2 * n	**S_4** + 2 * n + 2	…	**S_4** + (2 * n – 1) * 2
Observational error when leaving (32-bit)	**S_4** + 4 * n	**S_4** + 4 * n + 2	…	**S_4** + (3 * n – 1) * 2

7. When you set the reference value to 0 for a specific workstation, the specific workstation stops working. You can use this technique to manage workstations

8. **D** is the first corresponding device for the comparison result in the stack area. **D** occupies 2*n consecutive 16-bit devices and 2*m*n consecutive 32-bit devices (or 4*m*n consecutive 16-bit devices). If the required space exceeds the range of device **D**, the instruction is not executed. The following table lists the functions for each device and the corresponding number for **D**

Function	Workstation 1	Workstation 2	…	Workstation n
Value of the head index (16-bit)	**D** + 0	**D** + 1	…	**D** + (n-1)
Value of the tail index (16-bit)	**D** + n	**D** + (n + 1)	…	**D** + (2 * n – 1)
Compared counter result 1 of the object when entering (32-bit)	**D** + 2 * n	**D** + 2 * n + 2	…	**D** + 2 * n + 2 * (n – 1)
Compared counter result 1 of the object when leaving (32-bit)	**D** + 4 * n	**D** + 4 * n + 2	…	**D** + 4 * n + 2 * (n – 1)
. .	. .	. .	. .	. .
Compared counter result m of the object when entering (32-bit)	**D** + 4 * m * n – 2 * n		…	**D** + 4 * m * n – 2
Compared counter result m of the	**D** + 4 * m * n		…	**D** + 4 * m * n – 2 * (n – 1)

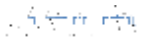
object when leaving (32-bit)				

9. **D** tends to occupy more space in the stack area. If the required space exceeds the range of device **D**, the PLC only executes what is valid in the storage and does not show a no warning. It is suggested that you declare an array of 2*n+4*m*n words for **D**

10. There is no limit on the number of times you can execute the instruction but only one execution can be done at a time

11. It is suggested to use this instruction with the YOUT instruction (API 0710) and use the same first corresponding device for the comparison result in the stack area (**D**)

12. The following timing diagram shows executing the high-speed counter and filter (reading from right to left)



    ① PLC reads the current counter value
    ② Drop the counter value: the number of filters read is less than the number of filters set
    ③ Record the counter value: the signal is high (ON time) and records the counter value to the comparing stack area for entering
    ④ Record the counter value: the signal is low (OFF time) and records the counter value to the comparing stack area for leaving
    ⑤ Unsettled pulse section
    ⑥ When the signal is rising- or falling-edge triggered, and the PLC completes processing the filters, the PLC reads the high-speed counter value and adds one in the value of the head index. The PLC then records the entering and leaving counter results for each workstation. The compared counter result is the current counter value + reference value + observational error. For either rising- or falling-edge triggered, the value of the head index is incremented. The maximum value for the head index mx2 (the maximum number of objects)

13. When the signal is rising- or falling-edge triggered, and the PLC completes processing the filters, the PLC reads the high-speed counter value and adds one in the value of the head index. The PLC then records the entering and leaving counter results for each workstation. The compared counter result is the current counter value + reference value + observational error. For either rising- or falling-edge triggered, the value of the head index is incremented. The maximum value for the head index mx2 (the maximum number of objects)

14. The value of the head index is cyclically incremented, when the signal is rising- or falling-edge triggered and completes processing the number of filters (the default for trigger input is OFF). The maximum value for the head index is mx2 (the maximum number of objects). For example, if you set the number of objects to 10, the value of the head index (default: 0) is incremented to 1, 2, 3 to 20 and then 1, 2, 3 to 20 repeatedly. When the value of the head index is 0, it means no object has entered after executing the instruction. The PLC adds one to the value of the head index, and then checks the value of the tail index. If the value (after adding one) in the value of the head index equals the value of the tail index, the PLC cancels the addition and records the counter result

15. When the instruction is executed and the state of the initial input is OFF, the rising-edge trigger corresponds to the odd numbers of the head index value, and the falling-edge

trigger corresponds to the even numbers of the head index value

16. When the PLC executes the instruction and the state of the initial input is ON, the falling-edge trigger corresponds to the odd numbers of the head index value, and the rising-edge trigger corresponds to the even numbers of the head index value

17. When the PLC executes the instruction, it does not clear the values in the accumulated area and the index areas. If the data is in a latched area and needs to be enabled again, use the ZRST instruction to clear the values in the head and tail indexes

18. The following models and firmware versions that support the XCMP and YOUT instructions

Example

Refer to the example in the YOUT instruction (API 316) for more information.

Attachment B-3

API	Mnemonic	Operands	Function	Controllers
316	YOUT	S_1, S_2, S_3, D	Comparing the outputs of multiple work stations	ES2/EX2 | SS2 | SE | SA2/SX2

Type / OP	Bit Devices				Word devices											Program Steps
	X	Y	M	S	K	H	KnX	KnY	KnM	KnS	T	C	D	E	F	YOUT: 9 steps
S_1	*											*				
S_2													*			
S_3													*			
D		*	*													

PULSE				16-bit				32-bit			
ES2/EX2	SS2	SE	SA2/SX2	ES2/EX2	SS2	SE	SA2/SX2	ES2/EX2	SS2	SE	SA2/SX2

Operands:

S_1: High-speed counter number

S_2: Setting for the number of work station and objects

S_3: First corresponding device for the comparison result in the stack area

D: First corresponding device for the output work station

Explanation:

1. **S_1** is for the setting of the high-speed counter. Use the same settings for the high-speed counter as for the high-speed counter for the XCMP (API 315) instruction

2. **S_2** occupies two consecutive 16-bit devices. **S_2**+0 is n (the work station number) and **S_2**+1 is m (the maximum number of objects). The range for n and m is between 1 and 32. When the value is out of range, the value used is the maximum (32) or the minimum (1). The settings for the operands should be the same as for the XCMP instruction

3. **S_3** is first corresponding device for the comparison result in the stack area. **S_3** occupies 2*n consecutive 16-bit devices and 2*m*n consecutive 32-bit devices (or 4*m*n consecutive 16-bit devices). For information on the functions of each device and the corresponding number for **D**, refer to the XCMP instruction (API 315). It is suggested that you use the same variable as you use for the XCMP instruction

4. There is no limit on the number of times you can execute the instruction but only one execution can be done at a time

5. It is suggested that you use with the XCMP instruction (API 315), and use the same first corresponding device for the comparison result in the stack area (**S_3**)

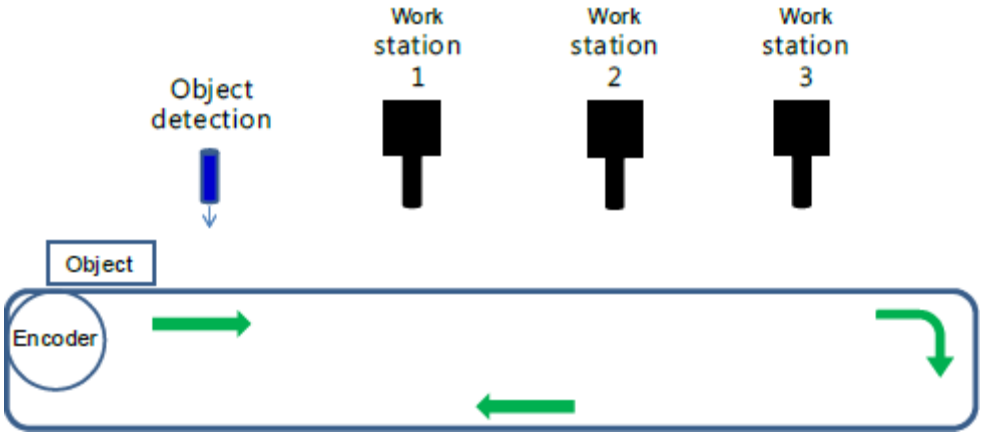
6. **D** is only for the outputs of Y and M devices; Y and M should be the BOOL data type. It occupies a consecutive number of workstations Xn. When used as the output point of Y or the M device, the instruction refreshes the output states

7. The odd numbered head index values (for example 1, 3, 5, etc.) are the compared counter results for the object when entering. The even numbered head index values (for example 2, 4, 6, etc.) are the compared counter result of the object when leaving

8. When the compared counter result for entering and leaving in the stack area are 0, the actions in this area are not executed and the state of the corresponding output work station is OFF. Add 2 to the value of the tail index and the added value in the tail index should not exceed the value of the head index

9. When the YOUT instruction is executed, each work station checks the compared value for entering and leaving in the tail index. When the counter value is larger or the same as the compared value for entering, the corresponding output point is ON and adds 1 to the value of the tail index. When the counter value is larger or the same as the compared value for leaving, the corresponding output is OFF and adds 1 to the value of the tail index; but the value of the tail index (after adding 1) does not exceed the value of the head index

Example: Three workstations and up to four objects

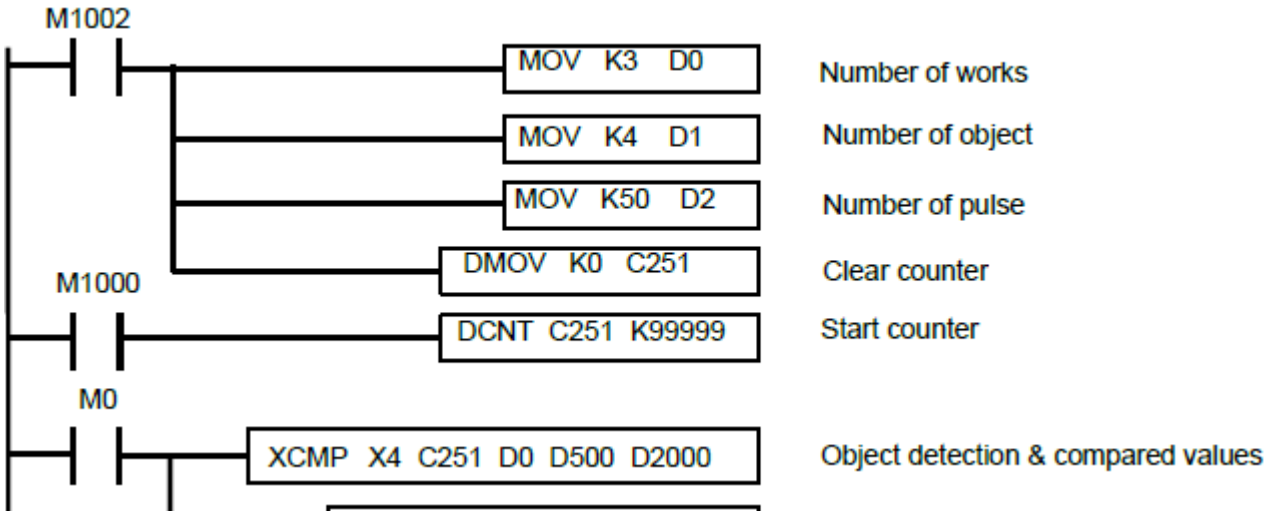


Step 1: use the input point X4 as the object detection interrupt, C251 as the high-speed counter for the encoder and output point Y0 as the first output point for the workstation.

Step 2: edit the register to set up the reference values, and the observational error when entering and leaving.

Device D	D500	D502	D504
Reference value for comparison (32-bit)	K2000	K3000	K4000
Device D	D506	D508	D510
Observational error when entering (32-bit)	K120	K120	K130
Device D	D512	D514	D516
Observational error when leaving (32-bit)	K50	K-20	K20
Device D	D2000	D2001	D2002
Value of the head index (16-bit)	K0	K0	K0
Device D	D2003	D2004	D2005
Value of the tail index (16-bit)	K0	K0	K0

Step 3: set up the initial values and write the programs



After the contact M0 is activated, the system sets the object detection, the compared values, the compared counter result of the object entering and leaving, and the output controls for each workstation. For example, the system detects two objects have entered and then four triggers to read the compared counter results: 3000, 3500, 4500, and 5000 in C251 (C251=K5060). The result of the last rising-edge / falling-edge of X4 from C251 for the values K4500 and K5000 are stored in (D3, D4) and (D5, D6) in 32-bit. The following table shows the compared value and the head/tail index in the stack area.

Device D	D2000	D2001	D2002
Value of the head index (16-bit)	K4	K4	K4
Device D	D2003	D2004	D2005
Value of the tail index (16-bit)	K1	K1	K1
Device D	D2006	D2008	D2010
Compared counter result 1 of the object when entering (32-bit)	K5100	K6120	K7130
Device D	D2012	D2014	D2016
Compared counter result 1 of the object when leaving (32-bit)	K5550	K6480	K7520
Device D	D2018	D2020	D2022
Compared counter result 2 of the object when entering (32-bit)	K6600	K7620	K8630
Device D	D2024	D2026	D2028
Compared counter result 2 of the object when leaving (32-bit)	K7050	K7980	K9020
Device D	D2030	D2032	D2034
Compared counter result 3 of the object when entering (32-bit)	K0	K0	K0
Device D	D2036	D2038	D2040
Compared counter result 3 of the object when leaving (32-bit)	K0	K0	K0

The following table shows the state of the output point Y when the high-speed counter C251 reaches 5200.

Output point Y number	Y0	Y1	Y2
16-bit value	ON	OFF	OFF
Device D	D2000	D2001	D2002
Value of the head index (16-bit)	K4	K4	K4
Device D	D2003	D2004	D2005
Value of the tail index (16-bit)	K2	K1	K1

The following table shows the state of the output point Y when the high-speed counter C251 reaching 6200.

Output point Y number	Y0	Y1	Y2
16-bit value	ON	OFF	OFF
Device D	D2000	D2001	D2002
Value of the head index (16-bit)	K4	K4	K4
Device D	D2003	D2004	D2005
Value of the tail index (16-bit)	K3	K2	K1

The following table shows the state of the output point Y when the high-speed counter C251 reaching 6800.

Output point Y number	Y0	Y1	Y2
16-bit value	ON	OFF	OFF
Device D	D2000	D2001	D2002
Value of the head index (16-bit)	K4	K4	K4
Device D	D2003	D2004	D2005
Value of the tail index (16-bit)	K4	K3	K1

The following table shows the state of the output point Y when the high-speed counter C251 reaching 7300.

Output point Y number	Y0	Y1	Y2
16-bit value	ON	OFF	OFF
Device D	D2000	D2001	D2002
Value of the head index (16-bit)	K4	K4	K4
Device D	D2003	D2004	D2005
Value of the tail index (16-bit)	K4	K3	K2

The following table shows the state of the output point Y when the high-speed counter C251 reaching 7700.

Output point Y number	Y0	Y1	Y2
16-bit value	ON	OFF	OFF
Device D	D2000	D2001	D2002
Value of the head index (16-bit)	K4	K4	K4
Device D	D2003	D2004	D2005
Value of the tail index (16-bit)	K4	K4	K3

The following table shows the state of the output point Y when the high-speed counter C251 reaching 8000.

Output point Y number	Y0	Y1	Y2
16-bit value	ON	OFF	OFF
Device D	D2000	D2001	D2002
Value of the head index (16-bit)	K4	K4	K4
Device D	D2003	D2004	D2005
Value of the tail index (16-bit)	K4	K4	K3

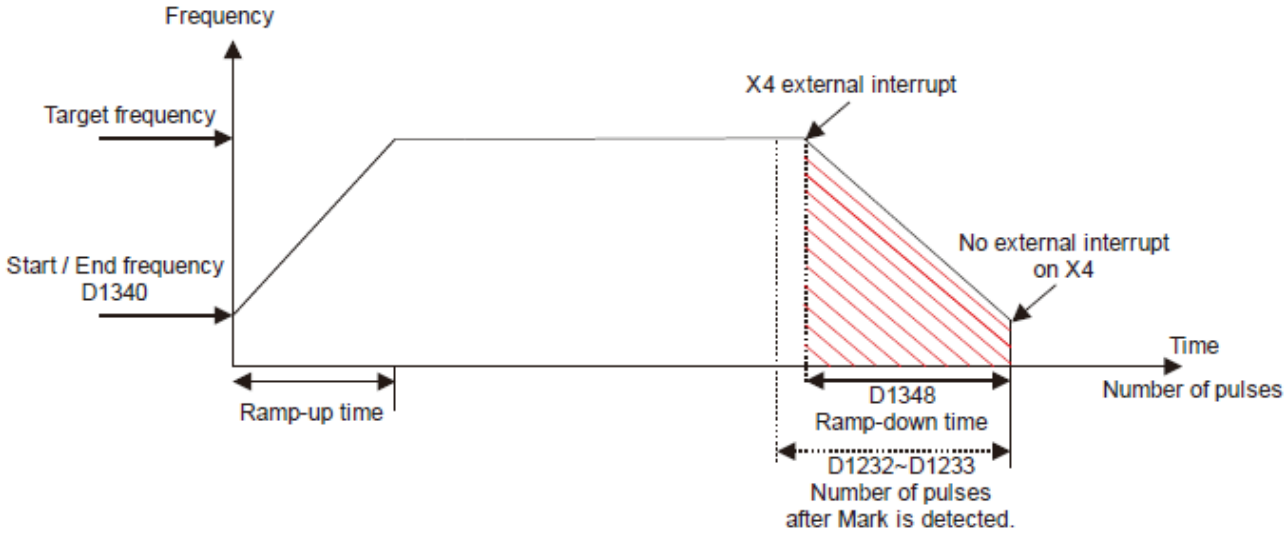
The following table shows the state of the output point Y when the high-speed counter C251 reaching 8700.

Output point Y number	Y0	Y1	Y2
16-bit value	ON	OFF	OFF
Device D	D2000	D2001	D2002
Value of the head index (16-bit)	K4	K4	K4
Device D	D2003	D2004	D2005
Value of the tail index (16-bit)	K4	K4	K3

Attachment B-5 M1680-M1683

Flags M1680~M1683 (for output points Y0~Y3 respectively) are used when no limit on the target output frequency is needed in the instructions DPLSR and DDRVI.

Operation of marked deceleration function on Y0:



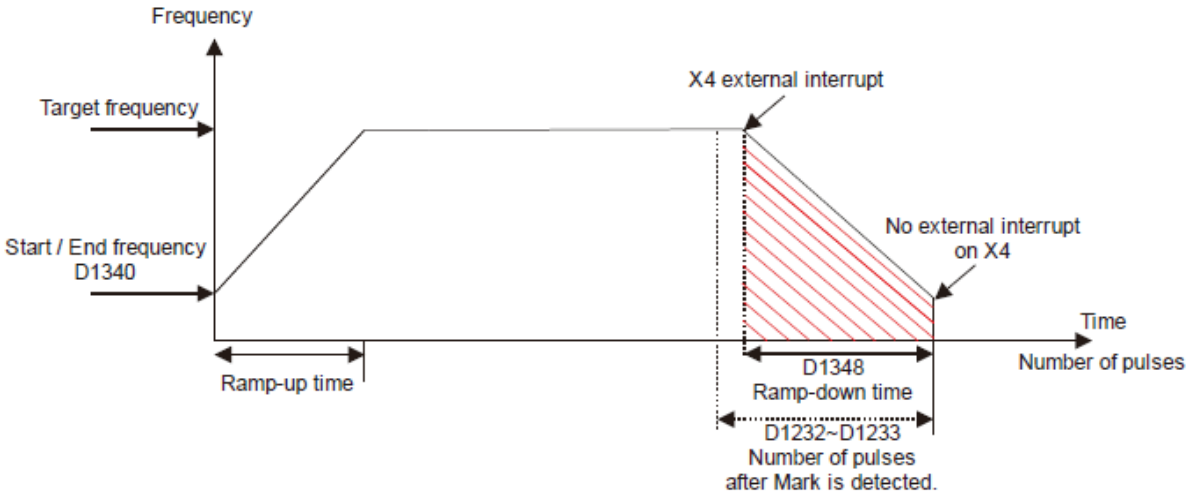
Output Number	Deceleration after marked flag	External input point	Ramp-up time	Ramp-down time	Starting / ending frequency	Number of ramp-down pulses after marking	Front masking	Back masking	No limit on the target output frequency
Y0	M1156	X4	D1343	D1348	D1340	D1232 / D1233	D1026 / D1027	D1100 / D1101	M1680
Y1	M1157	X5	D1343		n/a	D1236 / D1237	D1154 / D1155	D1156 / D1157	M1681
Y2	M1158	X6	D1353	D1349	D1352	D1234 / D1235	D1135 / D1136	D1102 / D1103	M1682
Y3	M1158	X7	D1353		n/a	D1238 / D1239	D1158 / D1159	D1160 / D1161	M1683

- When M1156 is ON, enable deceleration after marked function on Y0 when X4 receives interrupt signals

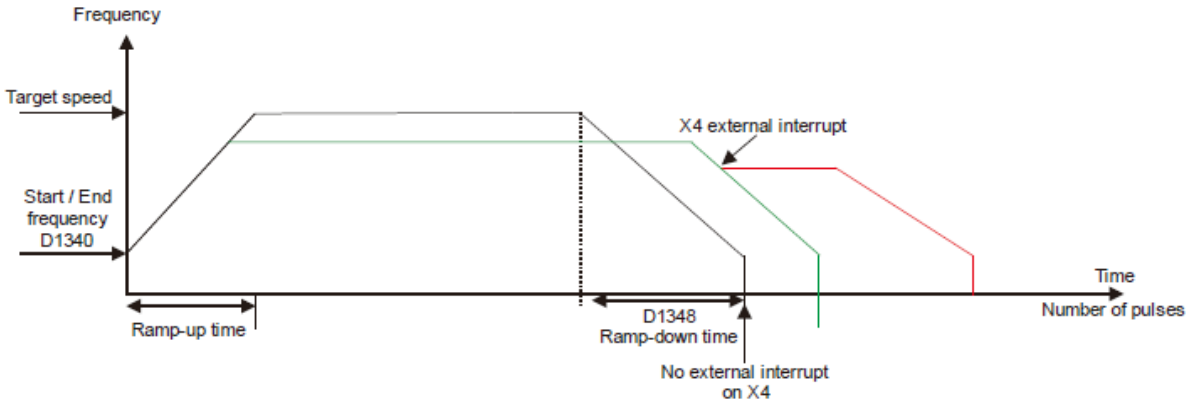
- When Mark function is enabled, ramp down time is separated from the ramp up time. Users can set the ramp up time in S3 and the ramp down time in D1348 for DPLSR instruction. When the number of output pulses in the ramp-down area is 0 (default), the pulses in the ramp down area is not outputted. If the number of output pulses in the ramp-down area is NOT zero (D1232 or D1233 is not zero and is a 32-bit value), PLC will output the specified number of pulse

- From the above image, the red-line filled area indicates the number of output pulses during the ramp-down time. (D1133, D1134)

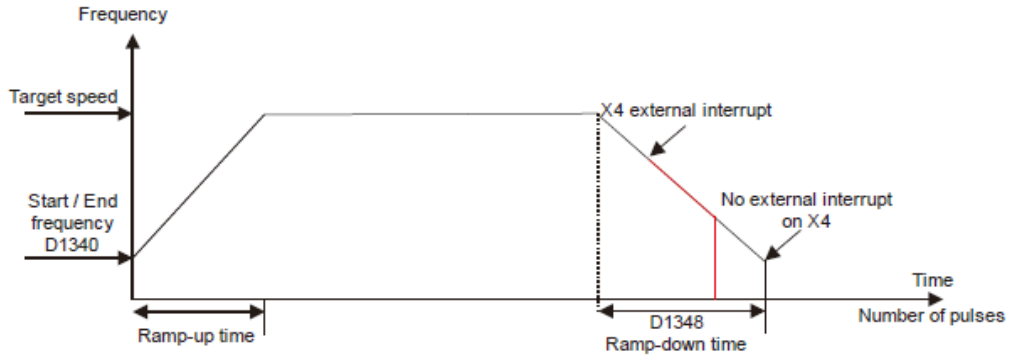
- If the value in D1232 or D1233 (the number of output pulse after marked) is greater than the specified number of output pulse in the ramp-down area, the output pulse will go like the red line below, once X4 receives interrupt signals to enable the deceleration after marked function



- If the value in D1232 or D1233 (the number of output pulse after marked) is smaller than the specified number of output pulse in the ramp-down area, the target frequency (green line) will be forced to slow down in order to keep the frequency going till it ends (e.g. M1680 OFF). The output pulse will go like the red line below, once X4 receives interrupt signals to enable the deceleration after marked function



- If the value in D1232 or D1234 (the number of output pulse after marked) is smaller than the specified number of output pulse in the ramp-down area, the target frequency will be forced to go faster in order to meet the actual output frequency (e.g. M1680 ON). The frequency stops earlier. The output pulse will go like the red line below, once X4 receives interrupt signals to enable the deceleration after marked function



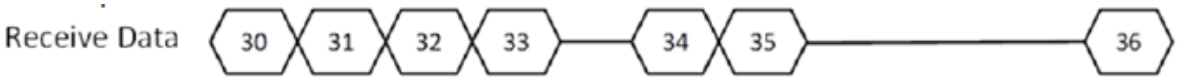
Attachment B-6 M1263

COM 3 RS-485

Executing RS instruction with the newly added M1263, you can set the data receiving as completed, when the data receiving stops for a period of time that is longer than what you have set in D1168 (The specific end word to be detected for RS instruction to execute an interruption request). Be sure to set the time in D1168 shorter than the time you set in D1129; otherwise, it may be treated as communication timeout.

The flow of data receiving may NOT always be as regular or consistent. After receiving one word of data, the PLC CPU starts to time to determine if the data receiving continues and when the data receiving stops longer than the time set in D1168, the data receiving will be seen as completed.

Example:



We can see there are two noticeable stops in this diagram.

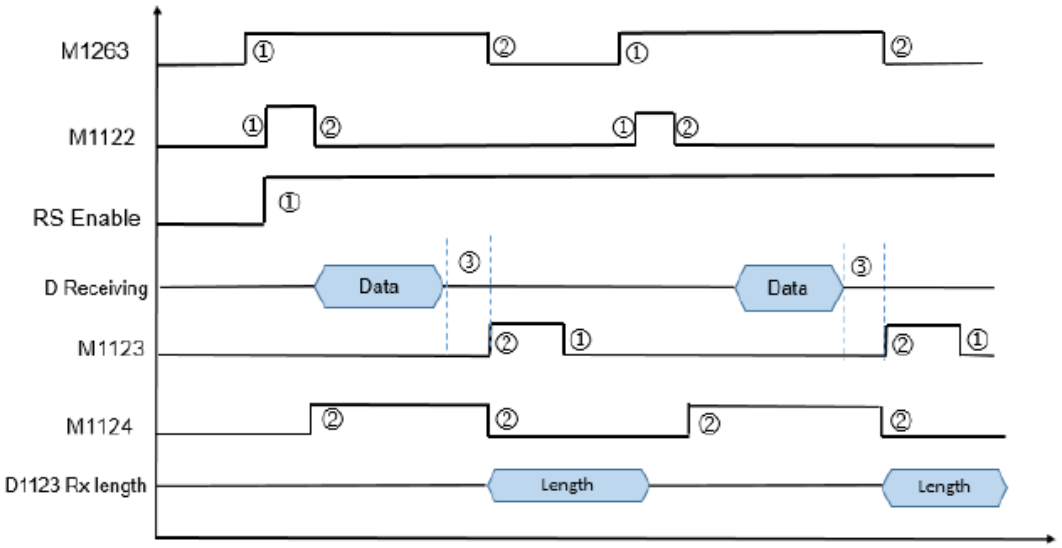
The flow of data receiving stopped between data 33 and data 34. But since the stopped time is less than what is set in D1168, the data 34 is treated as part of the data string and the data receiving continues.

The flow of data receiving stopped between data 35 and data 36. Since the stopped time is longer than what is set in D1168, the data 36 is NOT treated as part of the data string and the data receiving stops after data 35 is received.

1. **Explanations on the data devices D and flags M**

M1263	Execute RS instruction with M1263 to set the data receiving as completed, when the data receiving stops for a period of time that is longer than what D1168 was set (The specific end word to be detected for RS instruction to execute an interruption request). If the receiving is not started, the detecting will not be started either.
D1168	When M1263 is ON, the value in D1168 indicates a specific end word to be seen as an interrupt request; unit: ms. It is suggested to set this value shorter than what the timeout value is set in D1129. When M1263 is OFF, and the received data is low-byte of a specific word, the interrupt (I150) is triggered.
D1123	When M1263 is OFF, the value in D1123 indicates the remaining bytes of data to be received. When M1263 is ON, the value in D1123 indicates the bytes of data that are received.
M1123	After data receiving is complete, M1123 will be switched to ON, and users should reset this flag to OFF.
M1124	When in the receiving mode, M1124 will be switched to ON, and after receiving is complete, this flag will be OFF.
M1129, D1129	When in the receiving mode, if the time before receiving started is longer than what is set in D1129, M1129 will be ON.

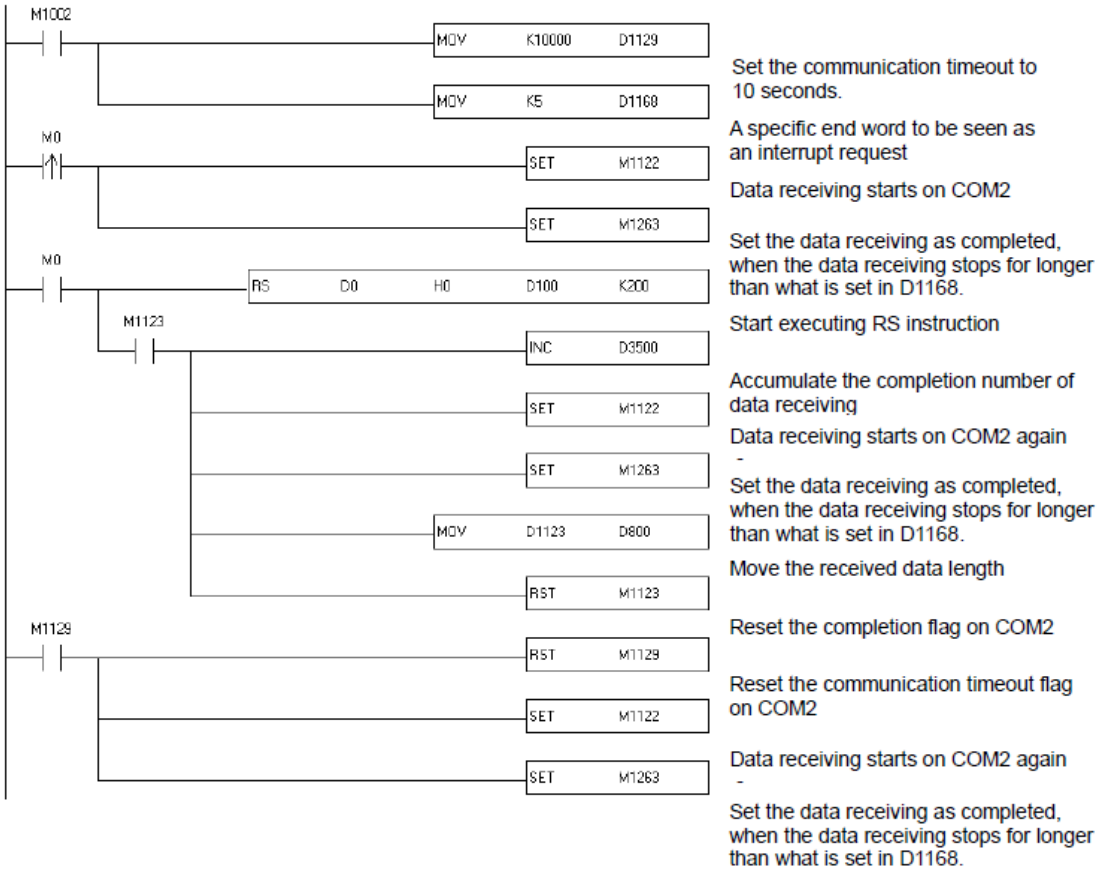
2. **Timing Diagram**



① Users set and reset	② PLC sets and resets
③ The data receiving stops for a period of time that is longer than what is set in D1168	

3. **Settings for executing RS instruction:**
When the sending data length is 0, that indicates it is in the receiving mode. If the sending data length is not 0, it will send that specific length of data first and once the sending is complete, it will be in the receiving mode. If executing RS instruction with M1263, the receiving data length should not be 0 and the value here should be set to a length that is bigger than the data length to be sent but less than 255

4. **Operational steps and explanation:**
Step 1: Use the rising-edge triggered on M0 to set flag M1263 to be ON and enable flag M1122 on COM2
Step 2: Specify the parameters for RS instruction, including where to store the received data and the maximum receiving/sending data length and then use M0 to enable the execution of RS instruction
Step 3: Once the completion flag M1123 is ON, the receiving is complete. If you need to receive data again, reset flag M1123 to OFF



2.14 UPDATE – DVP-SE PLC Firmware Update to Version 2.10

Related Products

Series	Model Name*	Firmware Version	Release Date
DVP-S	DVP12SE11T	V2.08 → V2.10	February 6, 2023 (W2306)
	DVP12SE11R		
	DVP12SE11S		
	DVP26SE11R		
	DVP26SE11S		

Purpose

The functions which are modified and the functions which are added are described as below. If the DVP-SE Series is V2.00 or above, all the issues below can be fixed by upgrading firmware to V2.10 or above (no tools are required). Contact Delta technical support team or the distributors in case a firmware upgrade is needed.

Possible Issues Are Solved

No.	Functions / Instructions	Description
1	Modbus TCP Communication	Modified the maximum connection number for Modbus TCP Server from 8 to 16 as indicated on the DVP-SE user manual.
2	EtherNet/IP Communication	Fixed an issue that when an EIP Scanner scans for available devices to add, the result (device names) shown on EIP software are not the same as the scanned devices.
3	Ethernet communication	Fixed an issue that after restarting the DVP-SE series PLC and then establishing a connection with an Ethernet device through the designed IP address, the transmission of the first packet might fail.
4	EtherNet/IP Communication	Fixed an issue that if the length of data to be read is set to 0 for EIP Adapter, the communication will become abnormal.
5	Ethernet communication	Fixed an issue that when using the instruction TO to change the IP address, the IP address will be NOT retainable.

New Functions and Instructions

No.	Functions / Instructions	Description
1	Online Edit	To provide the convenience of editing in Online Edit, added a new function that after editing in Online Edit, the PLC source code is also updated so that the PLC program can be uploaded after editing in Online Edit. Note: This function should work with ISPSoft V3.17 or later versions.

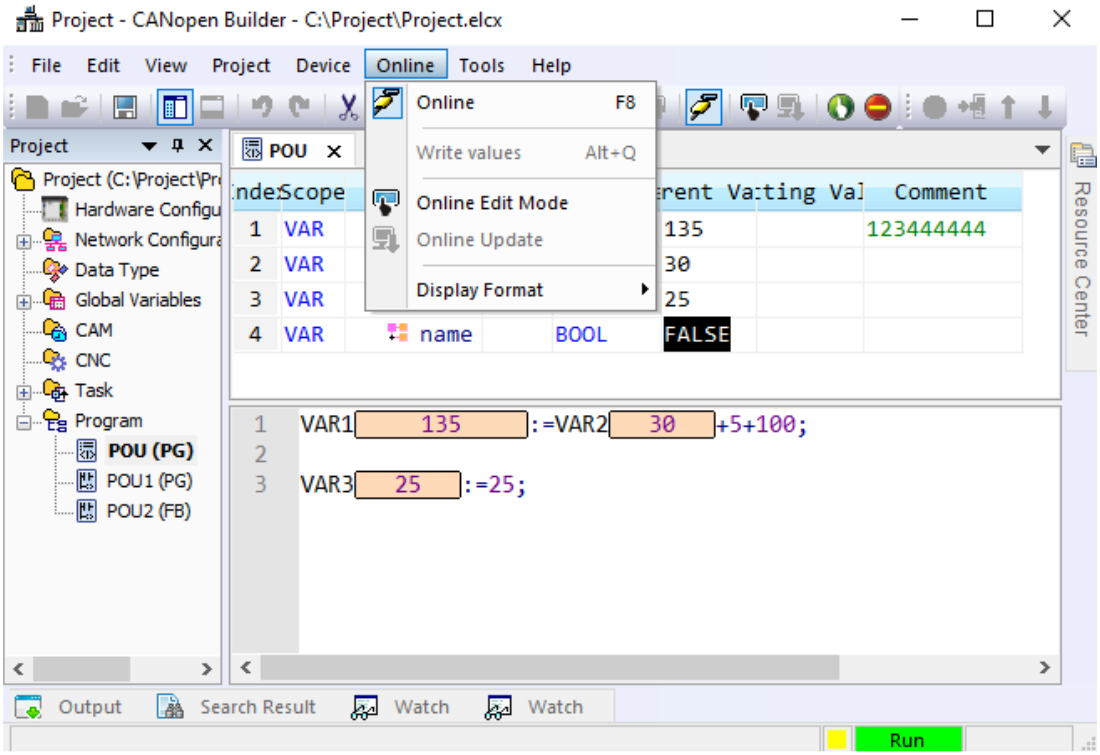
2.15 UPDATE – CANopen Builder Version 6.07 Release

Description

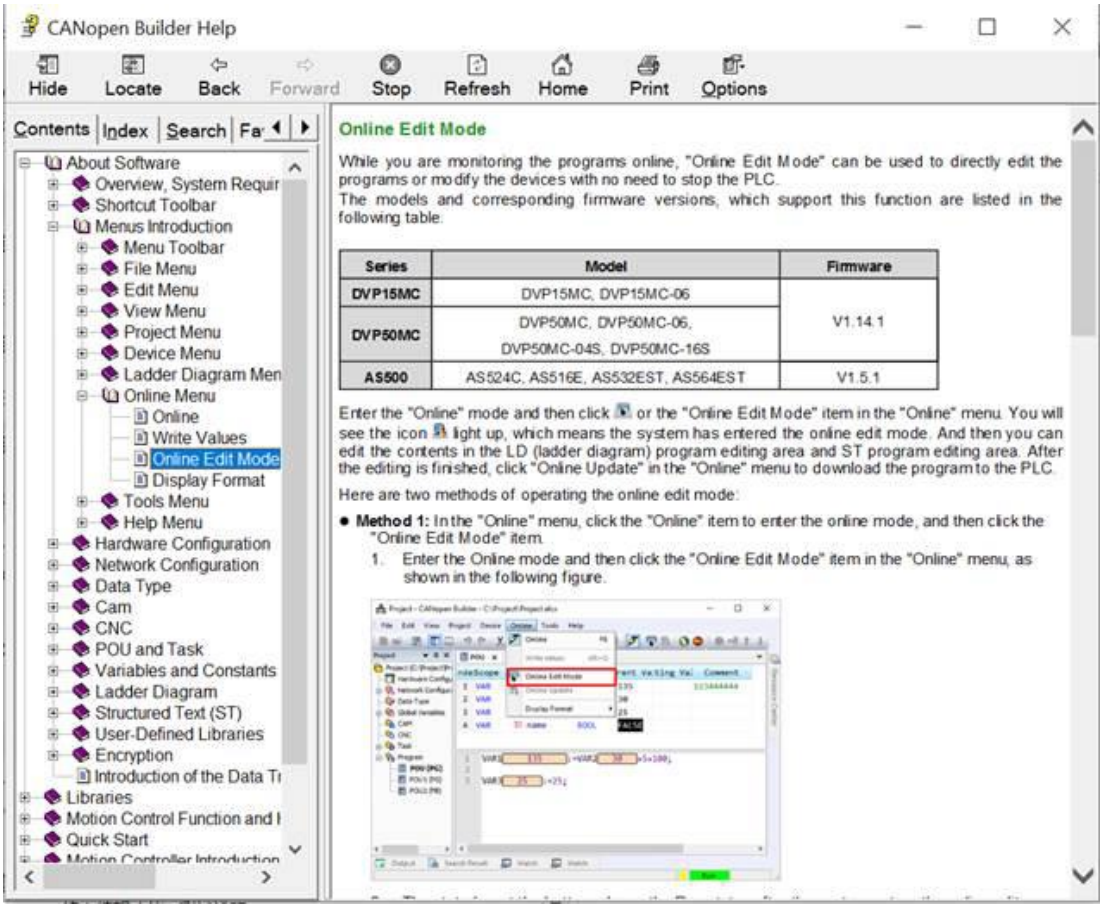
1. New function Online Edit Mode is added under Online Edit.
   You can use this mode to edit online without stopping PLC. This new function is available for the followings devices

Series	Model Name	Firmware Version
DVP15MC	DVP15MC, DVP15MC-06	V1.14.1
DVP50MC	DVP50MC, DVP50MC-06, DVP50MC-04S, DVP50MC-16S	
AS500	AS524C, AS516E, AS532EST, AS564EST	V1.5.1

For instance, this new function is available for DVP50MC series PLC with firmware V1.14.1 or later.



Refer to the Help file embedded in CANOpen Builder V6.07 for more details on how to use this functionality



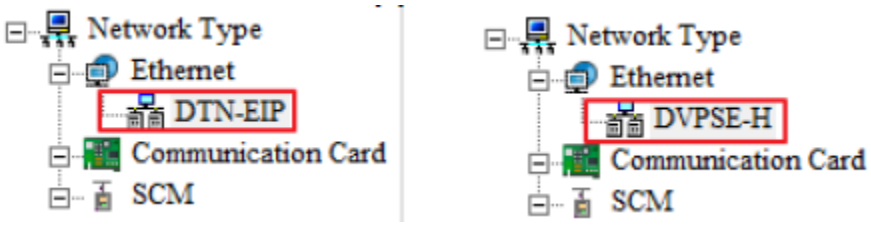
Download Link

Delta | Download Center (deltaww.com)

2.16 UPDATE – DCISoft Version 1.25 Releas

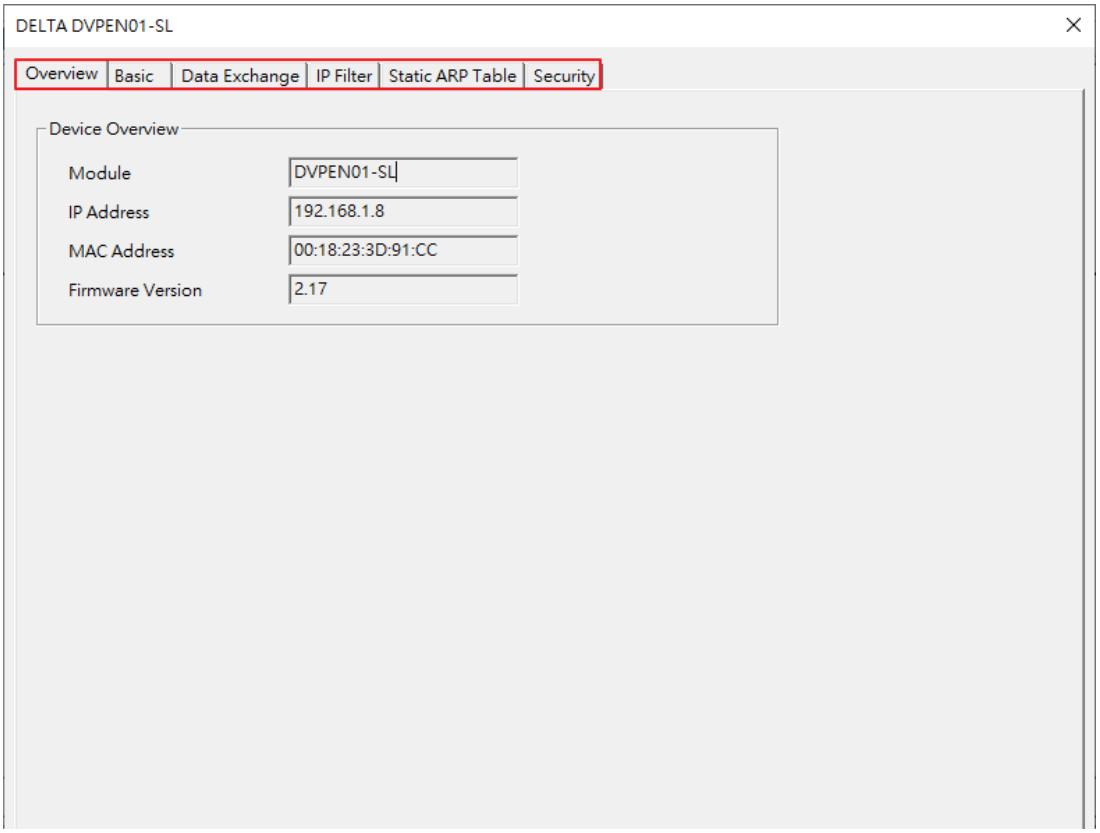
Description

1. DCISoft V1.25 now supports DTN-EIP and DVPSE-H

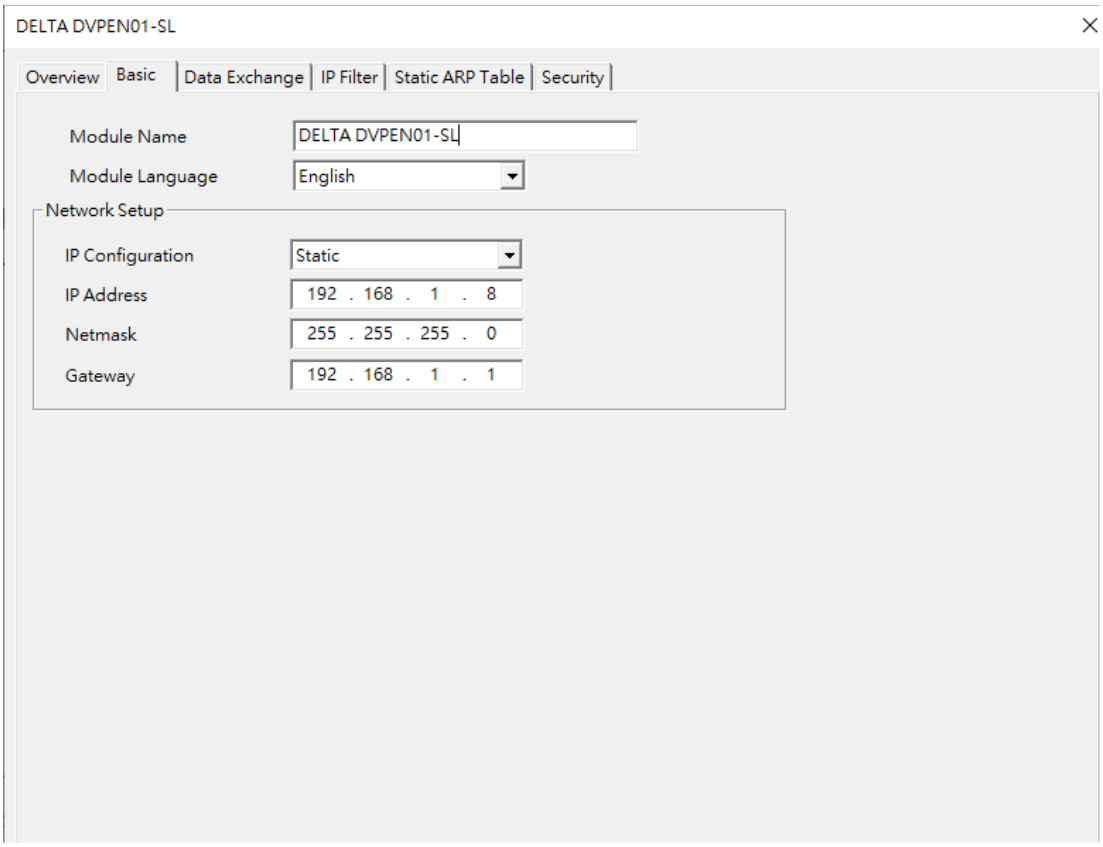


2. DCISoft V1.25 now supports DVP-SV3 and DVP-SX3. The followings are the available parameters for the connected left modules including DVPEN01 and DVPSCM

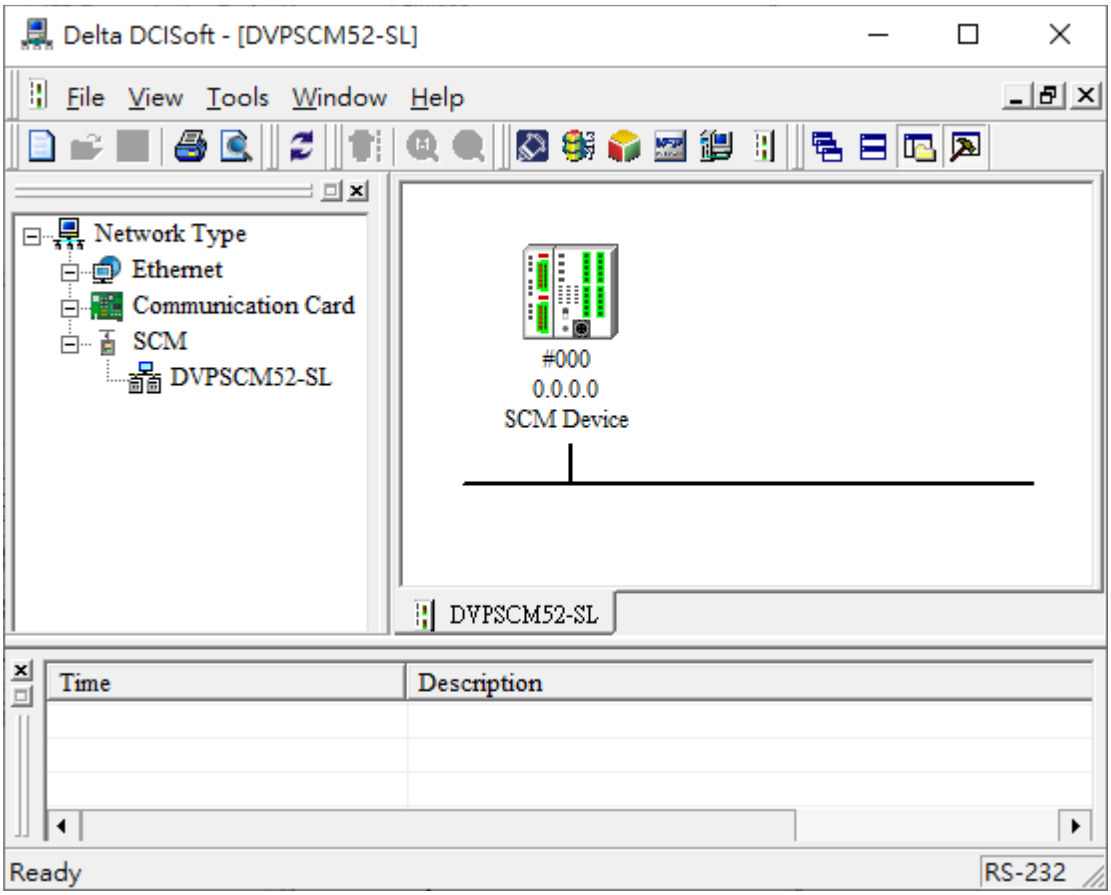
   A. DVPEN01: The following setting sheets including Overview, Basic, Data Exchange, IP Filter, Static ARP Table, and Security are available.



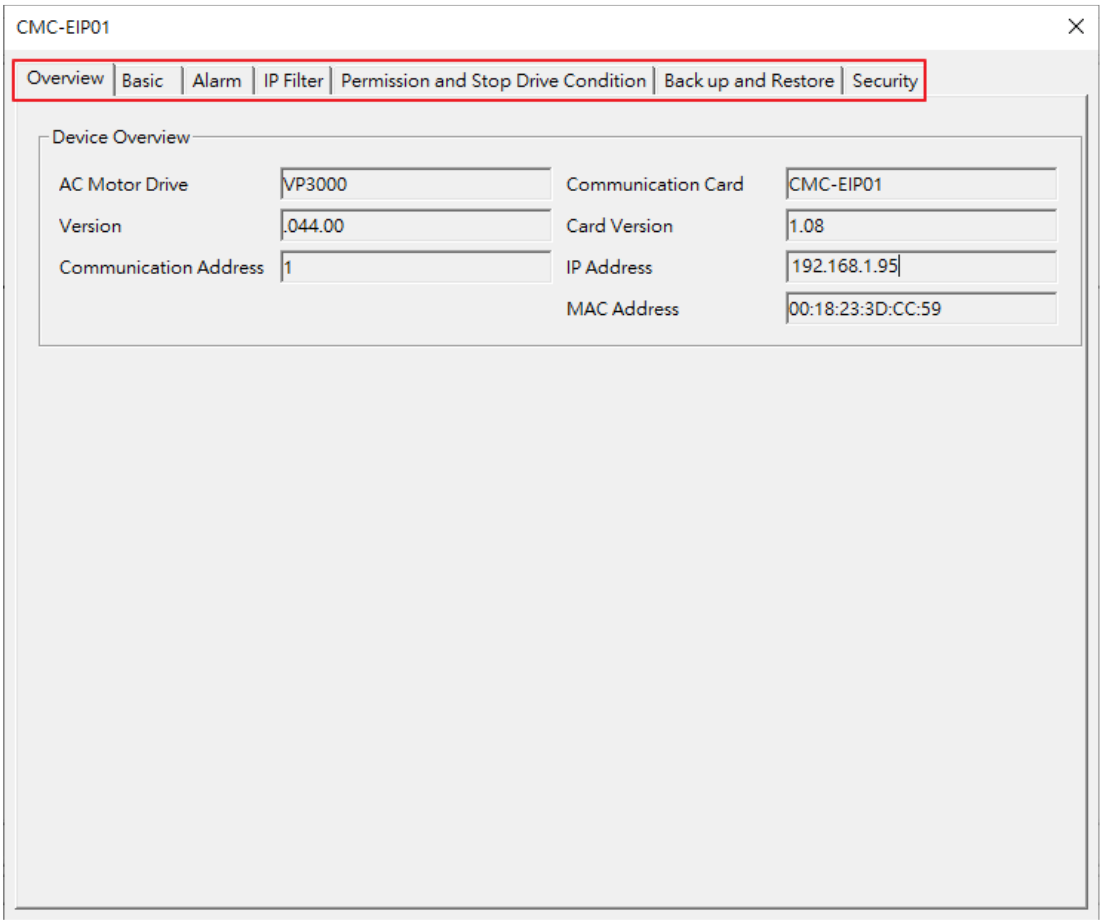
   B. DVPEN01: You can find the following information on the Basic setting sheet, including Module Name, Module Language, Network Setup data (IP Configuration, IP Address, Netmask, and Gateway.)



C. SCMSoft is now updated to V1.26 and DVPSCM can be set through DVP-SV3 as well as DVP-SX3.



3. CMM and CMC communication cards now support VP3000. When connected to VP3000, the followings setting sheets are available, including Overview, Basic, Alarm, IP Filter, Permission and Stop Drive Condition, Back up and Restore and Security



Download Link

DCISoft V1.25

2.17 UPDATE – DIACom Version 1.4.2.6 Release

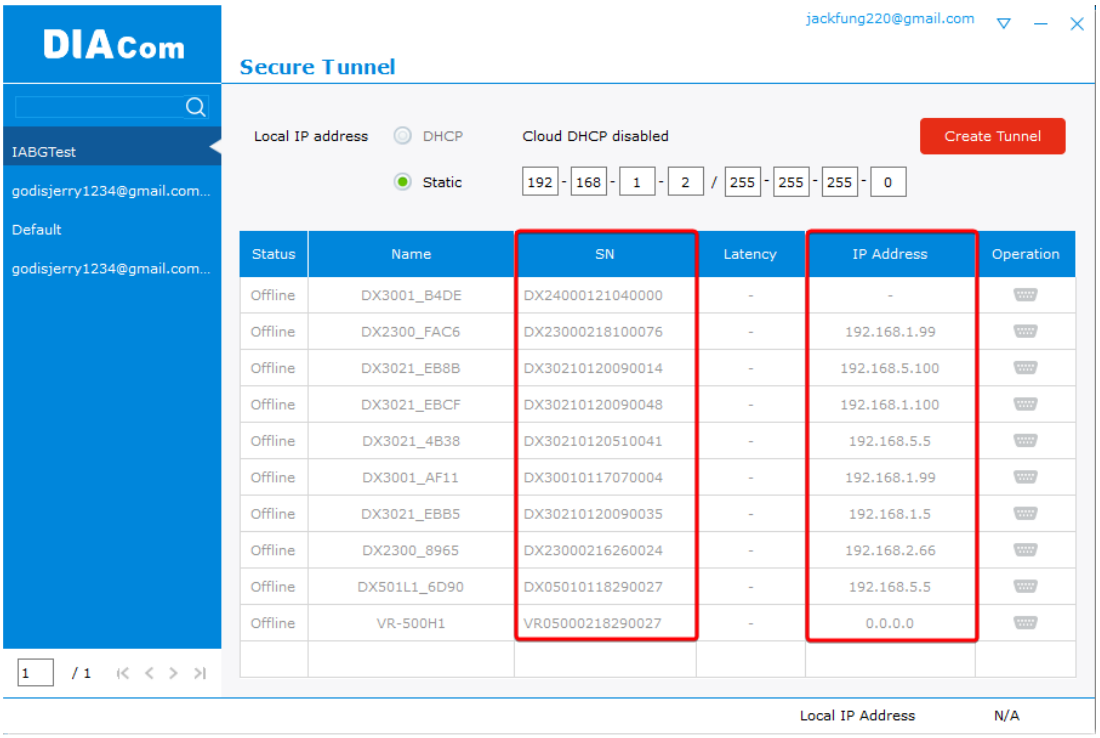
Related Products

Series	Version	Release Date
DIACom	V1.4.1.6 → V1.4.2.6	March 17, 2023 (W2311)

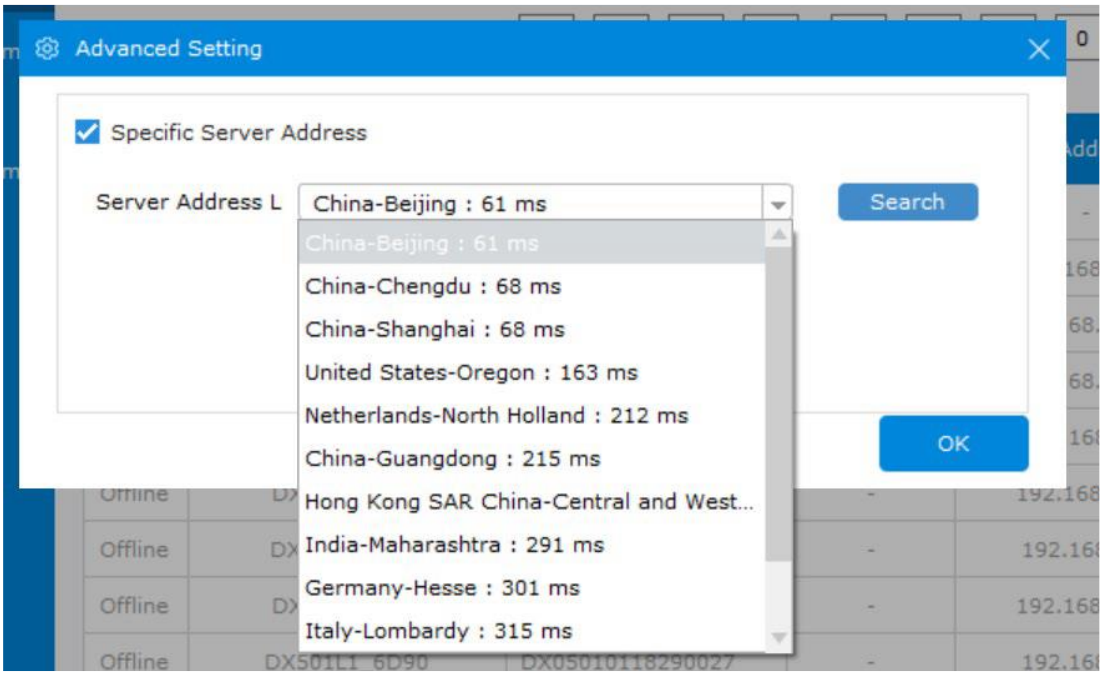
Description

I. New Function

1. Added the information of series numbers (SN) and IP addresses of the connected DX Series on the Secure Tunnel page



2. Added an Advanced Setting page for users to specify a specific DIACloud Server



II. Possible Issues and Improvements

1. Fixed an issue that if you executed the DIACom installation file whose file path contains a Chinese character, after the installation is done and you open DIACom, an display error occurs on the DIACom interface and the function of Secure Tunnel cannot be used after logging in

2. Fixed an issue that when selecting DIACom connects to DIACloud Server automatically, if one of the DIACloud Server that does NOT respond for more than 1000 ms, DIACom will misjudge and assume that Server is the one with the fastest connecting speed and then DIACom will connect to that DIACloud Server automatically

3. Improved the auto-connect mechanism

Before	After
DIACom determines which DIACloud Server is the one with the fastest connecting speed and then connects to that Server automatically. After that the IP address of that DIAColud Server will be remembered and saved. Later DIACom connects to the same DIACloud Sever directly without checking other possibilities.	Whenever a connection to DIACloud Server is in demand, DIACom determines which DIACloud Server is the one with the fastest connecting speed and then connects to that Server automatically.

Download Link

DIACom V1.4.2.6

2.18 UPDATE – DIALink Version 1.5.0.0 Release

Description

1. Delta CNC controller Series 300 B supported
2. AWS IoT Core supported. Now you can upload device data to AWS IoT Core for further data management
3. Now you can enter values in the device tags on Azure IoT Hub
4. Added new Web APIs
    a. To obtain CNC (DELTA, FANUC, HEIDENHAIN) comments in the programs
    b. The CNC (FANUC) main program can be changed, when the mode is in MEM/EDIT and the program is NOT in running status
5. CNC (Fanuc): Added new tags and fixed an issue for tools group
    a. Added the new tag “EmergencyStatus”
    b. Added the new tag “AlarmStatus”
    c. Added the new tag “ToolOffsetDigits”
    d. Added new error codes for the History Alarm
    e. Edit the contents of life time tag for the tools group
6. Fixed an issue that the functions of resetting used time and counting to zero in CNC tool management are not working
7. Updated the data security information
    a. ZDI-CAN-16889,CNVD-C-2022-708270
        i. Hard-coded Cryptographic Key Authentication Bypass Vulnerability
    b. ZDI-CAN-16888, CNVD-C-2022-708284, CNVD-C-2022-726370
        i. Directory Traversal
    c. CNVD-C-2022-708444
        i. MQTT Hard-coded Credential

Download Link

DIALink V1.5.0.0

2.19 UPDATE – DIAScreen Version 1.3.0 Release

New Device Support

- DOP-107SV for China region only

Model		DOP-107SV
Resolution		800 x 480 pixels
Brightness		400 cd/m² (typ.)
CPU		ARM Cortex-A8 (800 MHz)
ROM		128 Mbytes
RAM		128 Mbytes
SRAM		n/a
Touch		4-Wire Resistive > 1,000,000 operations
USB		USB Slave Ver 2.0 x 1 USB Host Ver 2.0 x 1
Serial Port	COM1	RS232 / RS485
	COM2	RS422 / RS485
Regulation		CE
Operation Temperature		0 °C … 50 °C
Storage Temperature		-20 °C … +60 °C
Dimensions		215 x 161 x 35.5

- DOP-110DS for China region only

Model		DOP-110DS
Resolution		1024 x 600 pixels, 24 Bits colour
Brightness		350 cd/m² (typ.)
CPU		ARM Cortex-A8 (800 MHz)
ROM		256 Mbytes
RAM		256 Mbytes
SRAM		32 kbytes
Touch		4-Wire Resistive > 1,000,000 operations
USB		USB Slave Ver 2.0 x 1 USB Host Ver 2.0 x 1
Ethernet		10/100 Mbps x 1
Serial Port	COM1	RS232 / RS485
	COM2	RS422 / RS485
Regulation		CE
Operation Temperature		0 °C … 50 °C
Storage Temperature		-20 °C … +60 °C
Dimensions		272 x 200 x 59

New Feature

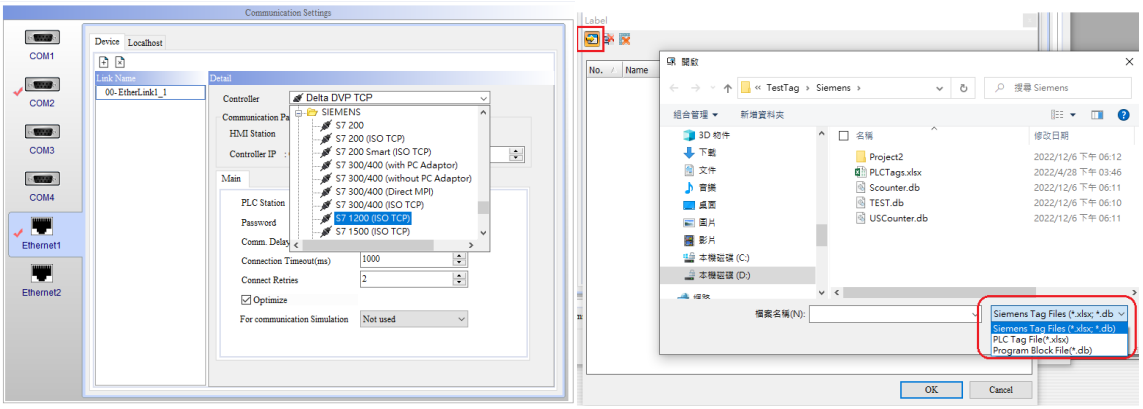
- **Introduce new mechanism for blocking firmware downgrade for All DOP-100 models**
  As a result of replacement materials for some products, a mechanism for blocking firmware downgrade is implemented. This feature is to prevent users from downgrading the firmware version which does not support new products.

  Affected models: All DOP-100 models
  Firmware version: 1.0120 (DOPSoft 4.00.16.30 is not implementing this feature
  ECN Plan: Q1/2023

Condition: Can update firmware, if version ≥ 1.0120

Source	Version
DOPSoft 4.00.16.30	1.0116 (1.0452)
ECN Firmware DIAScreen	1.0120 (1.0460) 107SV update to 1.0124 (1.0462)

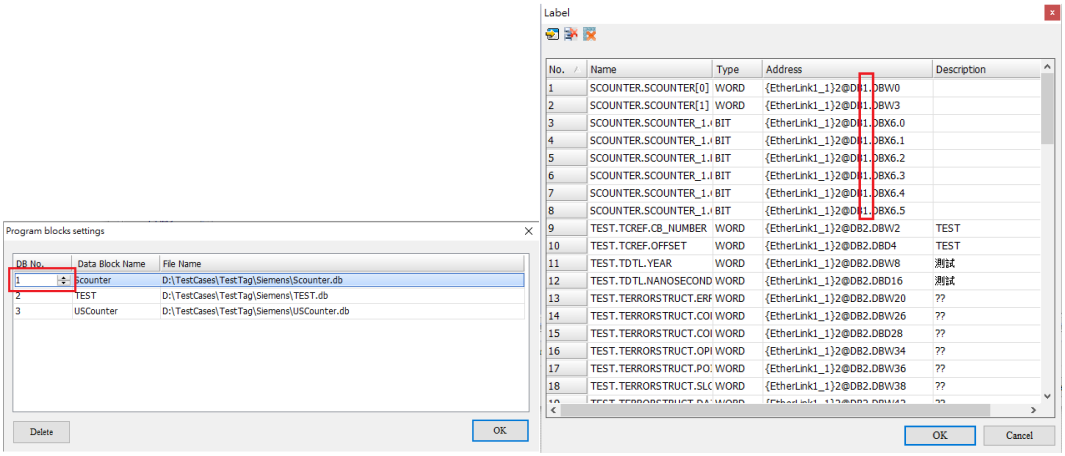
- **Support TIA Portal Tag import for Siemens S7-1200/ S7-1500 controllers**
  When selecting S7 1200 (ISO TCP) or S7 1500 (ISO TCP) controllers, the tag information for the TIA Portal can be imported manually.



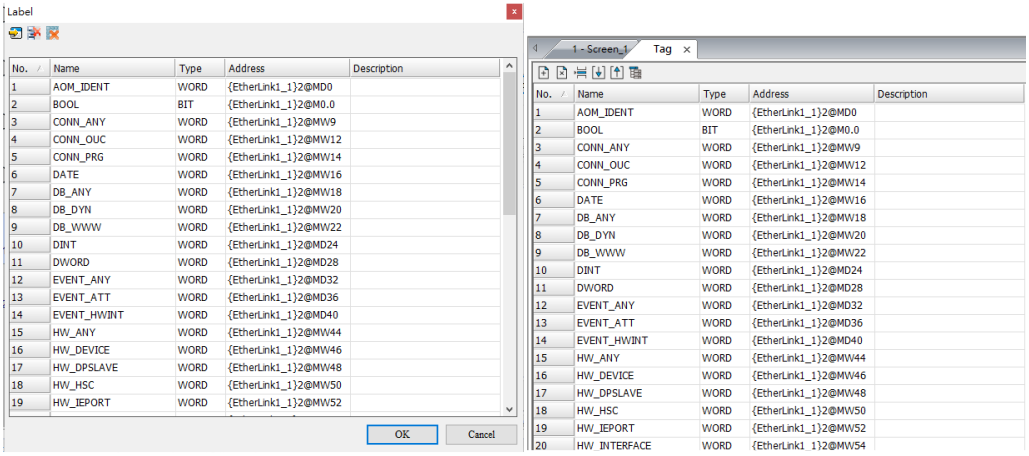
Support Format:

Category	Known Design Limitation	Import
Program Block	Importing Tags with 1 byte length is not supported. There is no limitation to the dimension of the imported array, but the number of the array elements which cannot exceed 3500 is restricted.	*.db
PLC Tags	Importing Tags whose address set to %MB (bytes) is not supported. Do not support LReal address (The address type assigned by TIA Portal is Bit).	*.xlsx

You can specify the DB number when importing the Program Block. It will be synchronized to the Tag table after confirming the label content.

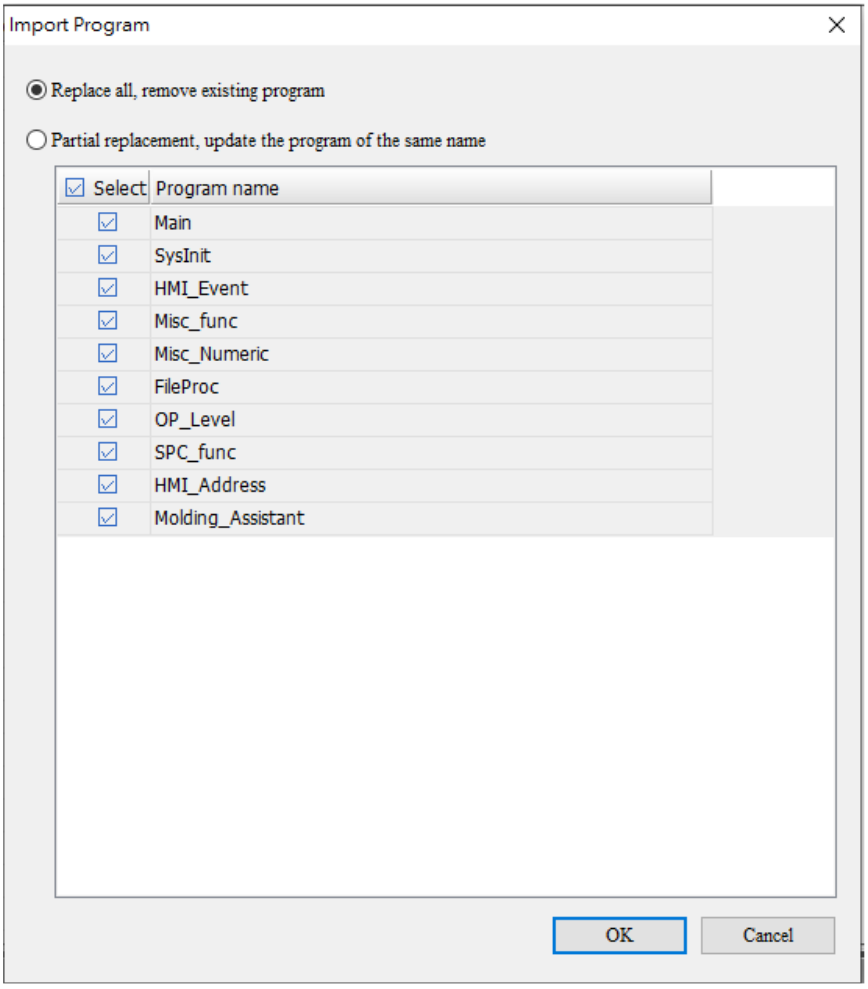


After the PLC tag is imported, it will be synchronized to the Tag table

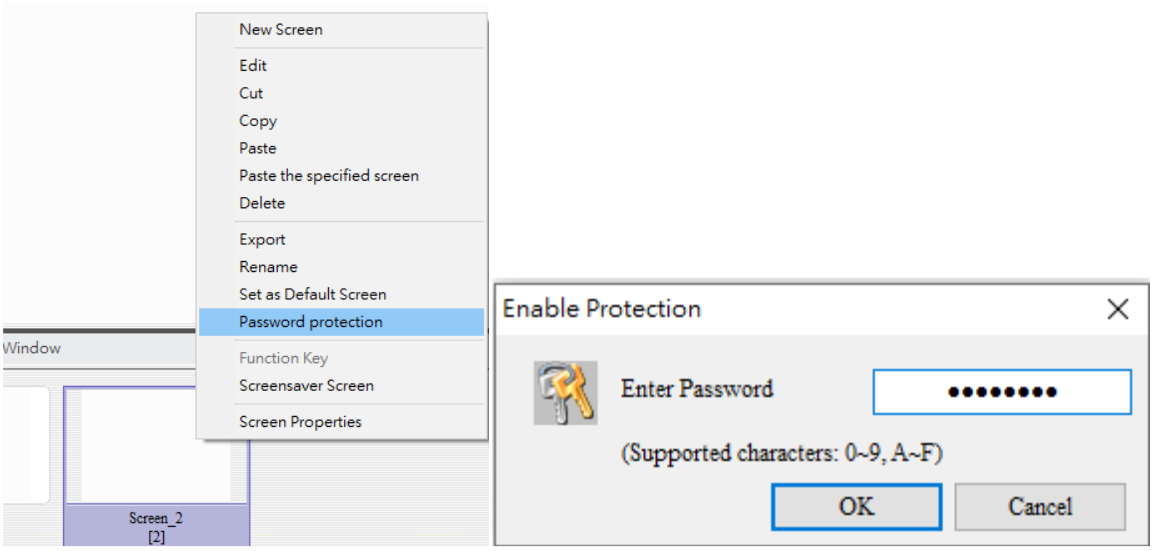


- **Support partial replacement option for importing protected LUA programs**
  When importing protected LUA programs, users have option to select one or more programs without replacing all. This feature helps users to share protected LUA programs more convenient.

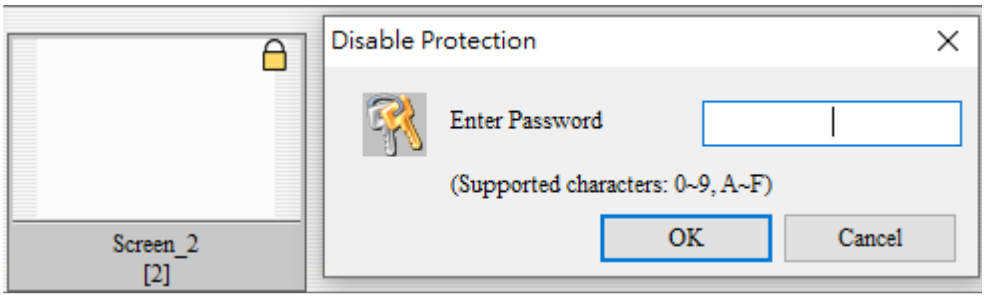
  Replace All: Delete all existing programs and then import all programs
  Partial Replacement: Items that can be partially selected for replacement, those with the same name will be replaced, while those that do not exist will be added.



- Support screen protection
  You can assign password for specific screen, and different passwords can be set for different screens.



A lock symbol will be displayed on the protected screen, and a password is required to open it.



Note: This feature has been experimentally introduced in version 1.2.1, but it was found that some operation behaviors would lead to leak

- Fixed the issue that DIAScreen crashes on some AMD computers
- Fixed the issue that discontinuous alarm trigger conditions leads to crash in some cases
- Unable to use Vector image bank is resolved
- Correct the anomaly that the list is blank after adding a component and opening the component window
- Abnormal MQTT Broker function is fixed
- Abnormal MQTT account login mechanism is fixed
- Correct the compilation errors when using multidimensional array tags of Lua statements

DIAStudio Website and Other Resources

Dedicated website of DIAStudio can let users click on the link to the DIAStudio web page from Delta's website, which is the introduction page of DIAStudio, the system software for industrial automation. Users need to register on DIAStudio to download related software and files, while getting 5MB of free cloud space for uploading/ saving personal projects or sharing to other DIAStudio registered users.

Delta Official Website: https://www.deltaww.com/en-US/products/DIAStudio/5040

Find more service of DIAStudio website at: https://diastudio.deltaww.com/Home

- DIAStudio: Software Introduction for DIASelector, DIADesigner, DIADesigner-AX, DIAScreen
- Download Center: Catalogue, Software, Manual, FAQ and Revision History
- Register: To get more serive and information of DIAStudio
- Log in: User's file storage (5MB of free cloud space)
- More introduction and operation guild films can be view on DIAStudio website and YouTube: https://www.youtube.com/playlist?list=PLFAKa104eUKcjZtzSuQnFECd4b4-DETZ9

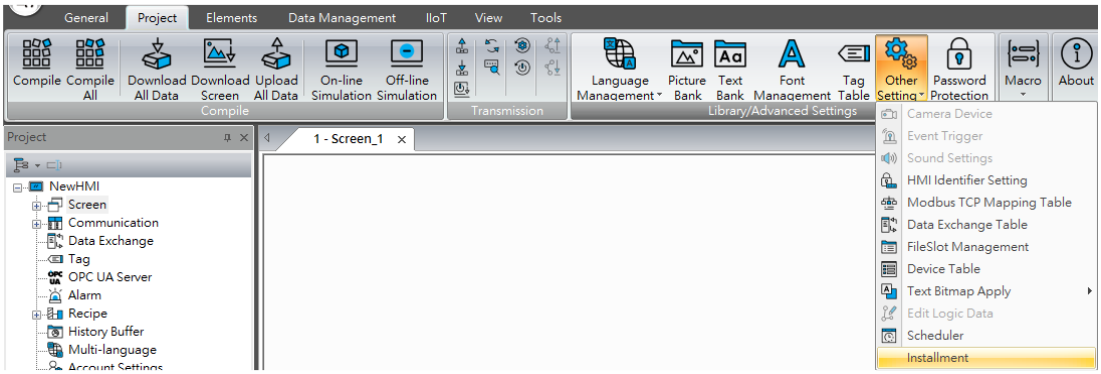
Release Information

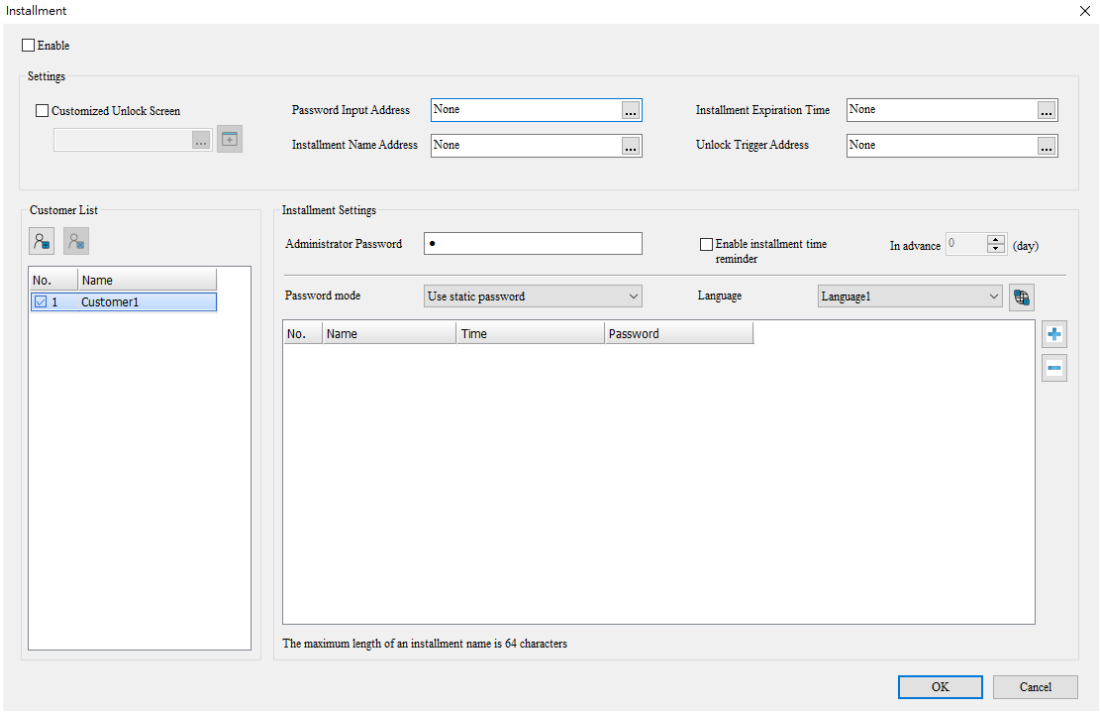
- DIAScreen download guide.
  Please download DIAInstaller of DIAStudio V1.2 and update each software to latest version
  https://diastudio.deltaww.com/home/downloads?sec=download#software
- Please find more details of new and updated function in Software Revision History of DIAStudio
  https://diastudio.deltaww.com/home/RevisionHistory

2.20 UPDATE – DIAScreen Version 1.3.1 Release

New Feature

- **Add Installment Payment function**
  DIAScreen can prompt and prohibit HMI operation according to the set installment period. To unlock, the corresponding password must be entered correctly.





- **Support customizing colors according to item state on Alarm History Table**
  By customizing the display color, a more user-friendly interface can be designed.

- **Add contact management for alarm notification**
  Provides a more intuitive way to management contacts, making setting alarm notifications easier.

- **Add Font Template editing function**
  Easy to manage font settings and improve editing efficiency.

- **Enhanced Recipe supports reading and writing discontinuous addresses and group individual continuous addresses**
  Provides greater flexibility to accommodate different address configurations.

- **Support synchronizing Tag content with DIADesigner AX**
  Reduce tedious manual processes and possible errors.

- **Support importing SVG format on Picture Bank**

- **Enhance element functionalities to provide more flexible and convenient design requirements**
    - Support unit display on Numeric Display and entry elements
    - Support floating point numbers on Meter and Normal Bar elements
    - Support advanced gradient and fill effects on Rectangle elements
    - Support border effects on Rectangle elements
    - Support rotation at any angle on Rectangle elements

Improved Feature

- Support the functionality that historical data will be retained after downloading screen data for matching to real application conditions
- Supports Search and Replace on Address Conversion to edit address more convenient
- Supports setting whether to restrict the editing area
- Support mouse wheel to adjust the display scale to switch between different scales easier
- Support mouse double-clicking on the image to configure element pictures by reducing operation steps
- Lua recipe commands support writing to multiple fields, reducing the operation complexity
- Support viewing CODESYS tag comments
- Expand GridBox items to 100
- Expand Alarm items to 20,000
- Support transparent style and value display on Bar elements
- Support invisible bit control on Line elements

Anomaly Fixed

- Fix the issue that the exported multilingual Excel file is not opened properly
- Correct the anomaly that replication function is not working after elements are grouped
- Fix the crash issue when using TP Editor to switch menu functions
- Correct the anomaly that prevents the use of addresses above 0.16 when the OPC UA Server address is used as the BIT address

DIAStudio Website and Other Resources

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Delta Official Website: https://www.deltaww.com/en-US/products/DIAStudio/5040

Find more service of DIAStudio website at: https://diastudio.deltaww.com/Home

- DIAStudio: Software Introduction for DIASelector, DIADesigner, DIADesigner-AX, DIAScreen
- Download Center: Catalogue, Software, Manual, FAQ and Revision History
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Release Information

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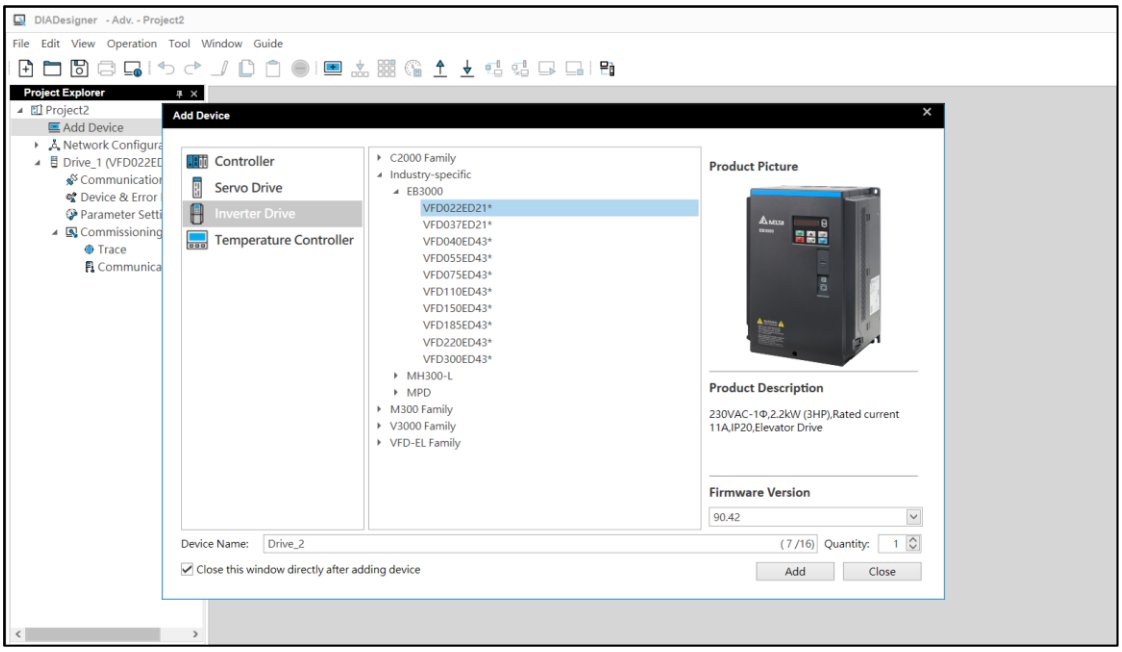
  Please download DIAInstaller of DIAStudio V1.2 and update each software to latest version
  https://diastudio.deltaww.com/home/downloads?sec=download#software
- Please find more details of new and updated function in Software Revision History of DIAStudio
  https://diastudio.deltaww.com/home/RevisionHistory

2.21 UPDATE – DIAStudio: DIAInstaller Version 1.2.1 Release, DIADesigner Version 1.2.2 Release, COMMGR Version 2.2.1 Release

New Device Support

DIADesigner & COMMGR

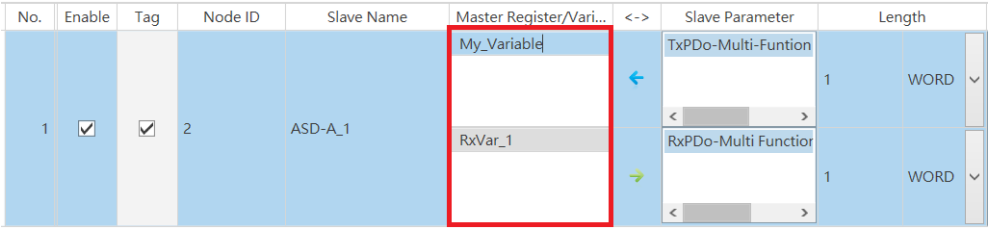
- New support EB3000 series, which is specific for elevator industry



New Feature

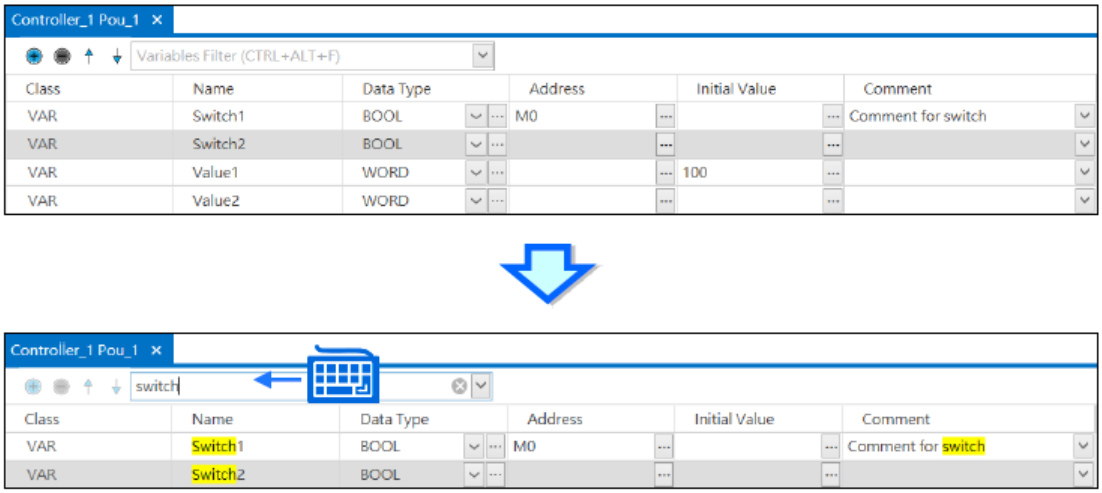
DIADesigner

- **CANopen variable rename: Support user to modify the CANopen variable**
  For the requirement of variable naming in different applications, the user can define the CANopen variable name on their own.

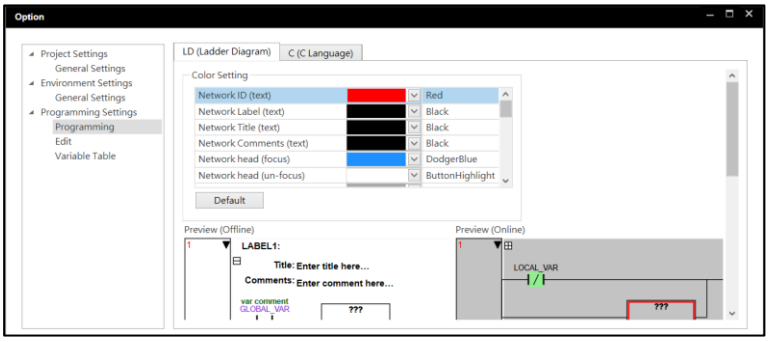


- **Support customizing colors according to item state on Alarm History Table**
  By customizing the display color, a more user-friendly interface can be designed.

- **Variable filter: Support the filter function for global & local variable table**
  When there are a lot of variables in a variable table, user can enter keywords to filter out the variable name and other contents.

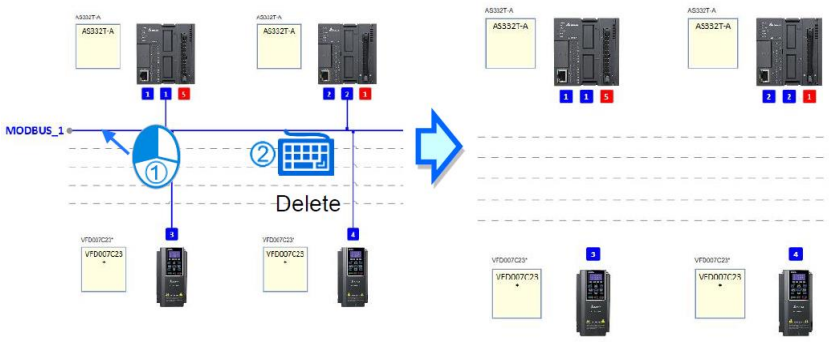


- **The option setting for ladder diagram: Support the color setting in ladder POU**
  User can define different color for every element in ladder POU for their display purpose.



DIADesigner

- **Improve the delete connection function in network view**
  Able to delete all connection by clicking delete button in keyboard after selecting the horizontal line



- **Improve collapsing all disable networks in a ladder POU**
  Able to one click collapsing all disable networks in a ladder POU, for user to review the program easily.

Anomaly Fixed

DIADesigner

- **Fix the anomaly of unexpected message**
  Fix the unexpected message when auto save function is enable.

- **Fix the anomaly of project migration**
  Fix the display anomaly of register comment of X, Y register after project migration.

DIAInstaller

- **Fix the anomaly of login**
  Fix the anomaly of user can't login

DIAStudio Website and Other Resources

Dedicated website of DIAStudio can let users click on the link to the DIAStudio web page from Delta's website, which is the introduction page of DIAStudio, the system software for industrial automation. Users need to register on DIAStudio to download related software and files, while getting 5MB of free cloud space for uploading/ saving personal projects or sharing to other DIAStudio registered users.

Delta Official Website: https://www.deltaww.com/en-US/products/DIAStudio/5040

Find more service of DIAStudio website at: https://diastudio.deltaww.com/Home

- DIAStudio: Software Introduction for DIASelector, DIADesigner, DIADesigner-AX, DIAScreen

- Download Center: Catalogue, Software, Manual, FAQ and Revision History

- Register: To get more serive and information of DIAStudio
- Log in: User's file storage (5MB of free cloud space)
- More introduction and operation guild films can be view on DIAStudio website and YouTube: https://www.youtube.com/playlist?list=PLFAKa104eUKcjZtzSuQnFECd4b4-DETZ9

Release Information

- DIAScreen download guide.
  Please download DIAInstaller of DIAStudio V1.2 and update each software to latest version
  https://diastudio.deltaww.com/home/downloads?sec=download#software
- Please find more details of new and updated function in Software Revision History of DIAStudio
  https://diastudio.deltaww.com/home/RevisionHistory

DIAStudio Compatible Device List

DIADesigner

Logic Controller Compatibility	Version						
	V1.0	V1.1	V1.1.1	V1.1.2	V1.2	V1.2.1	V1.2.2
AS100 Series							
AS132P-A					✓	✓	✓
AS132R-A					✓	✓	✓
AS132T-A					✓	✓	✓
AS148P-A					✓	✓	✓
AS148R-A					✓	✓	✓
AS148T-A					✓	✓	✓
AS164P-A					✓	✓	✓
AS164R-A					✓	✓	✓
AS164T-A					✓	✓	✓
AS200 Series							
AS218PX-A	✓	✓	✓	✓	✓	✓	✓
AS218RX-A	✓	✓	✓	✓	✓	✓	✓
AS218TX-A	✓	✓	✓	✓	✓	✓	✓
AS228P-A	✓	✓	✓	✓	✓	✓	✓
AS228R-A	✓	✓	✓	✓	✓	✓	✓
AS228T-A	✓	✓	✓	✓	✓	✓	✓
AS300 Series							
AS300N-A	✓	✓	✓	✓	✓	✓	✓
AS320P-B	✓	✓	✓	✓	✓	✓	✓
AS320T-B	✓	✓	✓	✓	✓	✓	✓
AS324MT-A	✓	✓	✓	✓	✓	✓	✓

AC Motor Drive Compatibility	Version						
	V1.0	V1.1	V1.1.1	V1.1.2	V1.2	V1.2.1	V1.2.2
C2000 Family							
C2000 Series	✓	✓	✓	✓	✓	✓	✓
C2000 Plus Series	✓	✓	✓	✓	✓	✓	✓
C2000-HS	✓	✓	✓	✓	✓	✓	✓
CFP2000 Series	✓	✓	✓	✓	✓	✓	✓
CH2000 Series	✓	✓	✓	✓	✓	✓	✓
CP2000 Series	✓	✓	✓	✓	✓	✓	✓
M300 Family							
ME300 Series	✓	✓	✓	✓	✓	✓	✓
ME300-HS Series				✓	✓	✓	✓
MH300 Series	✓	✓	✓	✓	✓	✓	✓
MH300-HS Series	✓	✓	✓	✓	✓	✓	✓
MS300 Series	✓	✓	✓	✓	✓	✓	✓
MS300-HS Series	✓	✓	✓	✓	✓	✓	✓
VFD-EL Family							
VFD-EL Series	✓	✓	✓	✓	✓	✓	✓
VFD-EL-C Series	✓	✓	✓	✓	✓	✓	✓
Industry-Specific Drives							
EB3000 Serie							✓
MH300-L Series				✓	✓	✓	✓
MPD Series		✓	✓	✓	✓	✓	✓

Servo Drive Compatibility	Version						
	V1.0	V1.1	V1.1.1	V1.1.2	V1.2	V1.2.1	V1.2.2
ASD-A2 Series							
ASD-A2-L Series	✓	✓	✓	✓	✓	✓	✓
ASD-A2-M Series	✓	✓	✓	✓	✓	✓	✓
ASD-A3 Series							
ASD-A3-L Series	✓	✓	✓	✓	✓	✓	✓
ASD-A3-M Series	✓	✓	✓	✓	✓	✓	✓
ASD-B2 Series							
ASD-B2-B Series	✓	✓	✓	✓	✓	✓	✓
ASD-B2-F Series	✓	✓	✓	✓	✓	✓	✓
ASD-B3 Series							
ASD-B3-L Series	✓	✓	✓	✓	✓	✓	✓
ASD-B3-M Series	✓	✓	✓	✓	✓	✓	✓

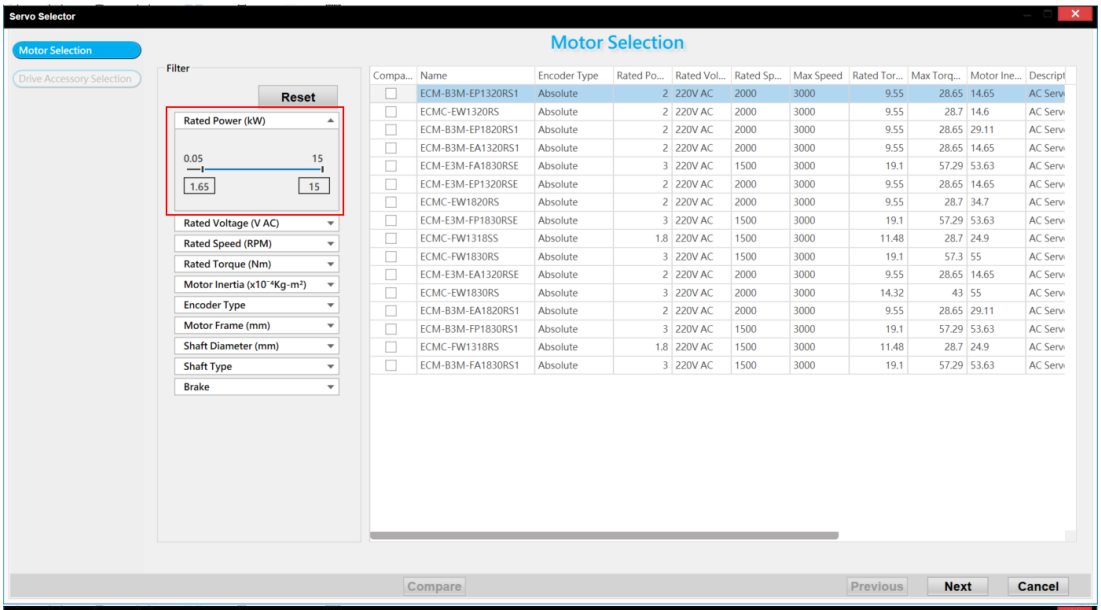
Temperature Controller Compatibility	Version						
	V1.0	V1.1	V1.1.1	V1.1.2	V1.2	V1.2.1	V1.2.2
DTC Series	✓	✓	✓	✓	✓	✓	✓

2.22 UPDATE – DIAStudio: DIASelector (Desktop) Version 1.3 Release, DIASelector (Android) Version 1.2 Release, DIAStudio Website Update

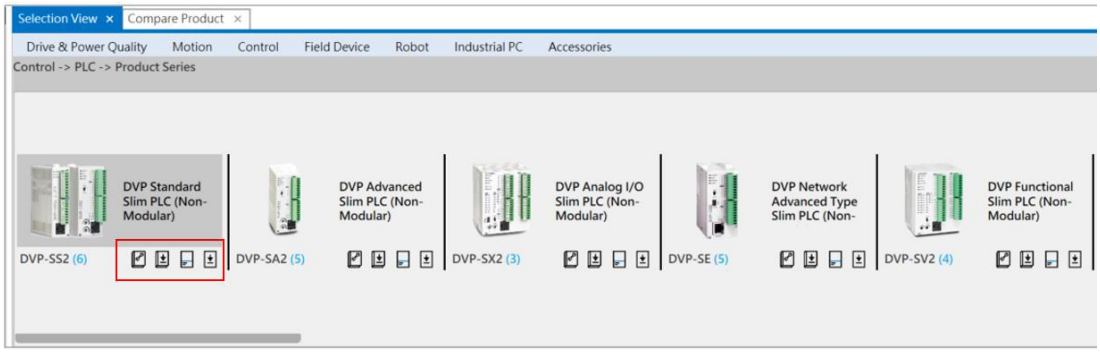
New Feature

DIASelector (Desktop)

- **Servo Selector wizard: Help user to select servo products through slider-type filters, making selection more user-friendly and convenient**
  User can select an AC Servo Motor based on filter properties, comparison etc., and guides user to select an appropriate AC Servo Drive model along with respective accessories.



- **Support download and opening of datasheet for product series in selection view**
  This feature enables front-line users and customers to access technical documents directly.

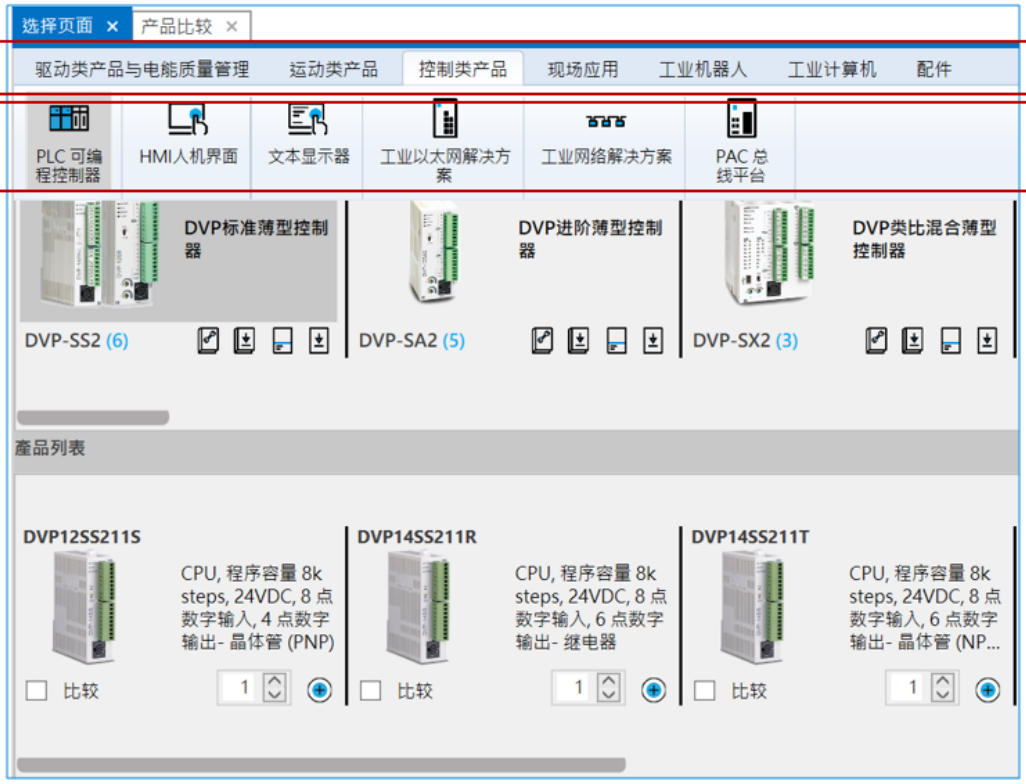


DIAStudio Website

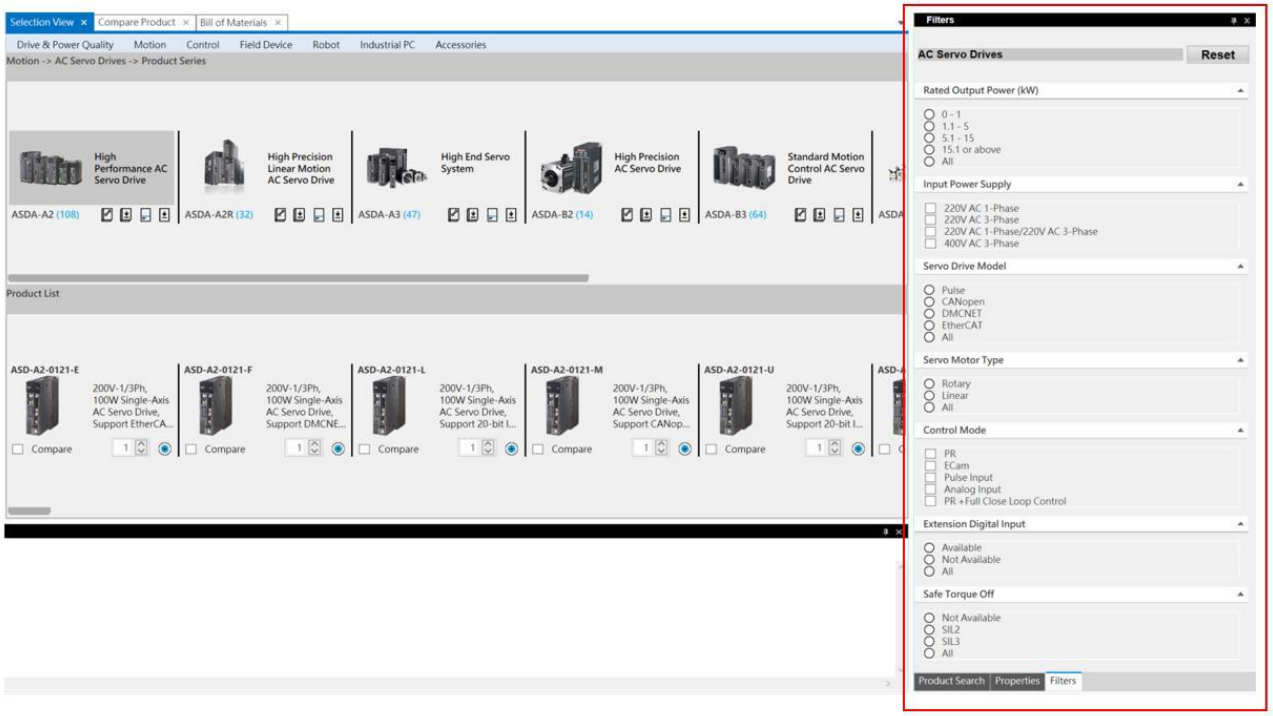
- **Support EPLAN (.edz) files download feature**
  This feature helps users to apply Delta IA products to EPLAN (third-party) software directly. Registered users can view and download .edz files adapted by EPLAN after signing in.

DIASelector (Desktop)

- **Localization for product category and family are added in Traditional Chinese and Simplified Chinese**



- **Optimize performance when performing filter function for AC Servo Drive and AC Servo Motor to make the process smoother**



- **Update Excel Bill of Materials template to support user details**

- **Update product and content information**
    - Update PLC Series sorting to display in small, medium, and large order to enhance the user experience
    - Update AC Servo Drive and AC Servo Motor mappings in the database to support B3 and B3A products

DIASelector (Android)

- **Support for Android 12**
- **Support localization for Traditional Chinese and Simplified Chinese**

Anomaly Fixed

DIASelector (Desktop)

- **Correct some anomalies in controller configuration**

DIASelector (Android)

- **Correct the anomaly that BOM shared via WeChat is not working**

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  https://diastudio.deltaww.com/home/RevisionHistory

DIASelector Compatible Device List

DIADesigner

Logic Controller Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
AH Series								
AH Series	✓	✓	✓	✓	✓	✓	✓	✓
AH Expansion Module	✓	✓	✓	✓	✓	✓	✓	✓
AS Series								
AS100 Series				✓	✓	✓	✓	✓
AS200 Series	✓	✓	✓	✓	✓	✓	✓	✓
AS300 Series	✓	✓	✓	✓	✓	✓	✓	✓
AS500 Series	✓	✓	✓	✓	✓	✓	✓	✓
AS Expansion Module	✓	✓	✓	✓	✓	✓	✓	✓
DVP Series								
DVP-EC3 Series	✓	✓	✓	✓	✓	✓	✓	✓
DVP-ES2 Series	✓	✓	✓	✓	✓	✓	✓	✓
DVP-ES3 Series	✓	✓	✓	✓	✓	✓	✓	✓
DVP-EX2 Series	✓	✓	✓	✓	✓	✓	✓	✓
ES2/EX2 Expansion Module	✓	✓	✓	✓	✓	✓	✓	✓
DVP-EH3 Series	✓	✓	✓	✓	✓	✓	✓	✓
EH3 Expansion Module	✓	✓	✓	✓	✓	✓	✓	✓
DVP-MC Series	✓	✓	✓	✓	✓	✓	✓	✓
DVP-PM Series	✓	✓	✓	✓	✓	✓	✓	✓

DVP-SA2 Series	✓	✓	✓	✓	✓	✓	✓	✓
DVP-SE Series	✓	✓	✓	✓	✓	✓	✓	✓
DVP-SS2 Series	✓	✓	✓	✓	✓	✓	✓	✓
DVP-SV2 Series	✓	✓	✓	✓	✓	✓	✓	✓
DVP-SX2 Series	✓	✓	✓	✓	✓	✓	✓	✓
DVP-SLIM Expansion Module	✓	✓	✓	✓	✓	✓	✓	✓
R1-EC	✓	✓	✓	✓	✓	✓	✓	✓

Touch Panel HMI Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
DOP Series								
DOP-100 Series	✓	✓	✓	✓	✓	✓	✓	✓
DOP-107H						✓	✓	✓
HMC Series								
HMC Series	✓	✓	✓	✓	✓	✓	✓	✓
TP Series								
TP70P Series	✓	✓	✓	✓	✓	✓	✓	✓

Text Panel HMI Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
TP Series								
TP02 Series	✓	✓	✓	✓	✓	✓	✓	✓
TP04 Series	✓	✓	✓	✓	✓	✓	✓	✓
TP04P Series	✓	✓	✓	✓	✓	✓	✓	✓
TP08 Series	✓	✓	✓	✓	✓	✓	✓	✓

Industrial Ethernet Soluiton Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
DVS Ethernet Switches	✓	✓	✓	✓	✓	✓	✓	✓
DVW Wireless AP/Client/Gateway	✓	✓	✓	✓	✓	✓	✓	✓
DX Routers	✓	✓	✓	✓	✓	✓	✓	✓
IFD	✓	✓	✓	✓	✓	✓	✓	✓
LCP SFP Transceiver	✓	✓	✓	✓	✓	✓	✓	✓

Industrial Fieldbus Soluiton Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
Ethernet Devices	✓	✓	✓	✓	✓	✓	✓	✓
Ethernet/IP Devices	✓	✓	✓	✓	✓	✓	✓	✓
EtherCAT Devices	✓	✓	✓	✓	✓	✓	✓	✓
Bluetooth Devices	✓	✓	✓	✓	✓	✓	✓	✓
Modbus Devices	✓	✓	✓	✓	✓	✓	✓	✓
CANopen Devices	✓	✓	✓	✓	✓	✓	✓	✓
DeviceNet Devices	✓	✓	✓	✓	✓	✓	✓	✓
Profibus Devices	✓	✓	✓	✓	✓	✓	✓	✓
BACnet Devices	✓	✓	✓	✓	✓	✓	✓	✓

PAC Total Soluiton Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
MH1 Series	✓	✓	✓	✓	✓	✓	✓	✓
MH2 Series	✓	✓	✓	✓	✓	✓	✓	✓
MP1 Series	✓	✓	✓	✓	✓	✓	✓	✓

AC Motor Drive Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
C2000 Family								
C2000 Series	✓	✓	✓	✓	✓	✓	✓	✓
C2000 Plus Series		✓	✓	✓	✓	✓	✓	✓
C2000-HS Series	✓	✓	✓	✓	✓	✓	✓	✓
CFP2000 Series	✓	✓	✓	✓	✓	✓	✓	✓
CH2000 Series	✓	✓	✓	✓	✓	✓	✓	✓
CP2000 Series	✓	✓	✓	✓	✓	✓	✓	✓
M300 Family								
ME300 Series	✓	✓	✓	✓	✓	✓	✓	✓
MH300 Series	✓	✓	✓	✓	✓	✓	✓	✓
MS300 Series	✓	✓	✓	✓	✓	✓	✓	✓
VFD-E Family								
VFD-E Series	✓	✓	✓	✓	✓	✓	✓	✓
VFD-EL Series	✓	✓	✓	✓	✓	✓	✓	✓
VFD-EL-C Series	✓	✓	✓	✓	✓	✓	✓	✓
VFD-EL-W Series								✓
Industry-Specific Drives								
CT2000 Series	✓	✓	✓	✓	✓	✓	✓	✓
EB3000 Series	✓	✓	✓	✓	✓	✓	✓	✓
IED-S Series	✓	✓	✓	✓	✓	✓	✓	✓
MH300-L Series	✓	✓	✓	✓	✓	✓	✓	✓
MPD Series				✓	✓	✓	✓	✓
REG2000 Series	✓	✓	✓	✓	✓	✓	✓	✓
VFD-DD Series	✓	✓	✓	✓	✓	✓	✓	✓
VFD-ED Series	✓	✓	✓	✓	✓	✓	✓	✓
VFD-VJ Series	✓	✓	✓	✓	✓	✓	✓	✓

Power Quality Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
Active Front End								
AFE2000 Series	✓	✓	✓	✓	✓	✓	✓	✓
Active Power Filter								
APF2000 Series	✓	✓	✓	✓	✓	✓	✓	✓
Static VAR Generator								
SVG2000 Series	✓	✓	✓	✓	✓	✓	✓	✓

AC Servo Drive Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
ASDA-A2 Series								
ASDA-A2 Series	✓	✓	✓	✓	✓	✓	✓	✓
ASDA-A2E Series	✓	✓	✓	✓	✓	✓	✓	✓
ASDA-A2R Series								
ASDA-A2R Series	✓	✓	✓	✓	✓	✓	✓	✓

ASDA-A3 Series								
ASDA-A3 Series	✓	✓	✓	✓	✓	✓	✓	✓
ASDA-B2 Series								
ASDA-B2 Series	✓	✓	✓	✓	✓	✓	✓	✓
ASDA-B3 Series								
ASDA-B3 Series		✓	✓	✓	✓	✓	✓	✓
ASDA-E3 Series								
ASDA-E3 Series						✓	✓	✓
ASDA-M Series								
ASDA-M Series	✓	✓	✓	✓	✓	✓	✓	✓
ASDA-MS Series								
ASDA-MS Series	✓	✓	✓	✓	✓	✓	✓	✓

AC Servo Motor Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
ECMA Series					✓	✓	✓	✓
ECM-A3 Series	✓	✓	✓	✓	✓	✓	✓	✓
ECM-B3 Series	✓	✓	✓	✓	✓	✓	✓	✓
ECMC Series	✓	✓	✓	✓	✓	✓	✓	✓
ECM-E3 Series						✓	✓	✓

CNC Solution Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
NC-E Series	✓	✓	✓	✓	✓	✓	✓	✓
NC200 Series	✓	✓	✓	✓	✓	✓	✓	✓
NC300 Series	✓	✓	✓	✓	✓	✓	✓	✓

PC-Based Motion Control Solution Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
Control Cards								
PCMC Pulse Series	✓	✓	✓	✓	✓	✓	✓	✓
PCMC EtherCAT Series	✓	✓	✓	✓	✓	✓	✓	✓
PCMC DMCNET Series	✓	✓	✓	✓	✓	✓	✓	✓
Linear Motion Products								
LPL Series		✓	✓	✓	✓	✓	✓	✓
ECM-PF Series		✓	✓	✓	✓	✓	✓	✓
ECM-PU Series		✓	✓	✓	✓	✓	✓	✓
ECML-S Series		✓	✓	✓	✓	✓	✓	✓
Planetary Gearbox								
PA Series	✓	✓	✓	✓	✓	✓	✓	✓
PS Series	✓	✓	✓	✓	✓	✓	✓	✓
CoDeSys Motion Solution								
AX-3 Series				✓	✓	✓	✓	✓
AX-8 Series	✓	✓	✓	✓	✓	✓	✓	✓
Embedded Motion Controller								
DXMC-S Series		✓	✓	✓	✓	✓	✓	✓
DXMC-P Series		✓	✓	✓	✓	✓	✓	✓

Field Device Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
Temperature Controller								
DTM Series	✓	✓	✓	✓	✓	✓	✓	✓
DTK Series	✓	✓	✓	✓	✓	✓	✓	✓
DT3 Series	✓	✓	✓	✓	✓	✓	✓	✓
DTA Series	✓	✓	✓	✓	✓	✓	✓	✓
DTB Series	✓	✓	✓	✓	✓	✓	✓	✓
DTC Series	✓	✓	✓	✓	✓	✓	✓	✓
DTV Series	✓	✓	✓	✓	✓	✓	✓	✓
DTE Series	✓	✓	✓	✓	✓	✓	✓	✓
DTI Series						✓	✓	✓
Machine Vision Systems								
DMV1000 Series	✓	✓	✓	✓	✓	✓	✓	✓
DMV2000 Series	✓	✓	✓	✓	✓	✓	✓	✓
DMV3000 Series	✓	✓	✓	✓	✓	✓	✓	✓
Barcode Scanner								
DAH Series	✓	✓	✓	✓	✓	✓	✓	✓
DFS Series	✓	✓	✓	✓	✓	✓	✓	✓
Vision Sensor								
VIS100 Series	✓	✓	✓	✓	✓	✓	✓	✓
Industrial Power Supplies								
DIN Rail								
CliQ Series	✓	✓	✓	✓	✓	✓	✓	✓
CliQ II Series	✓	✓	✓	✓	✓	✓	✓	✓
CliQ III Series	✓	✓	✓	✓	✓	✓	✓	✓
CliQ-M Series	✓	✓	✓	✓	✓	✓	✓	✓
CliQ-VA Series	✓	✓	✓	✓	✓	✓	✓	✓
LYTE Series	✓	✓	✓	✓	✓	✓	✓	✓
CHROME Series	✓	✓	✓	✓	✓	✓	✓	✓
SYNC Series	✓	✓	✓	✓	✓	✓	✓	✓
Panel Mount								
PMC Series	✓	✓	✓	✓	✓	✓	✓	✓
PMT Series	✓	✓	✓	✓	✓	✓	✓	✓
PMT2 Series	✓	✓	✓	✓	✓	✓	✓	✓
PMF Series	✓	✓	✓	✓	✓	✓	✓	✓
PMH Series	✓	✓	✓	✓	✓	✓	✓	✓
PMR Series	✓	✓	✓	✓	✓	✓	✓	✓
PMU Series	✓	✓	✓	✓	✓	✓	✓	✓
Open Frame								
PJ Series	✓	✓	✓	✓	✓	✓	✓	✓
PJB Series	✓	✓	✓	✓	✓	✓	✓	✓
PJT Series	✓	✓	✓	✓	✓	✓	✓	✓
PJU Series	✓	✓	✓	✓	✓	✓	✓	✓
Power Meter								
DPM-C Series	✓	✓	✓	✓	✓	✓	✓	✓
DPM-D Series	✓	✓	✓	✓	✓	✓	✓	✓
DPM-M Series	✓	✓	✓	✓	✓	✓	✓	✓
Inductive Proximity Sensor								
IS Series	✓	✓	✓	✓	✓	✓	✓	✓
Photoelectric Sensor								
PS-F Series	✓	✓	✓	✓	✓	✓	✓	✓
PS-L Series	✓	✓	✓	✓	✓	✓	✓	✓
PS-M Series	✓	✓	✓	✓	✓	✓	✓	✓
PS-R Series	✓	✓	✓	✓	✓	✓	✓	✓
Laser Displacement Sensor								

LD Series	✓	✓	✓	✓	✓	✓	✓	✓
Area Sensor								
AS-B Series	✓	✓	✓	✓	✓	✓	✓	✓
AS-B-C Series	✓	✓	✓	✓	✓	✓	✓	✓
Pressure Sensor								
DPA Series	✓	✓	✓	✓	✓	✓	✓	✓
DPB Series	✓	✓	✓	✓	✓	✓	✓	✓
Timer/Counter/Tachometer								
CTA Series	✓	✓	✓	✓	✓	✓	✓	✓
Gas Flow Meter								
DFM200 Series	✓	✓	✓	✓	✓	✓	✓	✓
DFM500 Series	✓	✓	✓	✓	✓	✓	✓	✓

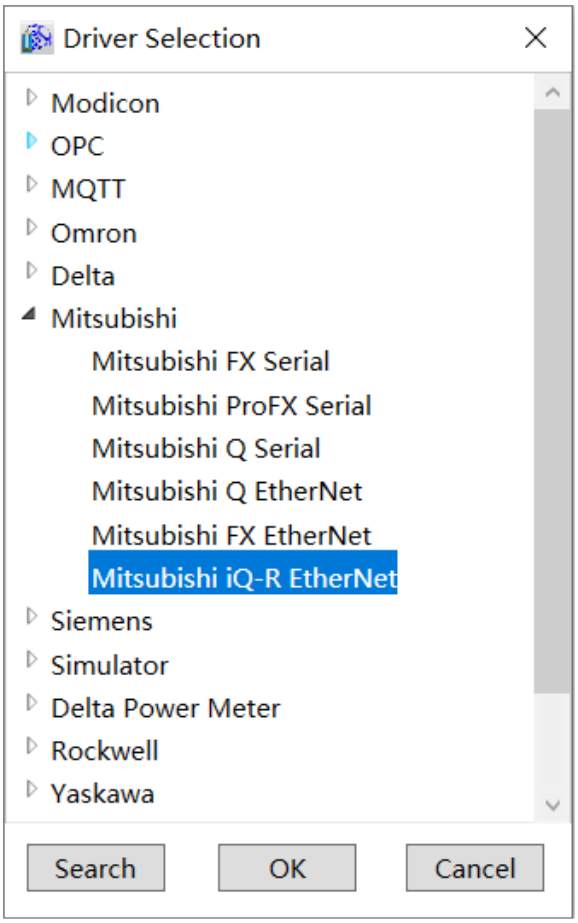
Robot Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
SCARA Robot								
DRS40L3 Series	✓	✓	✓	✓	✓	✓	✓	✓
DRS50L6 Series	✓	✓	✓	✓	✓	✓	✓	✓
DRS60H6 Series	✓	✓	✓	✓	✓	✓	✓	✓
DRS60L6 Series	✓	✓	✓	✓	✓	✓	✓	✓
DRS70L6 Series	✓	✓	✓	✓	✓	✓	✓	✓
DRS80L Series	✓	✓	✓	✓	✓	✓	✓	✓
Articulated Robot								
DRV70L7 Series	✓	✓	✓	✓	✓	✓	✓	✓
DRV90L7 Series	✓	✓	✓	✓	✓	✓	✓	✓
DRVA1L7 Series	✓	✓	✓	✓	✓	✓	✓	✓
DRVA4L7 Series	✓	✓	✓	✓	✓	✓	✓	✓
Screw-Driving Robot								
RS-AFS60LA Series	✓	✓	✓	✓	✓	✓	✓	✓
RS-AFS60LB Series	✓	✓	✓	✓	✓	✓	✓	✓

Industrial PC Compatibility	Version							
	V1.0	V1.1	V1.1.1	V1.1.2	V1.1.3	V1.2	V1.2.1	V1.3
IPC Series	✓	✓	✓	✓	✓	✓	✓	✓
PPC Series	✓	✓	✓	✓	✓	✓	✓	✓

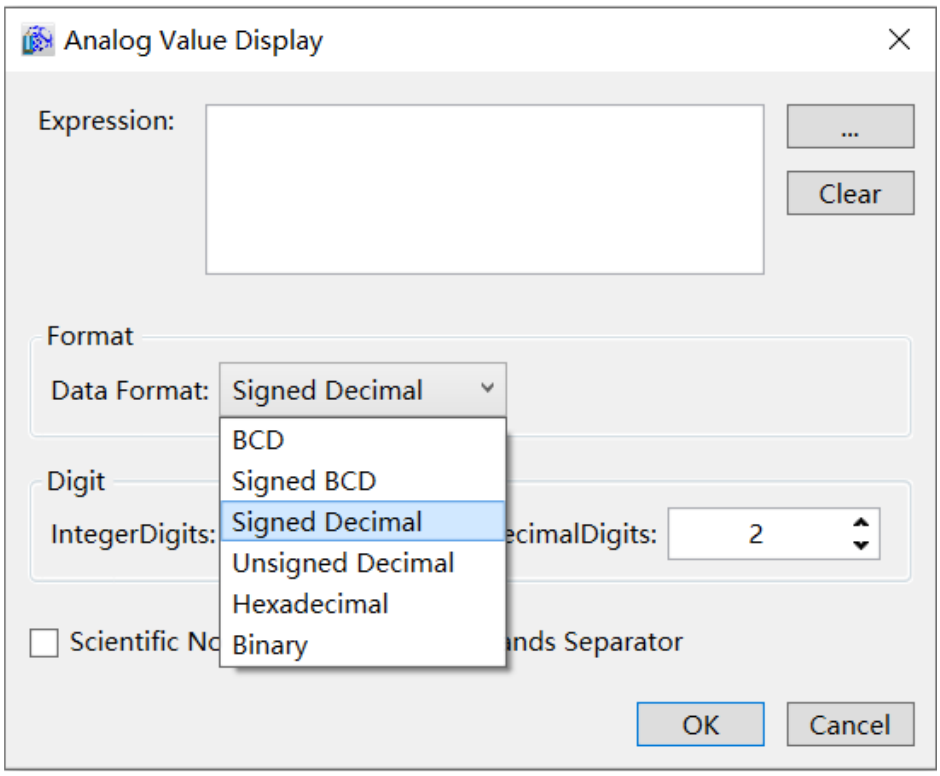
2.23 UPDATE – DIAView Version 3.90 Release

New Functions

1. Added a new face recognition function
2. Added Mitsubishi iQ-R Ethernet driver for selection

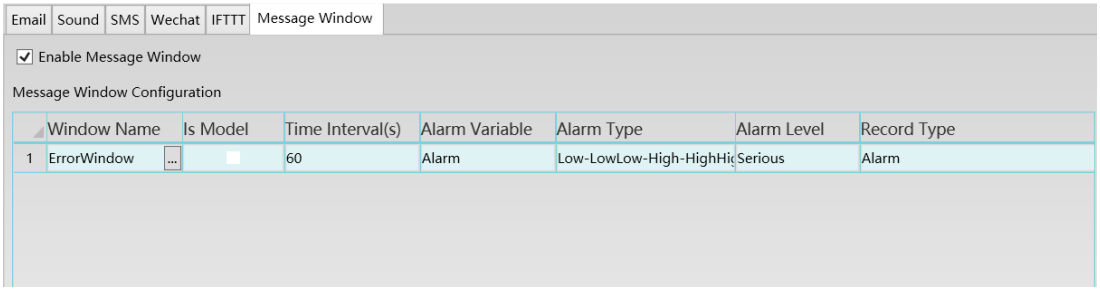


3. Added data format for selection on Analog Value Display setting page

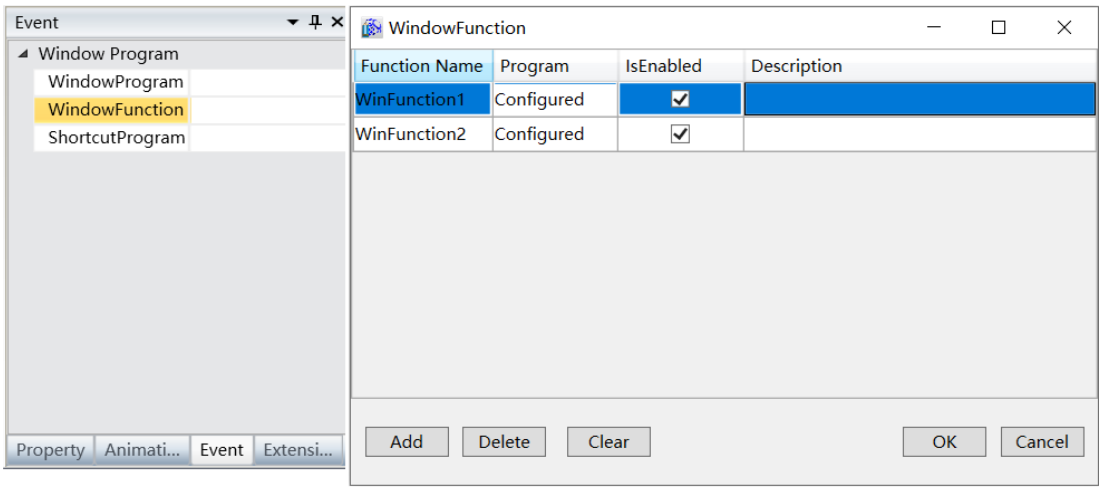


4. Added a new batch script for writing variable values in batches: *VarCmd.BatchSetVariableValues()*

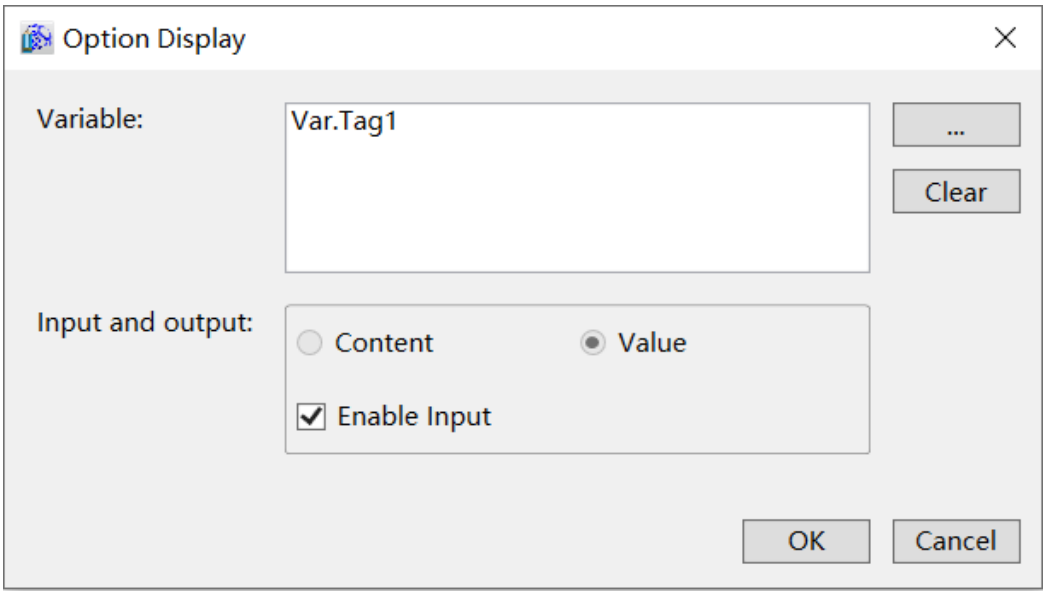
5. Added a new alarm message window. When an alarm occurs, a window automatically pops up for notification



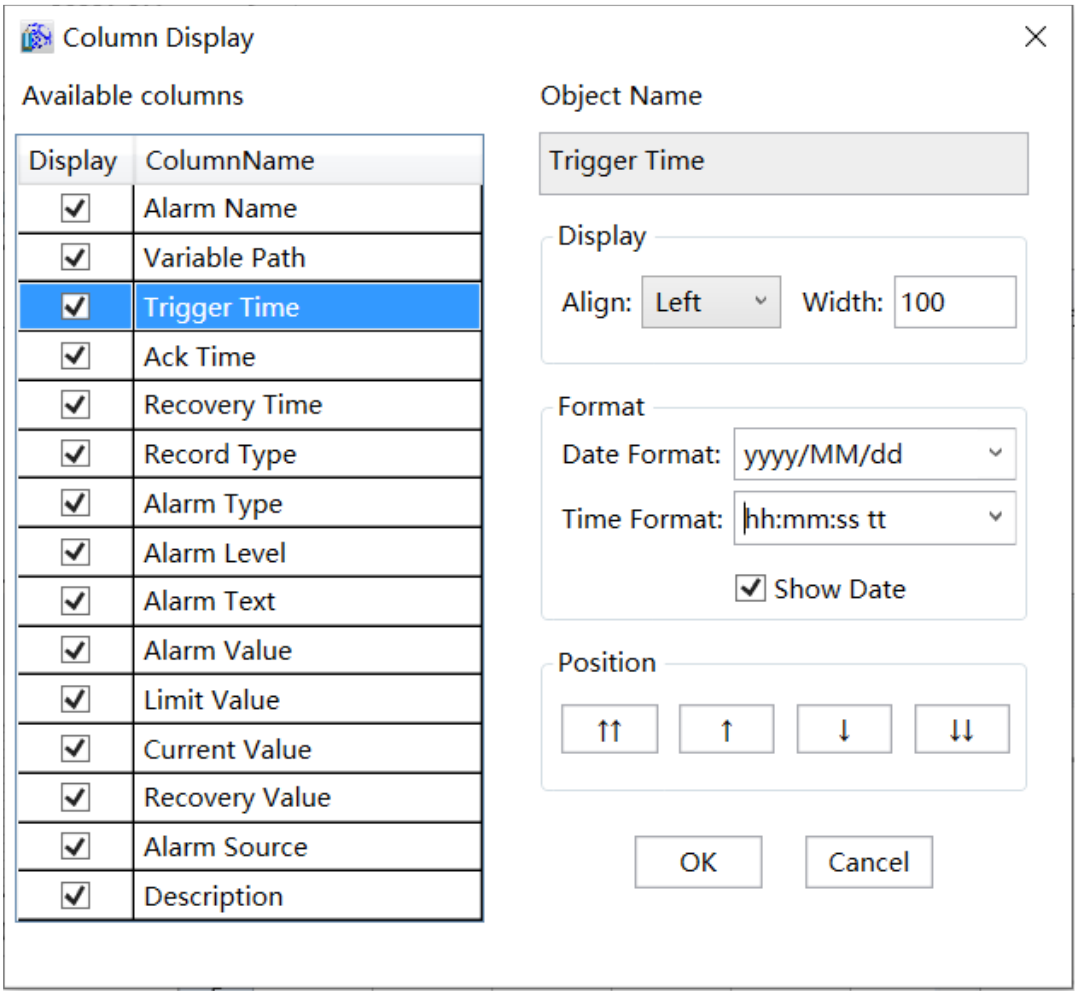
6. Added a window-function for users to call



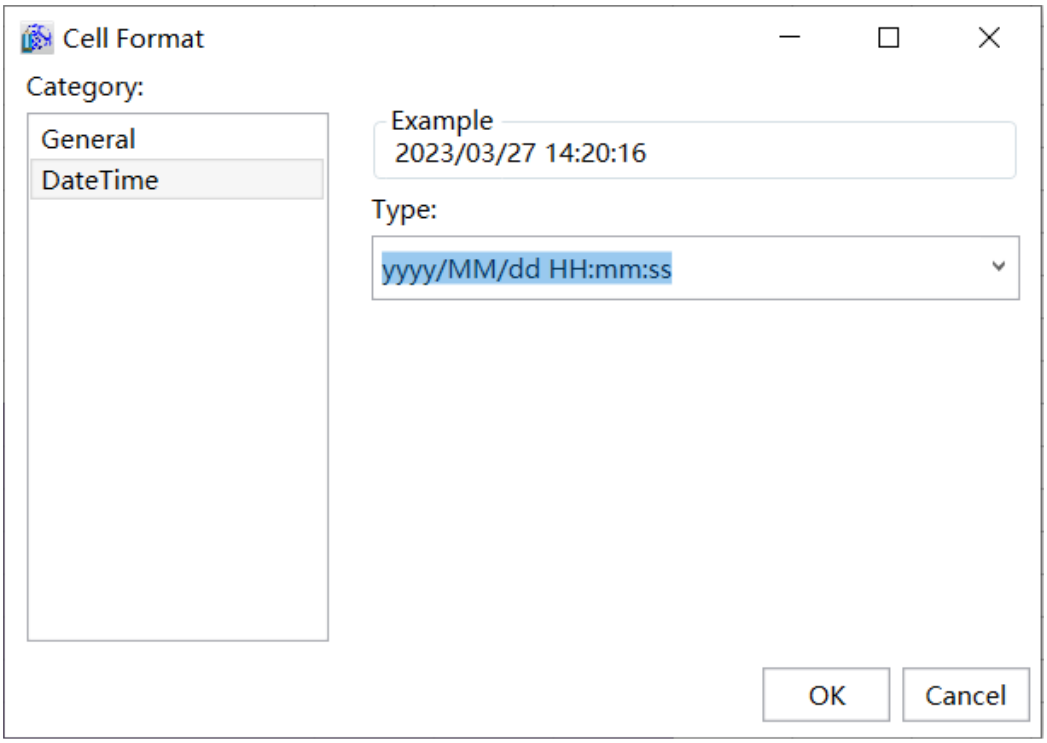
7. Added binding function for the Combo-box Control. When binding with analog values, the input/output values can be related. When binding with texts, the contents can be related



8. Added column editing function for the Alarm Type setting page and Record Type setting page. The setting items include column sorting, alignment setting, column width setting, and the format of date and time setting

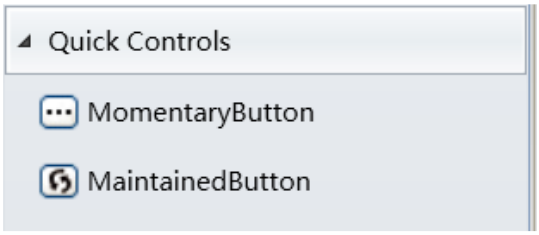


9. Cell format can be set in the report template and the format of date and time can be self-defined



10. The display of alarm descriptions support multi-languages

11. Added two more quick controls, Momentary Button and Maintained Button



12. Opening multiple windows with the same name and window dragging are supported in *OpenDialogWindow* script

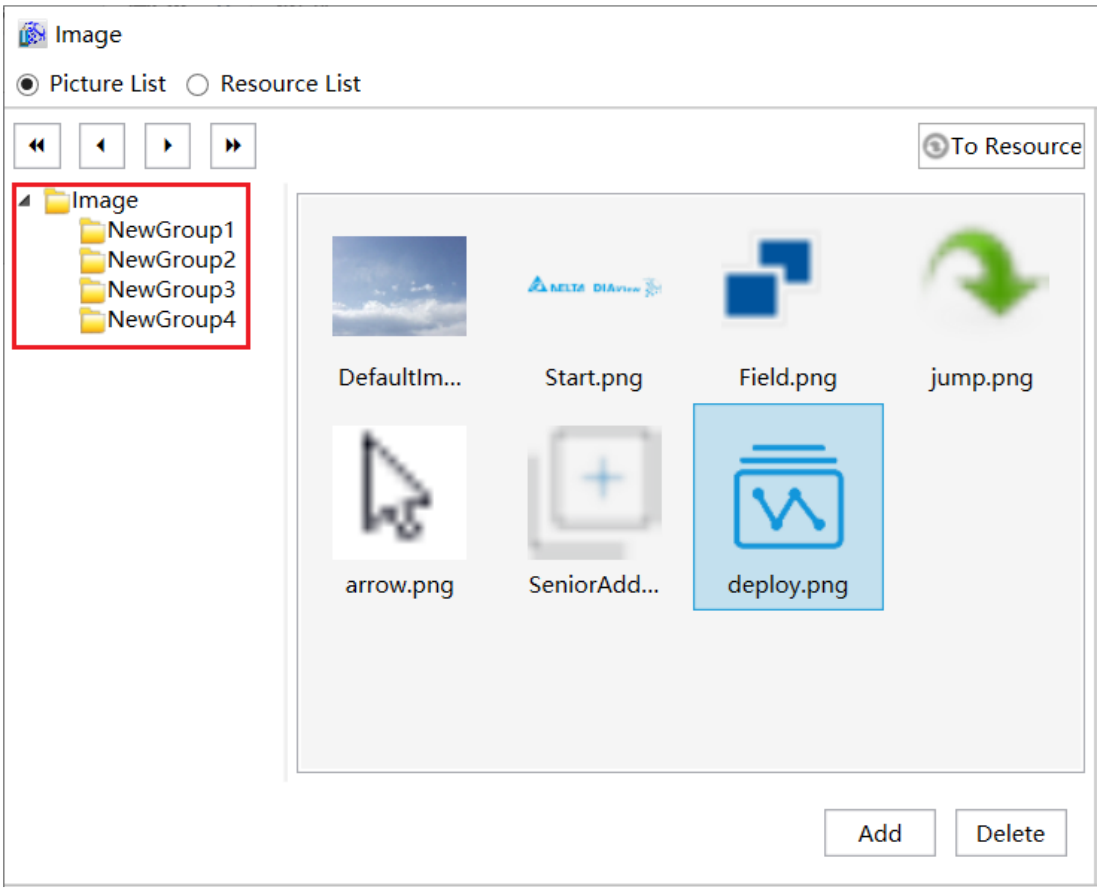
13. Added a new script for obtaining the current screen number: *GetCurrentScreenNumber()*

Optimized Functions

1. Optimized search and replace functions. The function of searching and replacing string types are supported in scripts

2. You can define the size of the DIAView keyboard

3. Optimized image importing function and added a new image grouping function



4. The right-side button size of the combo-box is optimized so that you can point it with your finger on the PPC panel with ease

5. Optimized the exported Excel table layout for the alarm records

6. Optimized the display of the script editor contents. The display will not be distorted by scrolling

7. Optimized simulation animation association process and the number of decimal places of variables will be brought in automatically

8. Optimized the project naming rules. The name of the imported project will stay the same as it is exported. If there is a duplicate, a number will be added to the end of the file's name to differentiate the primary and the duplicate

Fixed Issues

1. Fixed an issue of losing the maximum and minimum values when importing variables

2. Fixed an issue that when there is a space character in the script editor, an error will occur

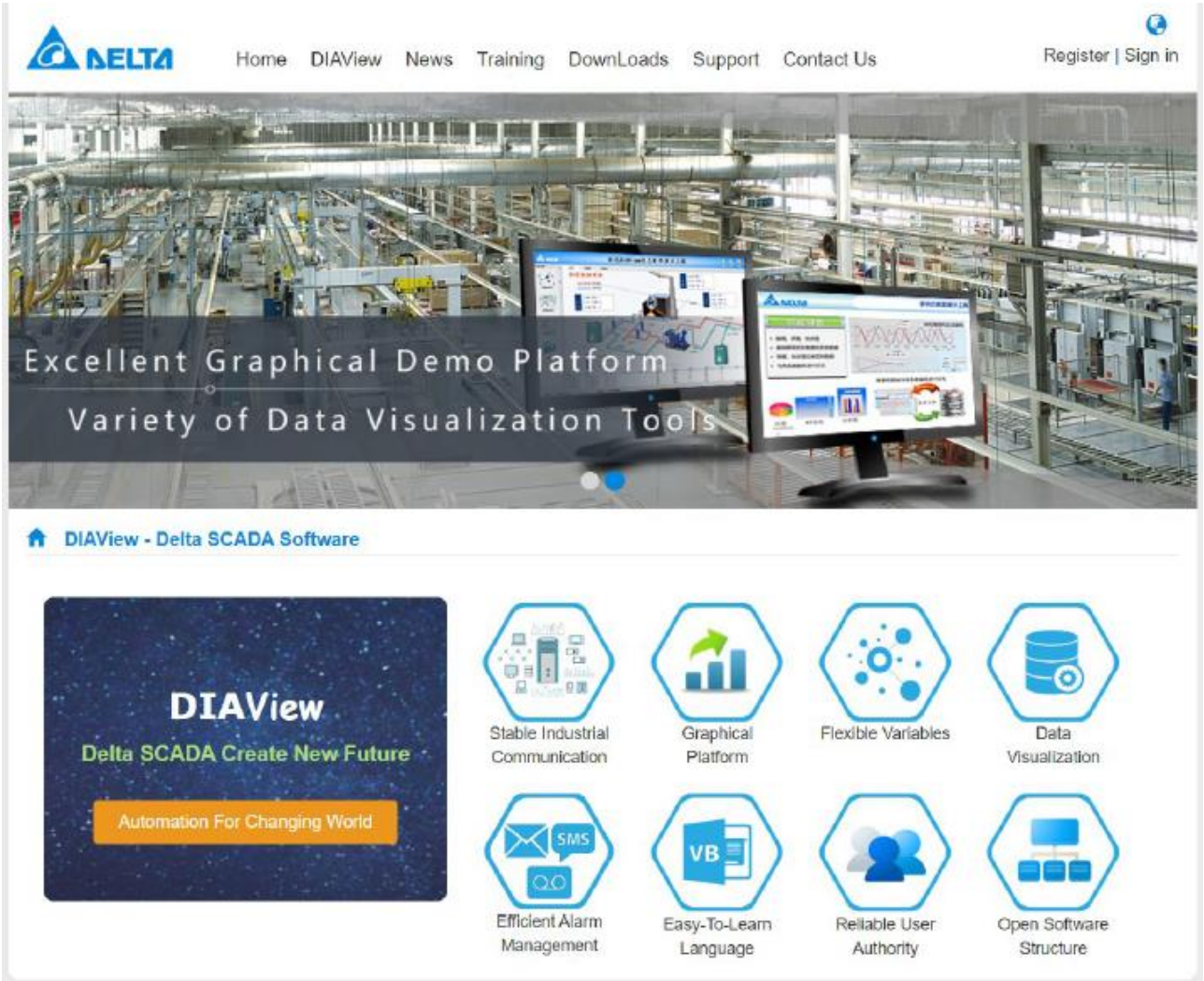
Websites and Resources

Delta | Download Center (deltaww.com)

Delta DIAView SCADA Software-Index (deltaww.com.cn)

The DIAView website provides the following services:

- **Software Introduction**: Product Description, Success Cases
- **Online Learning**: Training Videos
- **Downloads**: Software Installation Package, Teaching Materials, Application Template
- **Technical Support**: FAQ
- **User Registration**: Files can be downloaded and questions can be submitted after registration

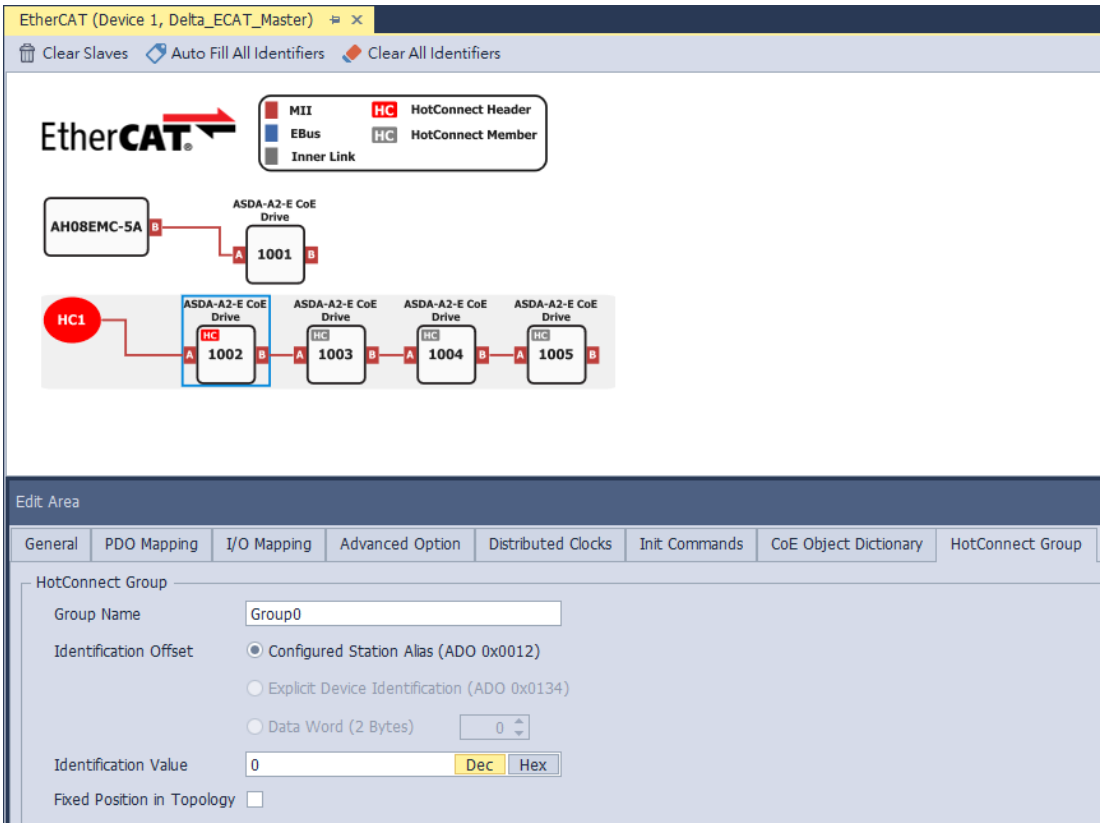


2.24 UPDATE – ISPSoft Version 3.17 Release

Description

1. ISPSoft V3.17 now supports DVP-EC5

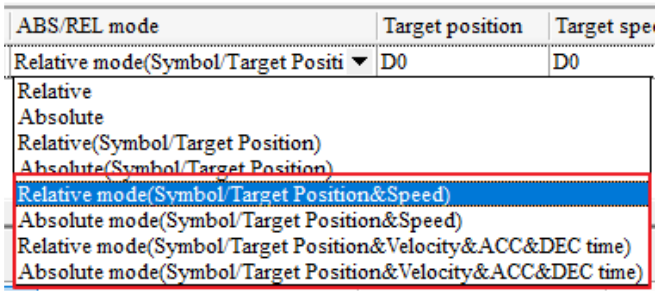
2. EtherCAT adds a new function “Hot Connect Group” for users to configure EtherCAT Slaves in a more flexible way



3. Four modes are added in the Positioning Settings:
   a. Relative Mode (Symbol / Target Position & Speed)
   b. Absolute Mode ((Symbol / Target Position & Speed)
   c. Relative Mode (Symbol / Target Position & Velocity & ACC & DEC Time)
   d. Absolute Mode (Symbol / Target Position & Velocity & ACC & DEC Time)

Mode	Target Position	Target Speed / Tangential Speed	Acceleration / Deceleration Time, Acceleration Time, Deceleration Time
Relative Mode, Absolute Mode (Symbol / Target Position & Speed)	Input variable (DWORD/DINT), Device D	Input variable (DWORD/DINT), Device D	Input variable
Relative Mode, Absolute Mode (Symbol/Target Position &			Input variable (WORD/DINT), Device D

Velocity & ACC & DEC Time)			



4. Optimized online editing for DVP Series
   After each online editing, the source code will be downloaded automatically to the PLC to ensure that the source code and the updated execution code will be consistent.

   Previous versions: After online editing, a prompt message will remind you to download the program.

   V3.17 and later versions: The source code will be downloaded to the PLC automatically after each online editing.

   Available for the following series and firmware versions.

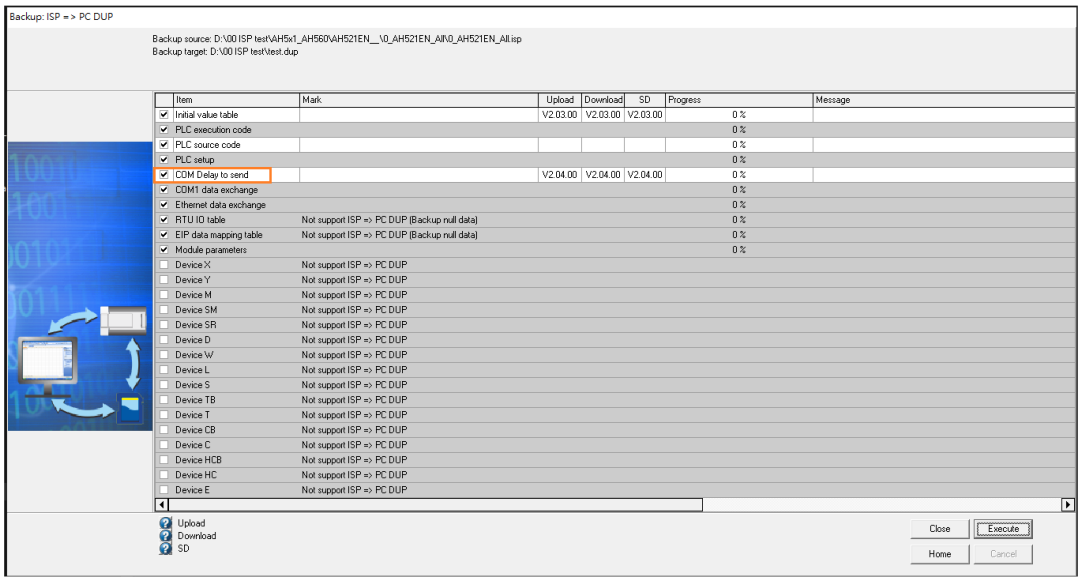
Series	ES2 EX2	ES2-C	ES2-E	SE	SE2	SS2	SA2	SA2 SX2	EC5	EC3	EH3 SV2	SX
Firmware Version	V4.04	V3.82	V1.50	V2.10	V1.00	V3.64	V2.90	V3.04	V1.00	V3.04	V2.28	V4.02

5. Newly added instructions

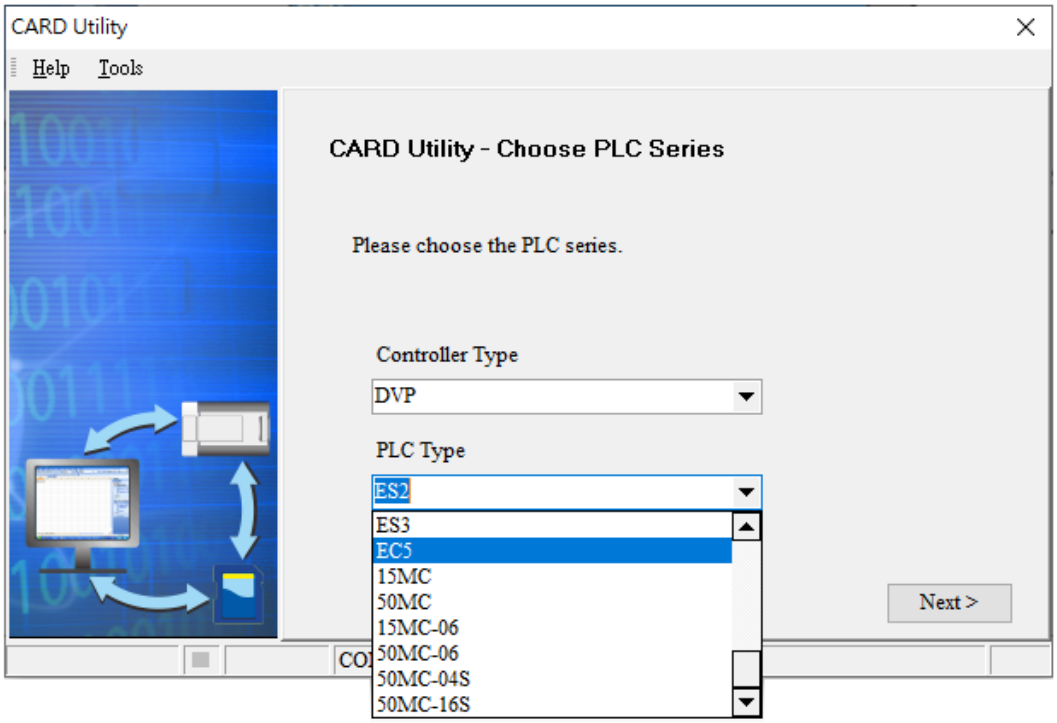
Instruction	Model and Firmware Version
MDEL	AH5X1-RS2: FW V1.06 AH5X1-EN: FW V2.04 AH560-EN: FW V1.10
DWSFR	
DWSFL	
DSFWR	
DSFRD	
DSFPO	
DSFDEL	
DSFINS	
DSFR	
DSFL	
DNSFR	
DNSFL	
BK*	AS300: FW V1.14 AS200: FW V1.14 DVP ES3: FW V1.08
BK/	
BKF+	
BKF-	
BKF*	
BKF/	
BKMUL16	
BKMUL32	
BKDIV16	
BKDIV32	

6. Updated function for Card Utility

   a. AH5x1 / AH560: added a new item “COM Delay to send” in the Backup setting section



   b. Added a new supported model, DVP-EC5. Select Controller Type to DVP and then you can find EC5 from the drop-down list of PLC Type



7. The following issues are fixed and functions are modified

   a. Fixed an issue that after the AHEMC Series PLC downloaded the hardware configurations, the COM port cannot function normally

b. Fixed an issue that when AH Series PLC executes mapping on the device Ds, if the number of devices exceeding the limit, no error shows

c. When executing “download” in EtherCAT, user privileges play no part in this operation

d. Ease the format checks for the ESI file before importing, for instance, the date format and the LCID format

e. Fixed an issue that if there are more than one port in one adapter in EtherNet/IP, the indications of the ports will be shown overlapped in the topology

f. Fixed an issue that if using Data Unit Type (DUT) as a pin in a function block within a function block, a compilation error will occur

g. Fixed an issue that if an ES3 Series PLC monitors the register Y in ST language, the monitoring results will be incorrect

h. Fixed an issue that if a DVP Series PLC uses step positioning to jump to a specific step in the function block, a message that shows this function is not supported will appear

i. Fixed an issue that after changing the order of the symbols, it does NOT trigger ISPSoft to compile the project again and this may bring incorrect monitoring results

j. Fixed an issue that when using a HC register as a pin for a 32-bit comparison instruction, a compilation error may occur

k. Fixed an issue that if executing “monitor” in ST language, some misjudgments on the string contents may occur and the monitoring results will be incorrect

l. Fixed an issue that after the execution of symbol-replacing, some symbol names in the symbol table will be replaced with the illegal symbol names

m. Type “TIMER” can support using ST registers in the field of address for AS Series PLC in the Main Table

n. Fixed an issue that if the value used in the target position of the positioning table is negative, an error message will appear

o. Modify the rules in IntelliSense (a code-completion aid). When entering “???” or leave the field blank in the field of symbol name, no symbol names will show up

p. Fixed an issue that when DVP Series PLC uploads a project, sometimes an unrelated and incorrect error message will show up “Current PLC firmware version does not support this function. Please update the firmware version to X.XX or above.”

q. Turkish is added in the language settings for selection

Download Link

ISPSoft 3.17

2.25 UPDATE – TPEditor Version 1.98.08 Release

Description

1. Fixed the security vulnerability issues

Download Link

TPEditor 1.98.08

2.26 DISCONTINUATION ANNOUNCEMENT – PLC, TP, IFD Products

Description

Due to the major component suppliers will discontinue to supply the components for some models. The affected models of our PLC/TP/IFD products have therefore entered the end of the product life cycle.

Type	Discontinued Model	Last Order	Discontinuation Date	Recommended Replacement Model
CPU	DVP14ES00R2	2023-Feb-28	2023-Feb-28	None
	DVP14ES00T2	2023-Feb-28	2023-Feb-28	None
	DVP24ES00R2	2023-Feb-28	2023-Feb-28	DVP24ES200R
	DVP24ES00T2	2023-Feb-28	2023-Feb-28	DVP24ES200T
	DVP30ES00R2	2023-Feb-28	2023-Feb-28	None
	DVP30ES00T2	2023-Feb-28	2023-Feb-28	None
	DVP32ES00R2	2023-Feb-28	2023-Feb-28	DVP32ES200R
	DVP32ES00T2	2023-Feb-28	2023-Feb-28	DVP32ES00T
	DVP40ES00R2	2023-Feb-28	2023-Feb-28	DVP40ES00R
	DVP40ES00T2	2023-Feb-28	2023-Feb-28	DVP40ES00T
	DVP60ES00R2	2023-Feb-28	2023-Feb-28	DVP60ES00R
	DVP60ES00T2	2023-Feb-28	2023-Feb-28	DVP60ES00T
	DVP14EC00R2	2023-Feb-28	2023-Feb-28	DVP14EC00R3
	DVP24EC00R2	2023-Feb-28	2023-Feb-28	DVP24EC00R3
	DVP32EC00R2	2023-Feb-28	2023-Feb-28	DVP32EC00R3
Extension Module	DVP32HM11N	2023-Mar-31	2023-Jun-30	None
	DVP32HN00R	2023-Mar-31	2023-Jun-30	None
	DVP32HN00T	2023-Mar-31	2023-Jun-30	None
	DVP48HP00R	2023-Mar-31	2023-Jun-30	None
	DVP48HP00T	2023-Mar-31	2023-Jun-30	None
	DVPPF02-H2	2023-Mar-31	2023-Jun-30	None
	DVPDT02-H2	2023-Mar-31	2023-Jun-30	EH3-L + DNET-SL
	DVPCP02-H2	2023-Feb-28	2023-Feb-28	EH3-L + COPM-SL
	DVP08XM11N	2023-Feb-28	2023-Feb-28	DVP08XM211N
	DVP08XN11R	2023-Feb-28	2023-Feb-28	DVP08XN211R
	DVP08XP11R	2023-Feb-28	2023-Feb-28	DVP08XP211R
	DVP04AD-S	2023-Jun-30	2023-Sep-30	DVP04AD-S2
	DVP04DA-S	2023-Jun-30	2023-Sep-30	DVP04DA-S2
	DVP06XA-S	2023-Jun-30	2023-Sep-30	DVP06XA-S2
	DVPPF01-S	2023-Mar-31	2023-Jun-30	None
	DVPDT01-S	2023-Mar-31	2023-Jun-30	DVPDNET-SL
	RTU-PD01	2023-Feb-28	2023-Feb-28	None
	AHRTU-DNET-5A	2023-Mar-31	2023-Jun-30	None
	AHRTU-PFBS-5A	2023-Mar-31	2023-Jun-30	None
TP	TP70P-RM0	2023-Jan-1	2023-Jan-1	None
	TP70P-RM1	2023-Jan-1	2023-Jan-1	None
	TP70P-RM2	2023-Jan-1	2023-Jan-1	None
	TP04P-08TP1R	2023-Feb-28	2023-Apr-30	None
IFD	IFD9502	2023-Feb-28	2023-Feb-28	None
	IFD9503	2023-Feb-28	2023-Feb-28	None
	IFD8540	2023-Feb-28	2023-Feb-28	None
Function Card / Accessory	DVPMTR1	2023-Feb-28	2023-Feb-28	None
	DVP-512FM	2023-Feb-28	2023-Feb-28	None
	DVP-F6SEG	2023-Feb-28	2023-Feb-28	None

	UC-EMC003-02A	2022-Dec-31	2022-Dec-31	UC-EMC003-02C
	UC-EMC005-02A	2022-Dec-31	2022-Dec-31	UC-EMC005-02C
	UC-EMC010-02A	2022-Dec-31	2022-Dec-31	UC-EMC010-02C
	UC-EMC020-02A	2022-Dec-31	2022-Dec-31	UC-EMC020-02C
	UC-EMC050-02A	2022-Dec-31	2022-Dec-31	UC-EMC050-02C
	UC-EMC100-02A	2022-Dec-31	2022-Dec-31	UC-EMC100-02C
	UC-EMC200-02A	2022-Dec-31	2022-Dec-31	UC-EMC200-02C
OEM / ODM	EXP-CAN-ADV20/50	2022-Dec-31	2022-Dec-31	None

2.27 DISCONTINUATION ANNOUNCEMENT – DIAView Unlimited Tags

Model	Description	Discontinuation Date	Recommended Substitute	Description
DIAV-0199K0000A	Unlimited tags, USB dongle key	2023-Jan	DIAV-0105K0000A	5,000 tags, USB dongle key
DIAV-0299K0500A	5 C/S clients, unlimited tags, USB dongle key		DIAV-0205K0500A	5 C/S clients, 5,000 tags, USB dongle key
DIAV-0299K1000A	10 C/S clients, unlimited tags, USB dongle key		DIAV-0205K1000A	10 C/S clients, 5,000 tags, USB dongle key
DIAV-0399K0500A	5 B/S clients, unlimited tags, USB dongle key		DIAV-0305K0500A	5 B/S clients, 5,000 tags, USB dongle key
DIAV-0399K1000A	10 B/S clients, unlimited tags, USB dongle key		DIAV-0305K1000A	10 B/S clients, 5,000 tags, USB dongle key
DIAV-0099K00UPA	3,000 upgraded to unlimited tags, USB dongle key		DIAV-0005K00UPA	3,000 upgraded to 5,000 tags, USB dongle key

3 Application

3.1 NEW – Technical Notes

Drives

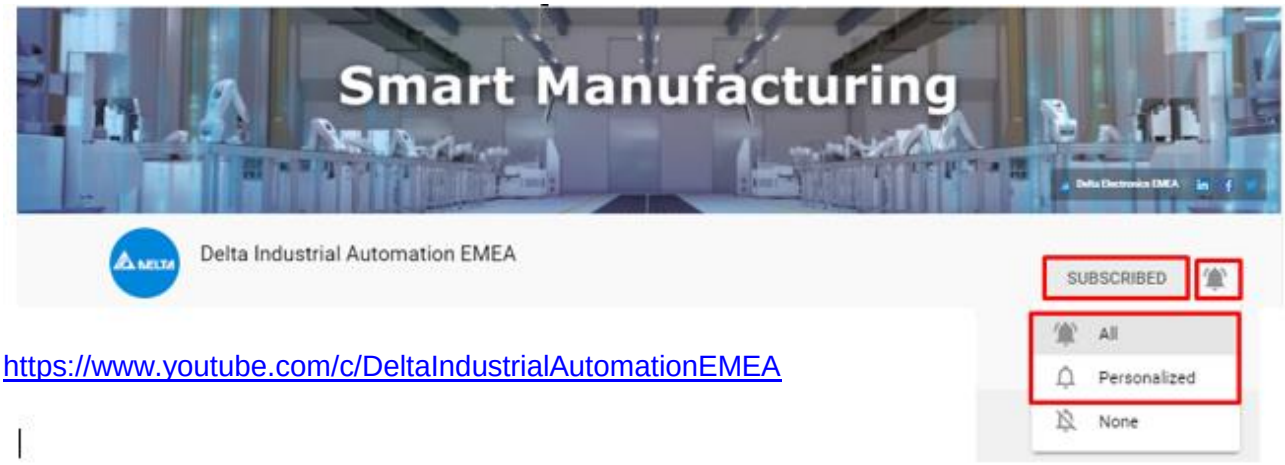
DEN_IA_VFD_Control_by_Physical_Unit_TN_EN_20220915.pdf

DEN_IA_VFD_Motor_Control_Modes_TN_EN_20220914.pdf

DEN_IA_VFD_Sleep_Mode_TN_EN_20220915.pdf

DEN_IA_VFD_Tank_Level_Control_TN_EN_20220912.pdf

3.2 Update – Technical Videos, Tips and Trainings on Our YouTube Channel



https://www.youtube.com/c/DeltaIndustrialAutomationEMEA

Subscribe and enable notifications in order to get notifications on all our new videos.

4 FAQ

4.1 AC Motor Drives

Variable Speed Drives

Q Why are the fuse recommendations for VFD and ASD so large?

A There are several reasons for this.

1. *The fuses must be fast acting, because their primary purpose is short circuit protection of semiconductors, namely the rectifier bridge at the input. Therefore, they can only withstand overload for a very short amount of time.*
   The overload capability of VFD drives depending on the model is between 120% and 200% for 60 s. ASD drives can even provide 300% to 350% of overload capacity.
   The fuses must be able to withstand that overload without tripping

2. *The fuses must be able to withstand the inrush current at power-on. Even with the current limiting resistor that is present in each drive, the inrush current can be several times as high as the nominal drive current*

3. *Drives produce harmonic distortion, which heats up all devices before them. Wires, contactors, circuit breakers and fuses must be able to withstand the drive's overload current plus the harmonic distortion currents, which can add more than 90% of the drive's current on top*

4.2 HMI

DOP Series

Q What is the EMC class of DOP series HMI?

A Without any measures, the DOP series complies with EMC class C3.
In order to reach EMC class 2, it is necessary to used shielded communication cables and a ferrite core that adds 300 Ω @ 100 MHz