DELTA Newsletter

Industrial Automation Products

Edition 2020-01

Contents

MS300 IP66

1 News

1.1 ftp-site link

Just to let you know (again), you can find the latest info about our products (manuals, pictures, catalogues, data sheets, application notes, presentations, software, etc.) on our ftp-site.

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

1.2 Delta Launched DIAStudio Smart Machine Suite at SPS 2019 in Nuremberg

Delta officially launched its new integrated engineering software DIAStudio Smart Machine Suite along with a broad range of advanced automation products at this year's SPS—Smart Production Solutions in Nuremberg, Germany.
The DIAStudio Smart Machine Suite provides an all-in-one platform for selecting models, programming (IEC61131-3 standard), and setting up PLCs, HMIs, drives, and more to enable effective, time-efficient machinery systems development. In addition to this new software, Delta will also exhibited its industrial power supplies and automation products, including the new

DMV3000Gseries machine vision system which supports up to two cameras with GigE interfaces for precise colour, shape, position inspection, quality assurance, and other critical tasks for smart equipment and production lines.

"This year's SPS in Nuremberg was very exciting because we've unveiled a new software suite that is going to save users mountains of time designing automation systems in factory settings all over the world. The great thing about the DIAStudio software is that it puts detailed technical information on Delta products right at the engineer's fingertips and allows them to use it seamlessly in the engineering process. You can literally click together the desired Delta products and their parameters, then send all that data on to your CAD software. We're also exhibiting our line of cutting-edge machine vision products that are used on production lines in conjunction with robots." said Patrik Hug, Senior Director of Industrial Automation for Delta in EMEA.

The DIAStudio Smart Machine Suite is an all-in-one engineering software designed to save time and simplify the machine setup process. Tasks such as product selection (including Delta HMIs, PLCs, servo drives, and AC motor drives), PLC programming, quantitative parameter setting, machine tuning, and HMI integration can all be executed seamlessly with the following DIAStudio tools:

- DIASelector is an application for PCs and Android mobile devices that allows the user to select specific components of the machine system.
- DIADesigner picks up after a few intermediate steps in the engineering process have been completed.
- DIAScreen then lets users share tags between PLCs and HMIs or text panels to complete the operation interface.

2 Product update

2.1 PHASE OUT – VFD-S series

After more than 22 years, our VFD-S series of drives will be phased out.

Its recommended replacement is ME300, see hereafter:

VFD002S21A	VFD1A6ME21ANNAA
VFD004S21A	VFD2A8ME21ANNAA
VFD007S21A	VFD4A8ME21ANNAA
VFD015S21D	VFD7A5ME21ANNAA
VFD022S21D	VFD11AME21ANNAA
VFD004S43A	VFD1A5ME43ANNAA
VFD007S43A	VFD2A7ME43ANNAA
VFD015S43A	VFD4A2ME43ANNAA
VFD022S43A	VFD5A5ME43ANNAA

VFD002S21E	VFD1A6ME21AFNAA
VFD004S21E	VFD2A8ME21AFNAA
VFD007S21E	VFD4A8ME21AFNAA
VFD015S21E	VFD7A5ME21AFNAA
VFD022S21E	VFD11AME21AFNAA
VFD004S43E	VFD1A5ME43AFNAA
VFD007S43E	VFD2A7ME43AFNAA
VFD015S43E	VFD4A2ME43AFNAA
VFD022S43E	VFD5A5ME43AFNAA

Worldwide Discontinuation	Jun 30th , 2020
Last Purchasing Order	May 31st , 2020
Last Shipment	Sep 30th , 2020

2.2 NEW – MS300 IP66

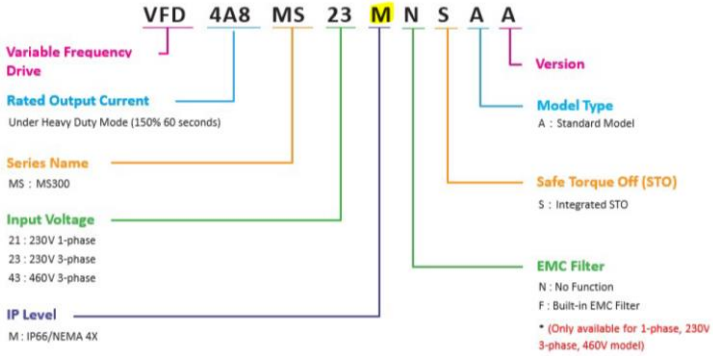
The MS3000 range has been extended with IP66 models:

- 230V 1-phase: 0.4~2.2kW
- 230V 3-phase: 0.4~5.5kW
- 400V 3-phase: 0.4~7.5kW

Features

- Supports Open loop control of IM and PM motors.
- Supports Speed and Torque control for IM motors.
- Max. output frequency: 599.00 Hz.
- Over load capability:
  - Heavy Duty (HD), factory default, 150% of rated output current for 60s.
  - Normal Duty (ND), 120% of rated output current for 60s.
- Integrated PLC program with 2K steps capacity.
- Built-in brake chopper for the entire series.
- Built-in EMC filter (optional).
- Built-in 5-digit LED keypad. No front potmeter.
- Safety standard compliance: Safe Torque Off (SIL2/PL d).
- Supports 4 independent induction motor switching control.
- Built-in high speed (33kHz) pulse input terminals (MI7) and output terminals (DFM).
- Built-in slot for communication card installation:
  CANopen, PROFIBUS DP, DeviceNet, MODBUS TCP, EtherNet/IP, EtherCAT.
- Optional disconnect switch accessory, when there is a need to isolate the drive and enable a safe working environment for maintenance and servicing.

Model name



2.3 UPDATE – IFD9506 firmware updated to V2.04

Models	Firmware Version	Release Date
IFD9506	V2.02→ V2.04	2019.11.8

Changes

EtherNet/IP Adapter function is supported by IFD9506.

1. IFD9506 acts as an EtherNet/IP Adapter and saves the monitored device data from the serial communication and the data can be read as implicit messages by an EtherNet/IP Scanner.
2. IFD9506 acts as an EtherNet/IP Adapter and an EtherNet/IP Scanner can convert the received explicit messages into MODBUS commands for the serial communication.

2.4 PHASE-OUT – EMED-PGHSD-1 / EMED-PGHSD-2 (and replaced by EMED-PGHSD-3 / EMED-PGHSD-4)

The encoder cards EMED-PGHSD-1 / EMED-PGHSD-2 for VFD-ED-S will be phased out per June 2020 due to discontinuation of its processor.

The full functionality replacements are EMED-PGHSD-3 (for -1) / EMED-PGHSD-4 (for -2).

EMED-PGHSD-3:

※ Supports Heidenhain ERN1387, EnDat2.1, HIPERFACE

Terminals Descriptions		Terminals Descriptions
TB1	Vin	Voltage input: (to adjust the output voltage amplitude of the push-pull pulse) Max. input voltage: 24 Vdc Max. input current: 30 mA
	GND	Common power input/signal output terminal
	A/O, B/O	Push-pull pulse output signal Max. output frequency: 50 kHz
	AO, /AO, BO, /BO	Line driver RS422 Max. input frequency: 100 kHz
J3 (D-SUB female connector)		Encoder signal input terminal
SW1		Frequency division output power terminal selection INP: Power supplied by PG card EXP: Power from an external source
SW2		Encoder's voltage output terminal (Up) Note: Modify the terminal output voltage by switching the direction of the SW2 DIP switch on the PG card. 5 V: 5 Vdc 8 V: 8 Vdc

EMED-PGHSD-4:

※ Supports Heidenhain ERN1387, EnDat2.1, HIPERFACE

Terminals Descriptions		Terminals Descriptions
TB1	Vin	Voltage input: (to adjust the output voltage amplitude of the push-pull pulse) Max. input voltage: 24 Vdc Max. input current: 30 mA
	GND	Common power input/signal output terminal
	A/O, B/O	Push-pull pulse output signal Max. output frequency: 50 kHz
	AO, /AO, BO, /BO	Line driver RS422 Max. input frequency: 100 kHz
TB2		Encoder signal input terminal
JP3	⏚	Ground Terminal Connect the motor drive power supply to ground. Supports PG shielding.
SW1		Frequency division output power terminal selection INP: Power supplied by PG card EXP: Power from an external source
SW2		Encoder's voltage output terminal (Up) Note: Modify the terminal output voltage by switching the direction of the SW2 DIP switch on the PG card. 5 V: 5 Vdc 8 V: 8 Vdc

2.5 UPDATE – Firmware of AS32AN02T-A and AS64AN02T-A updated to V1.04

Series	Models	Firmware Version	Release Date
AS DIO Series	AS32AN02T-A	V1.00.00→ V1.04.00	2019.11.15 (W1946)
	AS64AN02T-A	V1.00.02→ V1.04.00	

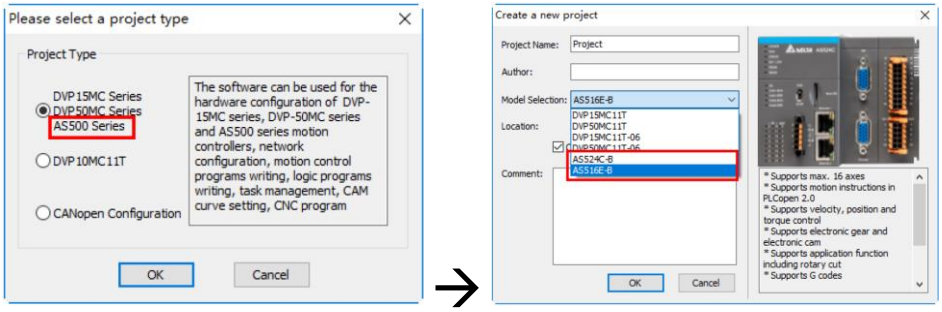
Changes

Reduced output leakage current for AS32AN02T-A and AS64AN02T-A.

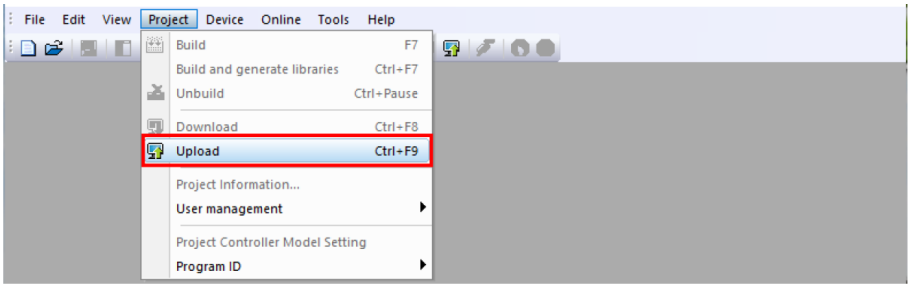
Model	Before	After
AS32AN02T-A	30uA	Less than 1 uA
AS64AN02T-A	30uA	Less than 1 uA

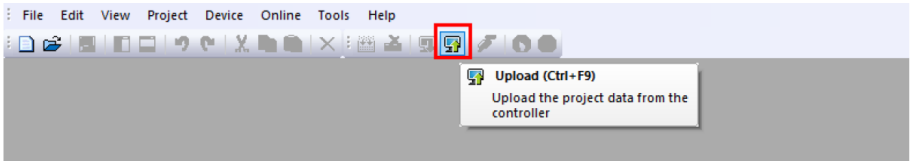
2.6 UPDATE – CANopen Builder V6.05 is released

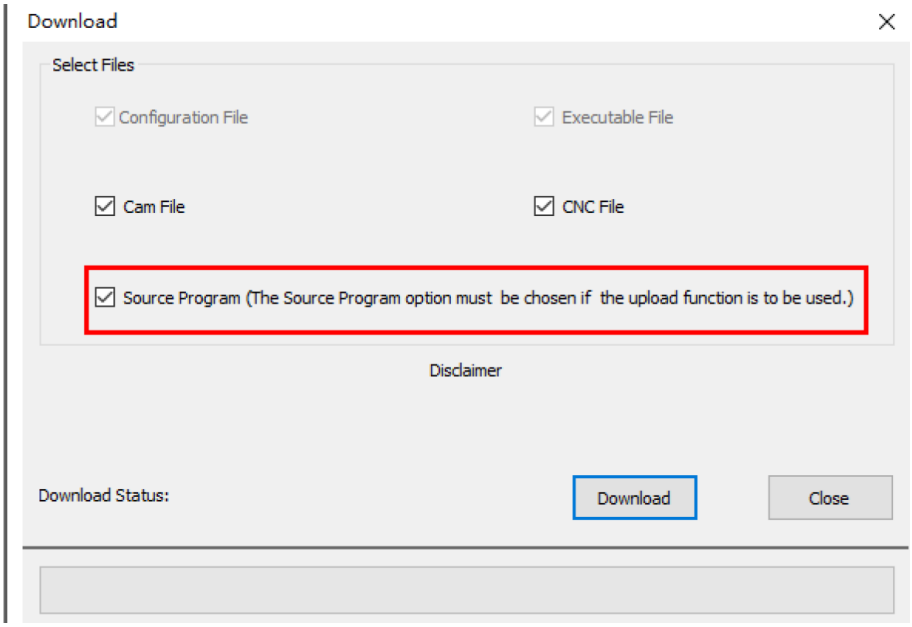
1. **AS524C-B and AS516E-B models are added.**
   After CANopen Builder is started, you can choose AS500 Series which includes **AS524C-B** and **AS516E-B**.



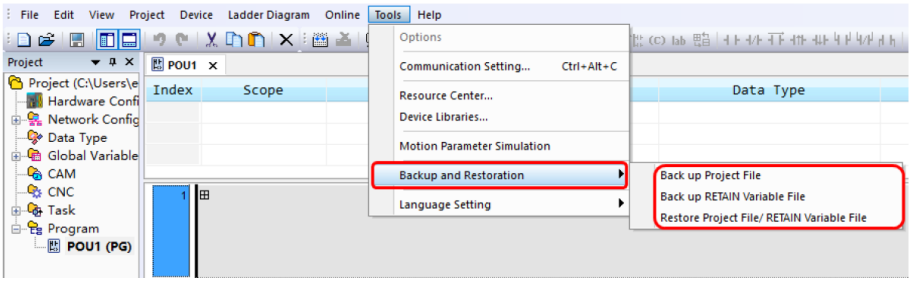
2. **Upload function is added.**
   After CANopen Builder is started, you can upload the items including configuration, programs, CAM, CNC and etc. in the controller to CANopen Builder via the **Upload** option on the menu or  icon. During the download, do select the Source Program option. Otherwise the upload command can not be performed.



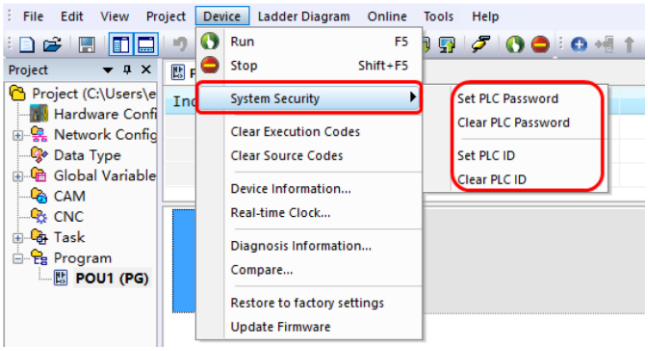


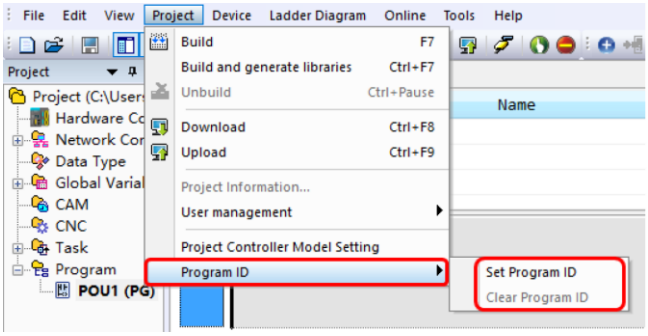


3. **Backup and Restoration functions are added**
   Through the **Backup** and **Restoration** option on the **Tools** menu, the items including configuration, programs, CAM, CNC, and many more, and the retentive data in the controller can be saved in the format of file to the computer or SD card. The backup file restored in the computer or SD card can be restored to the PLC with the **Restore Project File/RETAIN Variable File** function.

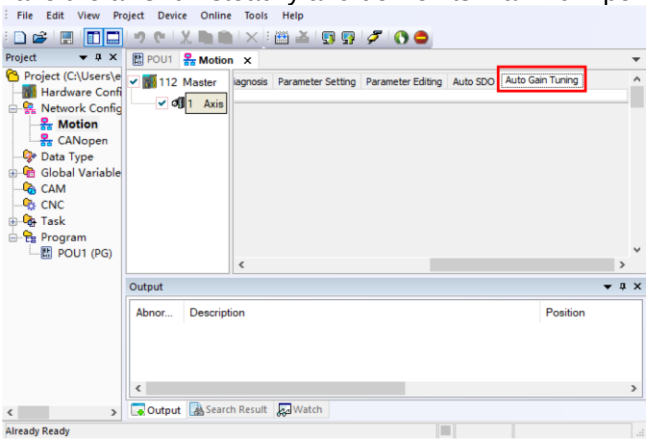


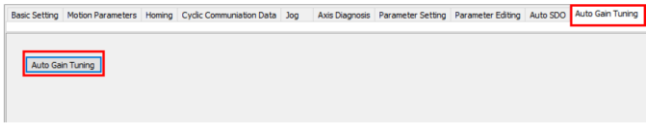
4. **Controller security functions are added**
   Through the **System Security** on the **Device** menu and **Program ID** on the **Project** menu, you can set the passwords for the PLC and program in order to effectively protect the developer's PLC and program.





5. **Auto Gain Tuning function is added**
   Perform the auto gain tuning for the axis in the **Motion** network under **Network Configuration** to have the axis run steadily and deliver its maximum performance.





2.7 UPDATE – COMMGR software version 1.11 is released

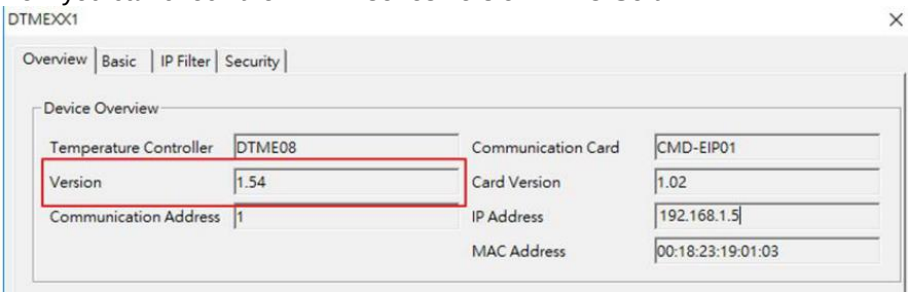
Changes

- COMMGR V1.11 now supports Russian for language selection.
- The simulators of AH5x1, AS300, and AS200 series are upgraded.

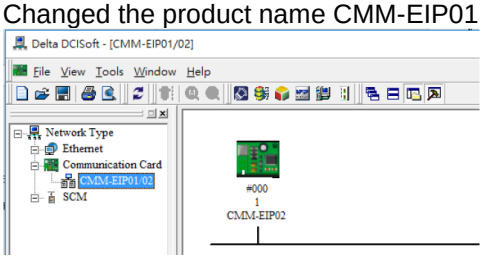
2.8 UPDATE – DCISoft is updated to V1.22

Changes

1. Now you can check the DTME series version in DCISoft V1.22



2. Changed the product name CMM-EIP01 to CMM-EIP01/02 shown in DCISoft V1.22

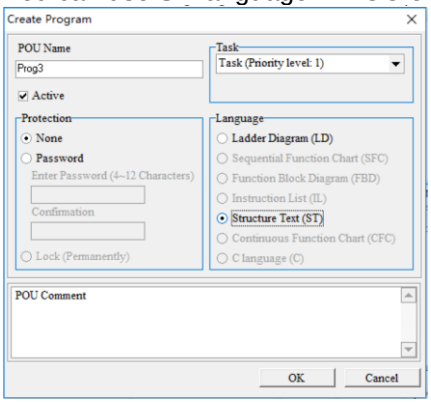


2.9 UPDATE – ISPSoft version 3.09 is released

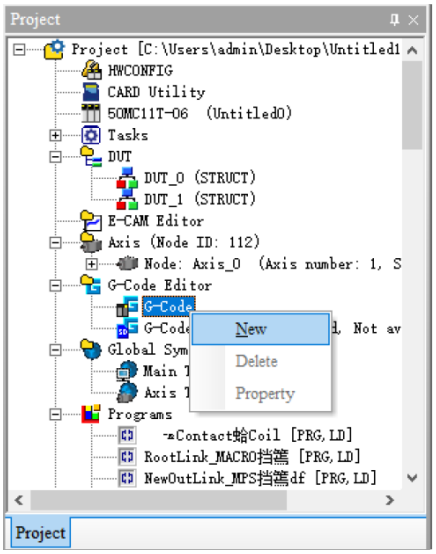
Changes

1. **New programming tools, including ST language and more are available for DVP15MC and DVP50MC in ISPSoft V3.09**
   After upgrading the project, you can use ST language and G-Code for programming.

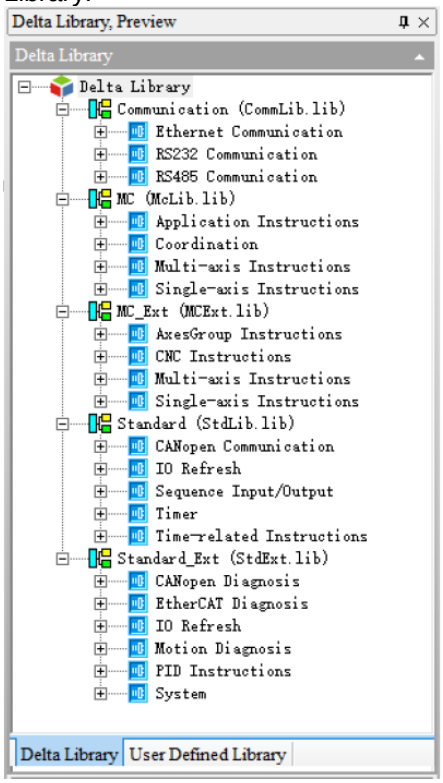
   - **ST language**
     You can use ST language in POU or FB for programming.



- **G-Code (available for FW V1.11.00 or later)**
You can use G-Code for programming by right-clicking G-Code Editor and then clicking **New** on the context menu.

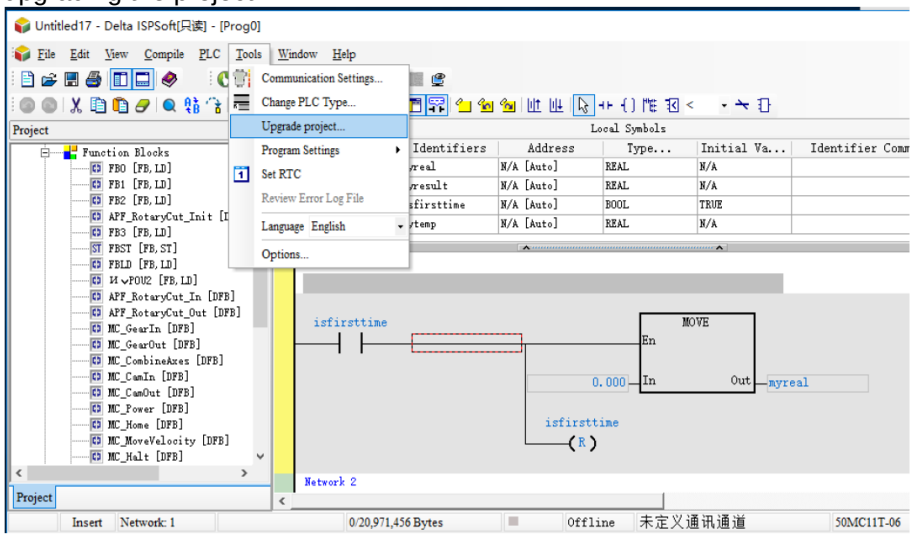


2. **ISPSoft V3.09 adds more instructions for DVP15MC / 50 MC in Delta Library**
Added three more types of instructions including Communication type instructions, MC_Ext type instructions and Standard_Ext type instructions for DVP15MC / 50 MC instructions in Delta Library.



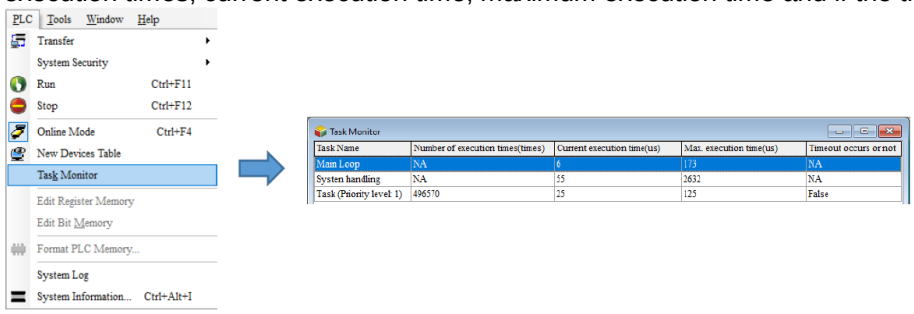
3. **You can use ST language, G-Code and all instructions in Delta Library in ISPSoft V3.09 by upgrading DVP15MC / 50MC project**
This function is for DVP15MC / 50MC projects created by ISPSoft V3.08 or previous versions. If you need to use programming tools, including ST language, G-Code and all instructions in Delta Library in ISPSoft V3.09, you need to upgrade the DVP15MC / 50MC project in ISPSoft V3.09 first.
But you need to note that after upgrading the project, the execution result may be slightly different and the project can NOT be restored or downgraded to previous version.

Remember to backup your project before upgrading and check if the result is the same after upgrading the project.



4. **ISPSoft V3.09 adds Task Monitor function for DVP15MC / 50MC**

When you are in online mode, you can monitor how the task is undertaken, including number of execution times, current execution time, maximum execution time and if the timeout occurs or not.

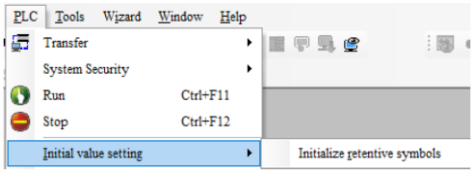


5. **Optimized the symbol initialization function for the following series:**

Model Series	NEW FW Version	Remarks
AH5X1-RS2	1.05.00	
AH5X1-EN	2.03.00	
AH560-EN2	1.02.00	
AS300	1.06.60	
AS200		
ES3	0.40.10	
AH Motion	2.03.00	
AS200 Simulator	1.06.60	Should work with COMMGR V1.11 or later
AS300 Simulator		

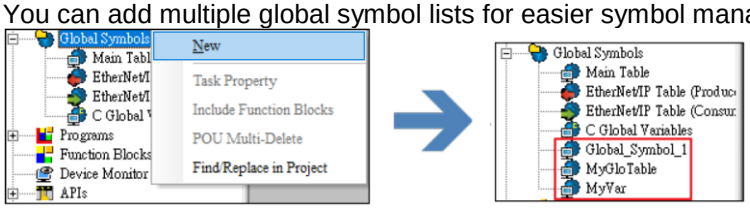
• You can activate the setting to initialize the symbols when PLC switches from Stop to Run in HWCONFIG for the supported model series (new FW) listed above. The default setting is disabled.
- Stop -> Run initialize the non-retentive symbols
- Stop -> Run initialize the retentive symbols

• You can also activate the setting to initialize the **retentive symbols** when PLC switches from Stop to Run by clicking PLC → Initial value setting → Initialize retentive symbols. As for **non-retentive** symbols, PLC clears the values in non-retentive symbols automatically when PLC switches from Stop to Run.



Note: This function is only available for supported model series (new FW) listed above. If the initialization function is enabled, the execution of initialization starts only for once, when the supported PLC switches from Stop to Run. For not supported model series (older FW), they follow the old initialization rules.

6. **Global Symbol function optimized**
   You can add multiple global symbol lists for easier symbol management.

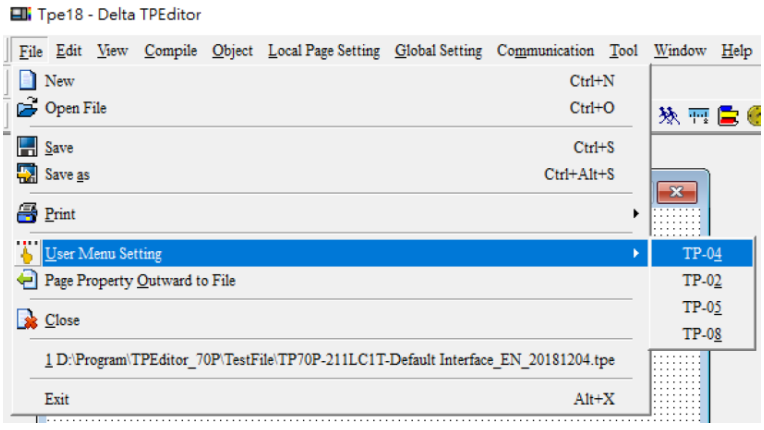


7. **Card Utility in ISPSoft V3.09 now supports AH Motion Series** to act as a module for connection.
8. **The following issues are fixed and functions are modified:**
   (1) Fixed an issue that CPU Module is shown in the Product List of AH Motion Series in HWCONFIG.
   (2) Fixed an issue the Device Information in HWCONFIG does NOT match with the actual device information of the AH Motion Series.
   (3) Fixed an issue that the sorting result of the address order in the variable table is incorrect.
   (4) Fixed an issue that the editing on the POU order in the Project Tree is not working. After editing and saving the project, the POU order in the Project Tree is still the same when you open the project again.
   (5) Fixed an issue that if the AH, AS, or AH Motion Series is set with PLC ID, after online editing, the program downloading is not working.
   (6) Fixed an issue that you cannot use the comparison functions including "= "and "<>" in the ST program.
   (7) Fixed an issue that you cannot compile the program if array1[0].0 := false in the ST program.
   (8) The compiler of AS200, AS300 and ES3 Series now supports using the bit format in special registers (e.g. SRxx.0 - SRxx.15).
   (9) Now the compiler supports the data type, Array of STRCUT.

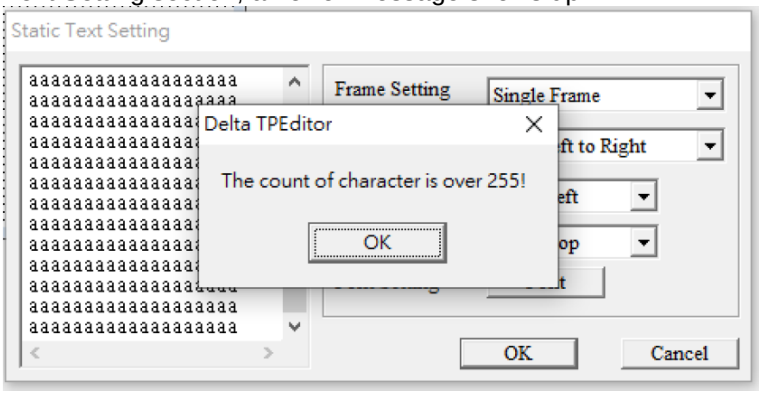
2.10 UPDATE – TPEditor version 1.96 is released

Changes

1. Fixed an issue that an error occurs when clicking the "User Menu Setting" option.



2. Added a new rule in the “Static Text Setting”: if you input more than 255 characters in the Static Text Setting section, an error message shows up.



3. Fixed an issue that one can find the components cannot be loaded properly, after opening a file page.

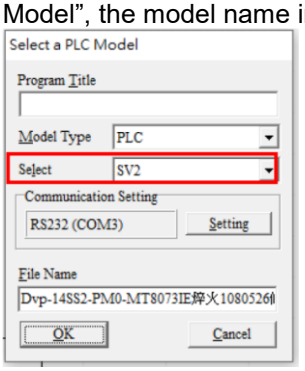
2.11 UPDATE – WPLSoft version 2.49 is released

Changes

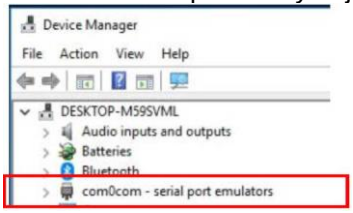
1. Upgrade the following DVP Series simulators:

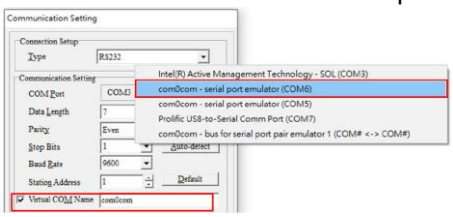
File name	DVP Series modules included
DVPSimulator_EH2	EH2 / SV / EH2-L
DVPSimulator_EH3	EH3 / SV2 / EH3-L
DVPSimulator_ES2	ES2 / EX2 / SA2 / SX2 / 10MC / ES2-E
DVPSimulator_SE	SE
DVPSimulator_SS2	SS2

2. Fixed the issue that even after cancelling what you have edited in the section of “Select a PLC Model”, the model name in the “Select” field is still changed.



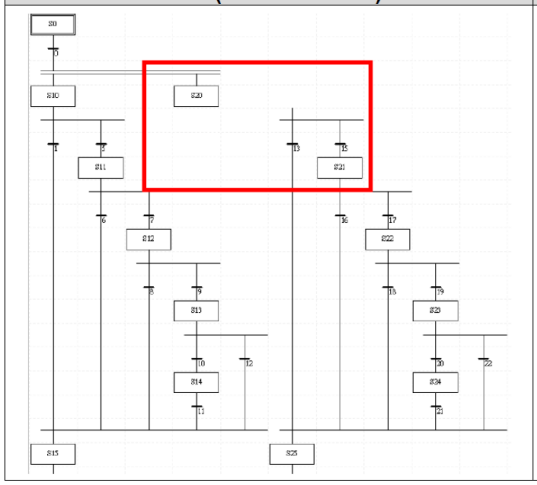
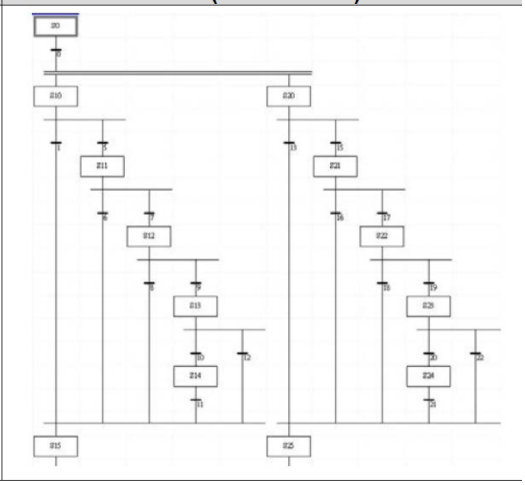
3. Fixed the issue that the PLC Link wizard cannot communicate with PLC.
4. Added a new function that existed virtual communication ports can be added for selection. Check the name of the existed virtual communication port that you needed to add in the “Device Setting”. Tick the option of Virtual COM String and enter the name of the existed virtual communication port that you just checked to include this communication port.





5. The programming capacity of the model VHVAC is changed from 10,000 to 14,000 steps.

6. Fixed the issue that an error occurs after converting the programming language from IL to SFC.

Before (Incorrect SFC)	After (Correct SFC)
	

7. The range of the data registers that VFD-MS300 supports is extended from D1000~D1199 to D1000~D1619.

2.12 UPDATE – DVP-ES2/EX2/ES2-C firmware updated from V3.62 to V3.64

Series	Models	Firmware Version	Release Date
DVP Series	ES2	V3.62→ V3.64	2019.12.17 (W1951)
	EX2		
	ES2-C		

Changes
Issues found in Firmware V3.62 (manufactured between weeks 42 and 45) are listed below. All of them can be fixed by upgrading firmware to V.3.63 or later. Contact Delta for a firmware upgrade.

1. **Issue:** When using TO instruction to write data to a module and simultaneously set M1183 to OFF to have the function of auto-mapping data exchange between CPU (D9900~D9979) and a module enabled, the module receives two different data and the actual output result will be affected.
   Solutions:
   I. Use only one of the followings to write data to a module. Choose TO instruction or set M1183 to OFF (function of auto-mapping data exchange between CPU (D9900~D9979) and a module enabled).
   II. Upgrade firmware to V.3.63 or later.
   Note: Be informed that even after upgrading firmware to V3.63 or later, it is NOT suggested to use TO instruction and set M1183 to OFF (function of auto-mapping data exchange between CPU (D9900~D9979) and a module enabled) at the same time, since this will prolong the PLC scan time.
2. **Issue:** When the module only opens one channel for data exchange and uses auto-mapping data exchange function to read and write data, an error occurs and data can NOT be read.
   Solutions:
   I. The module opens more than two channels for data exchange but the PLC program does NOT read or write data from channels that are not in use.
   II. Upgrade firmware to V.3.63 or later.

2.13 UPDATE – DVP-SS2 Series firmware updated from V3.48 to V3.60

Series	Models	Firmware Version	Release Date
DVP Series	DVP12SS211S	V3.48→ V3.60	2019.11.12 (W1946)
	DVP14SS211T/R		
	DVP26SS211T/R		

Changes
All the issues below can be fixed by upgrading firmware to V.3.51 or later. Contact Delta for a firmware upgrade.

1. **Issue:** While using LDZ and ORB instructions together, and then downloading PLC program to DVP-SS2 Series, a syntax error will occur.
2. **Issue:** Around 10% of the time that input point X4 may not function normally during the execution of an external interrupt, when PLC is supplied with power.
3. **Issue:** When DVP26SS2 switches from Run to Stop and M1033 is OFF, the output points Y6-Y13 may not stop outputting.
4. **Issue:** When M1035 is ON and uses input point X7 to switch the PLC to RUN or STOP; it is possible that the use of X7 to make the PLC RUN or STOP may fail at the first attempt. (It works fine in the second try though.)

Corrections and Improvements

1. Added M1700-M1715 flags to use PLC Link to read the read-only device components on the Slave through Modbus connection (04 code).
2. Changed the upper limit of the output frequency from 30K Hz to 20K Hz in PLSV instruction.
3. Changed the setting range of the response delay time (D1038) from 0-10,000 to 0-20. To avoid the chance of incorrect settings affecting the normal and smooth communication, if the setting is set over the limit 20, it will be treated as 20 (unit: 0.1ms).
4. Changed the internal measuring time unit from 1 ms to 0.1 ms in GPWM instruction to improve the accuracy of the ON/OFF output pulse cycle time. (The operation cycle of the PLC is not affected.)
5. Added a new parameter code K15 to calculate the local time for sunrise and sunset. Refer to ES2/EX2/SS2/SA2/SX2/SE&TP Operation Manual – Programming for more information.
6. Added a new rule that you cannot use 0 as a divisor in SCLP instruction.

2.14 UPDATE – DOPSoft V4.00.06.75 released

The new DOPSoft version V4.00.06.75 is released, enabling again the “Create Screen Data File” and “Create Auto Update Data File” functions.

2.15 NEW – CFP2000 user manual

A new version of the CFP2000 user manual has been published.
DELTA_IA-MDS_VFD-CFP2000_UM_EN_20190923.pdf. You can find it on the ftp-site.

2.16 UPDATE – TP04P Series firmware updated from V1.06 to V1.08

Series	Applicable Models	Firmware Version	Issue Date
TP04P	TP04P-22XA1T	V1.06→ V1.08	2019.12.30 (W1953)
	TP04P-22XA1R		
	TP04P-21EX1T		
	TP04P-21EX1R		
	TP04P-16TP1T		
	TP04P-16TP1R		
	TP04P-32TP1T		
	TP04P-32TP1R		

Changes

- Problem in firmware version 1.06 and lower:
  When the supplied power is lower than the operation voltage required, TP04P completes current execution and then saves data. But if TP04P is heavily loaded, including more than 10 objects to update on the current page and the PLC scan time exceeds 50 ms, the time for the PLC to save data will NOT be sufficient. In that case, there is a chance that the retained values in the latched area show 65535(is -1).
  Problem solved in firmware version 1.08: TP04P saves data instantly, when the supplied power is lower than the operation voltage required.

  Solutions
  1. Reduce the number of objects for updating and optimize the PLC program execution.
  2. Update PLC firmware to version 1.08.

2.17 NEW – PJB-24V300W: Open frame with 200% power boost

PJB-24V300W is part of the PJB series, which offers a power boost of 200% for 10 seconds. This reserve power allows for reliable start-up of electromechanical loads such as motors, pumps and actuators, thus eliminating the need for a higher power rated power supply, which is generally bigger in size and more expensive. There is built-in active PFC up to 0.99 and fulfils Harmonic Current Emission according to IEC/EN 61000-3-2. Other features include low leakage and inrush current. There is additional conformal coating on the PCBAs to provide protection against dust and chemical pollutants.

The product is certified for EMI standards according to EN 55032 and EMS according to IEC 61000-6-2. The product conform to major international safety standards according to IEC 60950-1/62368-1 standards and are fully compliant with RoHS Directive EU/2015/863 for environmental protection.

Highlights & Features

- Universal AC Input voltage range
- Up to 93.5% efficiency
- Power Boost of 200% for 10 seconds
- High PF up to 0.99 and conforms to harmonic current IEC/EN 61000-3-2, Class A
- Conformal coating on PCBA to protect against common dust and chemical pollutants
- Versatile configuration options: Open Frame, L Frame, Enclosed
- Remote ON/OFF option for selected models
- Design to meet Japan DENAN(PSE) @ 100-240VAC

3 Application

3.1 NEW – Application Notes

New application notes have been published recently on our ftp-site:

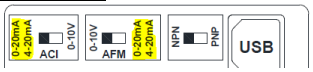
- Breeding Industry Notification - Delta Scaled Pig Breeding Integrated Solution.pdf
- Electronics Industry Notification - 6-Workstation High Speed Inner Winding Machine Solution.pdf
- IoT Industry Notification - Machine Tools Networking Solution.pdf
- Machine Tool Industry Notification - CNC Twin-Head Milling Machine Solution.pdf
- Machine Tool Industry Notification - Grinding Machine Combining OpenCNC.pdf
- Machine Tool Industry Notification - Multi-Workstation Glass Engraving & Milling Machine.pdf
- Delta MS Series Robot Controller- Palletizing Robot Solution.pdf
- Robot Industry Notification - Flexible Inductor Vision Positioning System Solution.pdf
- Textile Industry Notification - Yarn Covering Machine Solution.pdf
- Robot Industry Notification - Application of Delta IA Products In Wet Wipes Lid Applicator.pdf
- Robot Industry Notification - Medical Test Tube Transfer Solution.pdf

3.2 Testing ACI 4~20mA without external components

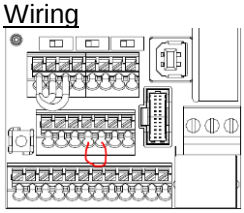
Before using ACI, you would often like to test its behaviour. Therefore you need a real 0/4~20mA current source. However, the drive (MS/ME300, C/CP/CFP2000) can do this without any external components. On MS300 you can even use the front potmeter for this with aid of a simple PLC-program.

Principle:
You can set AFM to output a constant current (change value by parameter) and connect it to ACI.

Example for MS300:
Parameters
Pr00-02=9 *(to have a fixed starting point)*
Pr00-20=2 *(analogue input)*
Pr03-00=0 *(AVI not used)*
Pr03-01=1 *(ACI for frequency command)*
Pr03-20=23 *(for constant voltage/current on AFM)*
Pr03-29=0 (4~20mA) or 2 (0~20mA). *Whenever this parameter is changed, all Pr03-57~03-62 are set to default)*
Pr03-31=1 (0~20mA) or 2 (4~20mA).

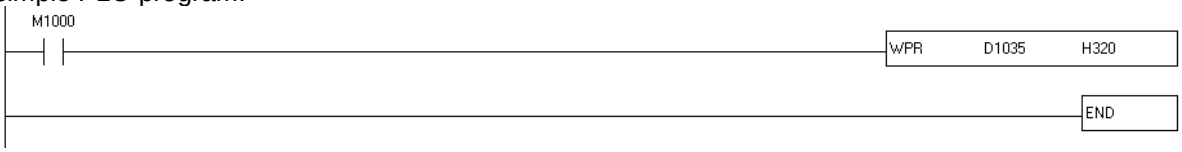
Switches


Set accordingly

Wiring

Connect AFM to ACI

Function
By changing the value in Pr03-32 0~100% you can set AFM current and subsequently change the $F_{command}$ on ACI.

Using the front potmeter:
On MS300 it is possible to use the front potmeter on the keypad to change Pr03-32 with aid of a very simple PLC-program.



Read D1035 (for frontpot VR) and output to Pr03-32 (H320). During testing, please disable writing to EEPROM by setting MIx=38 and activate MIx. This is to prevent frequent writing to EEPROM.

For ME300 and C/CP/CFP2000: See the user manual for the relevant parameters and switches. The principle is the same.
Using the front potmeter on these drives is not possible because C/CP/CFP2000 do not have one (you can use AVI with a potmeter instead) and ME300 doesn't have a built-in PLC and only one analogue input.

4 FAQ

4.1 VFD Series AC Motor Drives

Drives general

Q **What power cable section to use?**

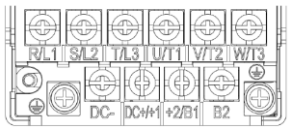
A *We often get questions about the power cable cross section that is needed in an application and the relevant info in the user manuals.*

In our user manuals, we state the cable cross section that the power terminals can accommodate.

It doesn't mean you always have to use the indicated cable.

Example: ME300 Frame B

Frame B



Models	Main Circuit Terminals R/L1, S/L2, T/L3, U/T1, V/T2, W/T3, DC-, DC+/+1, +2/B1, B2		
	Max. Wire Gauge	Min. Wire Gauge	Screw & Torque (±10%)
VFD0A8ME21AFNAA VFD0A8ME21AFSAA	4 mm² [12 AWG]	0.75mm² [18AWG]	M4 15 Kg-cm [13.0 lb-in.] [1.47 Nm]
VFD1A6ME21AFNAA VFD1A6ME21AFSAA		1.5mm² [16AWG]	
VFD2A8ME21AFNAA VFD2A8ME21AFSAA		2.5mm² [14 AWG]"	
VFD4A8ME21ANNAA VFD4A8ME21AFNAA VFD4A8ME21ANSAA VFD4A8ME21AFSAA VFD7A5ME23ANNAA VFD7A5ME23ANSAA		4 mm² [12 AWG]	
VFD1A5ME43AFNAA VFD1A5ME43AFSAA VFD2A7ME43AFNAA VFD2A7ME43AFSAA		0.75mm² [18AWG]	
VFD4A2ME43ANNAA VFD4A2ME43AFNAA VFD4A2ME43ANSAA VFD4A2ME43AFSAA		2.5mm² [14 AWG]	

The maximum cable section that these terminals can accommodate is 12AWG or 4mm².
The minimum cable section that these terminals can accommodate is 18AWG or 0.75mm².

Because the terminals of a frame size are always the same, it means that the power terminals of any ME300 in Frame B can accommodate a wire section between 0.75~4mm².

The actual wire section, that should be used, depends on the application: Current and Cable length.

- *Very long cables or cables for higher current should be thicker (but in this case not >4mm²).*
- *Short cables or cable for lower current can be thinner (but in this case not <0.75mm²).*

If you have to or want to use another cable section, please use lugs or ferrules.

The same applies to other frame sizes and Delta drives.

Q **How can I read drive series and model by serial communication?**
A *Read address 2110hex.*

Series	Code	2110h High byte	2110h Low byte	Type
C2000	20	14h	FFh	Read ID in Pr00-00 (Address 000h)
CP2000	21	15h		
CH2000	22	16h		
C200	25	19h		
CT2000	30	1Eh		
CFP2000	42	2Ah		
MH300	31	1Fh		
MS300	32	20h		
ME300	33	21h		
MH300-L	48	30h		
C2000HS	49	31h		
MH300HS	51	33h		
MS300HS	52	34h		
VFD-M	0	00h	ID (as in Pr00-00)	N/A
VFD-S	1	01h		
VFD-B	2	02h		
VFD-L	3	03h		
VFD-V/VE	4	04h		
VFD-F	5	05h		
VFD-E	6	06h		
VFD-E-C	7	07h		
VFD-EL	8	08h		
VFD-VL	9	09h		
VFD-DD	13	0Dh		
VFD-ED	17	11h		

MS300

Q **What is the function of MOx=42 (the description in manual is wrong)?**
A *In MS300 when MOx=42:*
- MOx active when output frequency >Pr.02-34.
- MOx deactivated when output frequency <Pr.02-58 after STOP command.
If Pr.02-34 <= Pr.02-58: MOx deactived when output frequency < Pr.02-34 after STOP command.

The next user manual will be updated.

C2000

Q **In firmware 2.06 I cannot find Pr11-17~Pr11-20 and Pr06-12 anymore?**
A *These are removed in 2.06.*
OC-stall prevention can now only be set in Pr06-03 and Pr06-04.

CMM-EIP01

Q **What is the meaning of the LEDs on CMM-EIP01?**

A *The explanation in the manual is not complete.*

Name	Indicator	Status	Correction Actions
NET1 (NS)	Red and Green flashing alternately	The product under itself test	n/a
	Red Light ON	IP address conflict	Check the IP address setting.
	Green Light ON	Network connection in normal status	n/a
	Red flashing	Network timeout/disconnected/changing IP	Check the Network setting.
	Green flashing	Network in operation	n/a
	OFF	Network not connected	Check if network cable has connected
NET2 (MS)	Red and Green flashing alternately	The product under itself test	n/a
	Red Light ON	The product has a un-recoverable issue	Hardware issue, please contact the distributor.
	Green Light ON	The product parameters have been set.	n/a
	Red flashing	The product has a recoverable error.	Check the parameter setting.
	Green flashing	The product parameters have not been set.	Set parameters.
	OFF	No power supply	Check the power supply

It will be added to the next version of the manual.

The 2 yellow LEDS are for engineering purposes and can be disregarded by the user.