 ● DVP-SA2/SS2/SX2 Series PLCs
 ● DVP-PM/MC series Motion Controllers
 ● Industrial Fieldbus Solutions

Project Manager
Pere Roura
Development of DVP Series

- AH500: Launched in September, 2011
- ES2: Built-in Ethernet, launched in September, 2011
- SE2: Built-in Ethernet, launched in September, 2011
- SX2, SS2, SA2, SE2: New, launched in July, 2011
- SS/SA/SX/SC: Mid-size PLC system
- EC
- ES/EX

Price

Function

32 bits, upgraded CPU
Award-winning PLC Design

red dot design award winner 2010

Golden Pin Design Mark

2009年度中国自动化领域创新节能产品
DVP-ES2 Series
Delta’s Second Generation PLCs

DVP-Slim series powerful CPU units

14SS2
- DI: 8
- DO: 6
- Left-side extension

12SA2
- DI: 8
- DO: 4
- Left-side extension

20SX2
- DI: 8, DO: 6
- Built-in USB port
- AI: 4 (12 bits)
- AO: 2 (12 bits)
- Left-side extension

EH2/SV
EH2/SV are upgraded to 32 bits, for
Doubled Program Capacity!
Features of DVP-SS2 Series (1)

**Program, commands and devices:**
- Fully compatible with DVP-SS series program with capacity up to 8k steps
- Command speed: Basic => 0.35 ~ 1μs, Application =>- 3.4μs
- Data register up to 5,000 words

**High-speed pulse input:**
- 8 points --- 4 * 20 kHz, 4 * 10 kHz
- Counting modes: U/D, U/D Dir, CW/CCW, A/B

**High-speed pulse output:**
- 4 points --- 10 kHz
- High-speed pulse outputs: Pulse, Pulse/Dir, A/B, CW/CCW
- Motion commands: Signal-axis motion and closed-loop positioning commands, with S-curve acceleration/deceleration
Features of DVP-SS2 Series (2)

**Peripherals:**
- 2 built-in serial ports: RS-232 and RS-485, settable Master/Slave
- PLC-Link communication speed up to 921k bps

**Extension modules:**
- Effectively combines DVP-Slim series modules
- Doubled system bus speed for special modules, e.g. analog I/O
- The PT/TC modules provide PID auto-tuning
- Digital I/O points up to 480 points

**Others:**
- 4 levels of protection: Main/subroutine passwords, PLC ID, retries
- Convenient application commands for Delta AC motor drives and servo drives
- Built-in Delta Q-Link protocol to enhance the speed of DOP series human machine interfaces
Features of DVP-SX2 Series (1)

**Program, commands and devices:**
- Fully compatible with DVP-SX series program with capacity up to 16k steps
- Command speed: Basic -- 0.35 ~ 1μs, Application --- 3.4μs
- Data register up to 10,000 words

**High-speed pulse input:**
- 8 points --- 2 * 100 kHz, 6 * 10 kHz
- Counting modes: U/D, U/D Dir, CW/CCW, A/B

**High-speed pulse output:**
- 4 points --- 2 * 100 kHz, 2 * 10 kHz
- High-speed pulse outputs: Pulse, Pulse/Dir, A/B, CW/CCW
- New motion commands: Signal-axis motion and closed-loop positioning commands, with S-curve acceleration/deceleration
- 2 axes of synchronous motion control
Features of DVP-SX2 Series (2)

Peripherals:
- 3 built-in serial ports: RS-232, RS-485, USB, settable Master/Slave
- Built-in analog I/O: 12-bit AD x 4 CHs, 12-bit DA x 2 CHs
- PLC-Link communication speed up to 921k bps

Extension modules:
- Effectively combines DVP-Slim series modules
- Doubled system bus speed for special modules, e.g. analog I/O
- Connectable with left-side high-speed extension modules
- The PT/TC modules provide PID auto-tuning.
- Digital I/O points up to 480 points

Others:
- 4 levels of protection: Main/subroutine passwords, PLC ID, retries
- Convenient application commands for Delta AC motor drives and servo drives
- Built-in Delta Q-Link protocol to enhance the speed of DOP series human machine interfaces
Features of DVP-SA2 Series (1)

**Program, commands and devices:**
- Fully compatible with DVP-SA program with capacity up to 16k steps
- Command speed: Basic -- 0.35 ~ 1μs, Application --- 3.4μs
- Data register up to 10,000 words

**High-speed pulse input:**
- 8 points --- 3 * 100 kHz, 5 * 10 kHz
- Counting mode: U/D, U/D Dir, CW/CCW, A/B
- A/B phase up to 50 kHz * 1

**High-speed pulse output:**
- 4 points --- 2 * 100 kHz, 2 * 10 kHz
- High-speed pulse output: Pulse, Pulse/Dir, A/B, CW/CCW
- Motion commands: --- Signal-axis motion and closed-loop positioning commands, with S-curve acceleration/deceleration
- 2 axes of synchronous motion control
Features of DVP-SA2 Series (2)

**Peripherals:**
- 3 built-in serial ports: RS-232*1 and RS-485 * 2, settable Master/Slave
- PLC-Link communication speed up to 921k bps

**Extension modules:**
- Effectively combines DVP-Slim series modules
- Doubled system bus speed for special modules, e.g. analog I/O
- Connectable with left-side high-speed extension modules
- The PT/TC modules provide PID auto-tuning.
- Digital I/O points up to 480 points

**Others:**
- 4 levels of protection: Main/subroutine passwords, PLC ID, retries
- Convenient application commands for Delta AC motor drives and servo drives
- Built-in Delta Q-Link protocol to enhance the speed of DOP series human machine interfaces
**Application in Printing Machines**

**Left-side advanced I/O modules:**

- **DVP02LC-SL**  
  Load cell/tension control module

- **DVP04AD-SL**  
  06-bit analog input module

- **DVP04DA-SL**  
  16-bit analog output module

- **DVPSCM-SL**  
  Serial communication module
The analog input module:

- 4 input (1 to 5V, 0 to 5V, 0 to 10V, -10 to 10V, 4 to 20mA, 0 to 20mA)
- Resolution: 1/32,000, 16-bit
- Conversion time: 250\(\mu\text{s}/\text{point}\)
- Wire burnout detection (1 to 5V, 4 to 20mA)
- Offset gain setting
- Left-side extension: Converting analog signals to binary data in high speed.
The analog output module:

- 4 input (0 to 10V, -10 to 10V, 4 to 20mA, 0 to 20mA)
- Resolution: 1/32,000, 16-bit
- Conversion time: 250\mu s/point
- Offset gain setting
- Left-side extension: Converting to binary data to analog signals in high speed.
The analog output module:

- 4 input (0 to 10V, -10 to 10V, 4 to 20mA, 0 to 20mA)
- Resolution: 1/32,000, 16-bit
- Conversion time: 250μs/point
- Offset gain setting
- Left-side extension: Converting to binary data to analog signals in high speed.
**Q1:** In my huge system, I need many Modbus serial devices, but one RS-485/422 port can only connect to 32 devices. What can I do?

**Q2:** When there are sensors, meters, UPS or PLCs, and frequency inverters connected in a system but of different communication formats, what can I do?

**Q3:** When the RS-232/RS-485 port on a PLC is connected with some device but I still need to modify or re-download the PLC program, what can I do?

**Q4:** When a PLC is connected to many frequency inverters and servos, and the RS-485 signal interference leads to a malfunction, what can I do?
Advanced Modbus data exchange (Modbus Advance)

- Temperature controller
- PLC
- Frequency inverter
- Power meter
- Card reader
- Other devices

Through RS-232 or Ethernet

Special communication format: UD-Link

DCI Soft

DVPSCM12-SL (2)
Max. 8 DVPSCM12-SL modules are extendable from DVP-PLC

- Only one PLC is needed. Cost is saved by left-side extensions.
- Every DVPSCM12-SL has 2 serial ports, every port can be RS-422 or RS-485.
- Every port is connectable to 32 serial communication devices, supporting max. 460,800 bps.
- Every port has full isolation between communication and power supply, built-in with 120Ω termination resistor and switches.
- Supports slave mode. Can be the COM3 for PLC program upload/download.
- User-defined communication (UD Link) connects to special communication formats of other brands.

Applicable PLCs: DVP-SV, DVP-SX2, DVP-SA2, DVP-EH2-L
Delta Motion Control Products

- CANopen motion controllers
  - DVP-PM
  - DVP10MC11T
  - CANopen card, DMCNET card
  - DVP10PM00M
- DVP-AH/ MC modules
  - CANopen/DMCNET advanced motion control modules
- DVP-AH/ PM modules
  - Pulse motion control modules
DVP-10PM General Purpose Motion Controller

- PLC MPU, high-speed pulse input/enhanced output functions
- Program capacity: 64k steps
- 6 high-speed pulse counters (Open Collector*4, Differential*2), built-in digital filter
- 8 high-speed pulse outputs (Open Collector*4, Differential*4), for differential type, max. 1 MHz.
- Electronic cam
- 8 high-speed captures (mark correction, frequency measurement), comparative output, mark/mask functions (for bag making)
- Fast connection to all kinds of devices; supports 1,200 to 460,800 bps
- Supports CANopen motion control cards (built-in Ethernet port)
  - Provides Modbus/TCP
  - Supports CANopen DS301 and DS402
- Supports function blocks
Applications of DVP-10PM

Cutting Machinery

Including plasma cutting machines, 4-axis robot welding machines, LCD panel conveyors, wafer cutting machines, high-speed cutting machinery (e.g. packaging machines, label sleeving machines, high-speed sealing machines)

Lathes

For the electronics industry, military industry, automobile/motorbike industry, mechanical component industry, ironware industry, electromechanical industry
DVP-10MC

- CANopen
- LED
- RUN/STOP
- Reset
- Left-side extension
- COM1 (RS-232)
- COM2 (RS-485)
- Output (4)
- Encoder
- Input (8)
- Ethernet
- Power input (24 VDC)
DVP-10MC CANopen based Motion Controller

**Advanced motion control functions:**
- Supports single-axis, multi-axis motion control commands; complies with PLCopen standard
- Supports electronic cam, electronic gear, rotary cutting and flying shear
- Supports CNC, G-Code can be dynamically or statically executed.
- Built-in with an encoder port; supports differential input of max. 250 kHz
- The host software supports motion networks, motion programs, logical programs, electronic cam, editing/download of G-Code and device monitoring.

**Large capacity:**
- Controls max. 16 axes; built-in virtual axes
- Max. 480 I/O points
- Supports advanced left-side modules

**High-speed bus system:**
- The max. CANopen communication between DVP-10MC and servo drive can be 1M bps.
- Supports high-speed Ethernet transmission at 100M bps

**User-friendly interface:**
Industrial Fieldbus Solutions
Delta Industrial Automation Solutions

Delta industrial automation products offer stable, fast and accurate solutions through Industrial networks.

Delta Ethernet products transcend the limits on transmission distance, offering 10/100M bps high-speed transmission and efficient remote monitoring.

DMCNET

Delta DMCNET offers 10M bps communication speed, constructing a real-time control system which supports multi-axis synchronous motions. The system can be connected to servo motors, remote digital or analog I/O modules, step motors, DD motors, linear motors, MFO modules, and more.

DeviceNet

Delta DeviceNet products support interconnections among products of different brands and wire-saving network topology. The 590k bps stable and noise resistant fieldbus data transmission is suitable for harsh industrial sites.

PROFIBUS

Delta PROFIBUS products support 12M bps communication speed and are suitable for distributed automated industrial control networks.

Modbus / RS-485

Delta Modbus serial products integrate easily with devices of other brands, e.g., the communication among RS-232, RS-422, RS-485 and custom-defined formats, offering greater flexibility for on-site applications.

CANopen

Delta CANopen products support CANopen DS301 and DS402 protocols, and are able to achieve multi-axis, high-speed and complex motion control with max. speed 1M bps.
DVPEN01-SL

Ethernet module-
Master/Slave
• Modbus TCP protocol
• Client: 8 connections
• Server: 16 connections

RTU-EN01

Ethernet remote I/O
• Modbus TCP Master
• 8 S-type AI/O module
• 256 S-type DI/O module

IFD9506

Ethernet-Modbus gateway
• Modbus TCP Master/Slave
• Client: 4 connections
• Server: 16 connections
• E-Mail Alarm (3 DI)
• 32 RS-485 devices
• RS-485 isolation

IFD9507

EtherNet/IP-Modbus Gateway
• EtherNet/IP protocol
• Client: 4 connections
• Server: 16 connections
• E-Mail Alarm (3 DI)
• 32 RS-485 devices
• RS-485 isolation
**DeviceNet Solutions**

**DVPDNET-SL**  
DeviceNet module - Master/Slave  
- 63 slaves  
- Max. baudrate: 500k bps  
- Length: Max. 500m

**DVPDT01-S**  
DeviceNet module - Slave  
- For DVP-S PLC  
- Max. baudrate: 500k bps

**DVPDT02-H2**  
DeviceNet module - Slave  
- For DVP-EH2 PLC  
- Max. baudrate: 500k bps

**RTU-DNET**  
DeviceNet remote I/O module  
- 256 DI/O  
- Baudrate: 500k bps

**IFD9502**  
DeviceNet-Modbus gateway  
- For RS-485 products  
- 500k bps (Max)

**DN02**  
DeviceNet-Modbus gateway  
- For inverters  
- Max. baudrate: 500k bps

**CME-DN01**  
DeviceNet-Modbus gateway  
- For VFD-E inverters  
- Max. baudrate: 500k bps
CANopen Solutions

**DVPCOPM-SL**
- CANopen module - Master
- 110 slave
- Baudrate: 1M bps
- Length: 1,000m
- Interpolation
- Synchronization

**DVPCP02-H2**
- CANopen module - Slave
- For DVP-EH2 PLC
- Baudrate: 1M bps

**IFD9503**
- CANopen - Modbus Gateway
- For RS-485 devices
- Baudrate: 1M bps

**ASDA-A2**
- CANopen servo drive
- Interpolation
- Synchronization
- Baudrate: 1M bps

**VFD-EC**
- CANopen inverter
- Baudrate: 1M bps

**CME-COP01**
- CANopen-Modbus converter
- For VFD-E inverters
- Baudrate: 1M bps
DeviceNet/ CANopen Solutions

**TAP-CN01**

DeviceNet/ CANopen distribution box
- Type: 1 trunk to 2 branches
- Open style terminal
- 120 Ohm terminal resistor
- Switch

**TAP-CN02**

DeviceNet/ CANopen distribution box
- Type: 2 trunk to 3 branches
- Open style terminal
- 120 Ohm terminal resistor
- Switch

**TAP-CN03**

DeviceNet/ CANopen distribution box
- Type: 2 trunk to 3 branches
- RJ 45 terminal
- 120 Ohm terminal resistor
- Switch

**TAP-CB01**

DeviceNet trunk
- ODVA standard

**TAP-CB02**

DeviceNet branch
- ODVA standard

**TAP-CB03**

- CANopen
- Length: 0.5 m
- For Delta CANopen wiring

**TAP-CB04**

- CANopen
- Length: 1 m
- For Delta CANopen wiring
**IFD Series Gateways**

- **IFD8500**
  - RS-232-RS-485/422 communication module

- **IFD8510**
  - RS-485/422 isolated repeater

- **IFD8520**
  - Addressable RS-485/RS-422 to RS-232 isolated converter

- **IFD9502**
  - DeviceNet-Modbus gateway

- **IFD9503**
  - CANopen-Modbus gateway

- **IFD9506**
  - Ethenet-Modbus gateway

- **IFD9507**
  - EtherNet/IP-Modbus gateway

- **IFD6500**
  - RS-485/USB converter

- **IFD6503**
  - CAN/USB converter

- **IFD6530**
  - RS-485/USB converter for C2000 series