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

Project Manager

Pere Roura

Development of DVP Series

Price

AH500 — *new*

Mid-size PLC system

Launched in September, 2011

Small PLC

32 bits, upgraded CPU

EH3/SV2 — *new*

EH2/SV

Launched in July, 2011

SX2, SS2, SA2, SE2 — *new*

SS/SA/SX/SC

SE2: Built-in Ethernet, launched in September, 2011

ES/EX → ES2

EC

Function
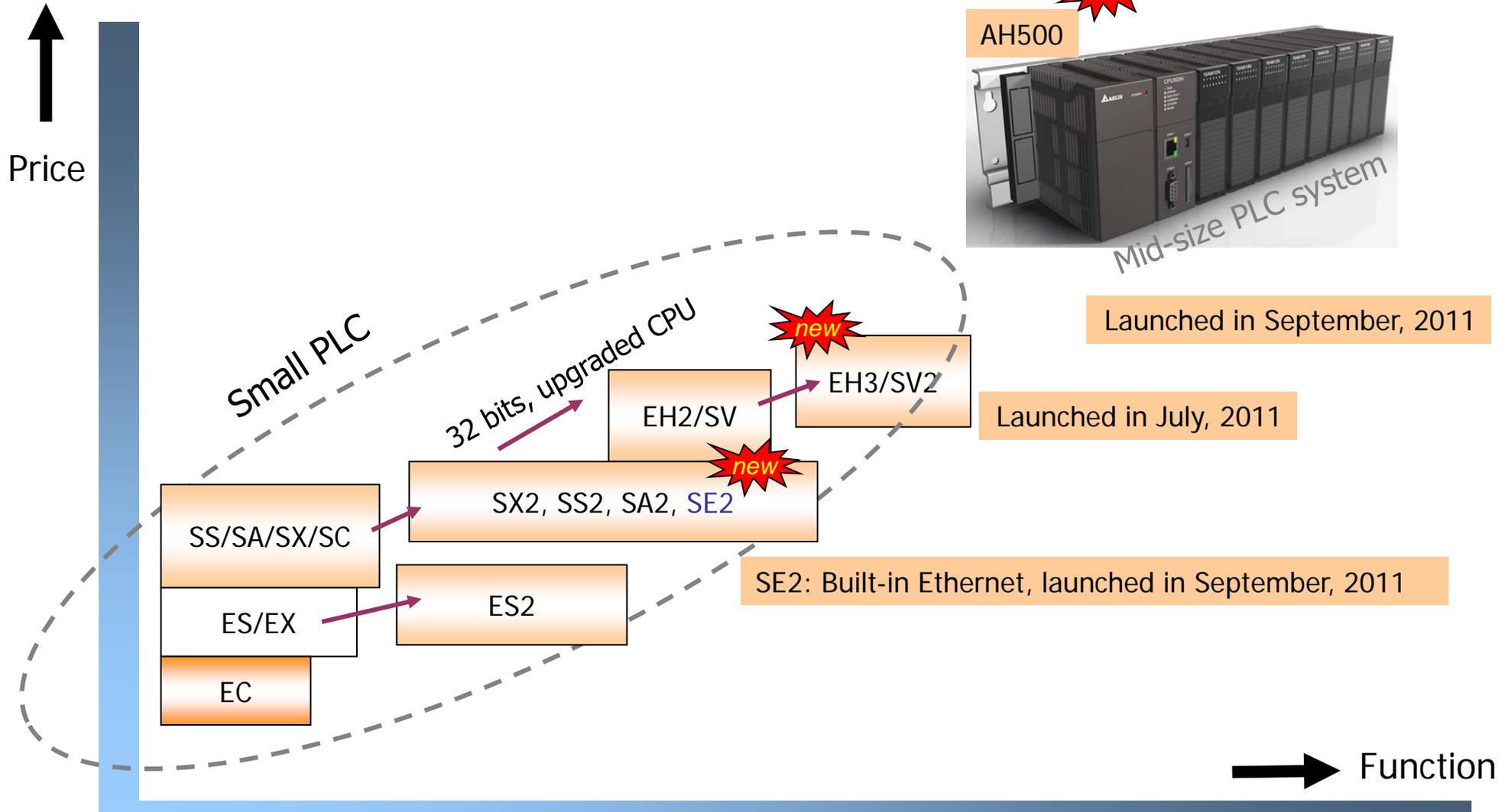
Award-winning PLC Design

DVP-ES2 Series

Input terminals

Main Processing Unit (MPU)

RS-232 COM port (COM1)

RS-485 COM port (COM2/COM3)

Output terminals

Digital Input Module   **Digital Output Module**   **Digital I/O Module**   **Analog I/O Module**   **Temperature Measurement Module**

DVP-ES2 MPU

DVP20EX2   DVP16ES2   DVP24ES2   DVP32ES2   DVP40ES2   DVP60ES2

Digital Input Modules

08XM211N   16XM211N

Digital Output Modules

08XN211R   08XN211T   16XN211R   16XN211T   24XN200R   24XN200T

Temperature Measurement Modules

04PT-E2   04TC-E2

Digital I/O Modules

08XP211R   08XP211T   16XP211R   16XP211T   24XP200R   24XP200T   32XP200R   32XP200T

Analog I/O Modules

02DA-E2   04DA-E2   04AD-E2   06XA-E2

Delta's Second Generation PLCs

DVP-Slim series powerful CPU units

14SS2

12SA2

20SX2

EH2/SV

EH2/SV are upgraded to 32 bits, for

Doubled Program Capacity!

- DI: 8
- DO: 6

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

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

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
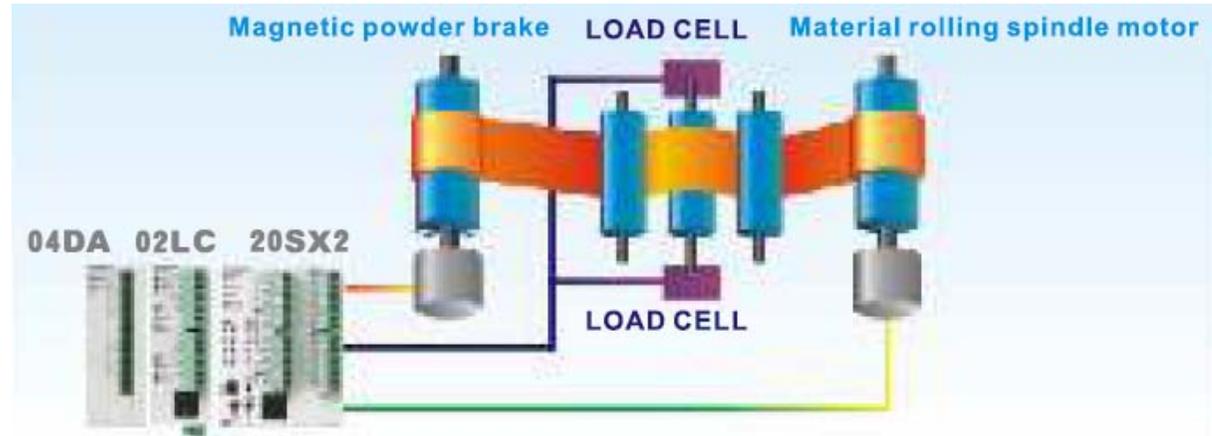
Left-side advanced I/O modules:

DVP02LC-SL
Load cell/tension control module

DVP04DA-SL
16-bit analog output module

DVP04AD-SL
06-bit analog input module

DVPSCM-SL
Serial communication module

DVP04AD-SL

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: 250μs/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: 250μs/point

- Offset gain setting

- Left-side extension: Converting to binary data to analog signals in high speed.
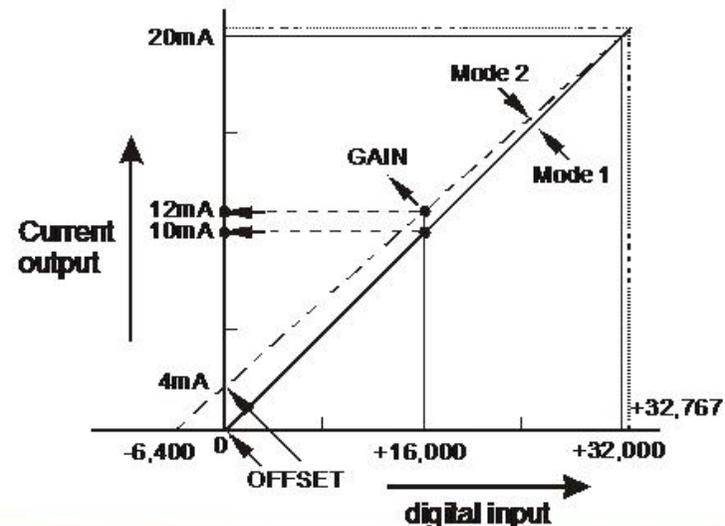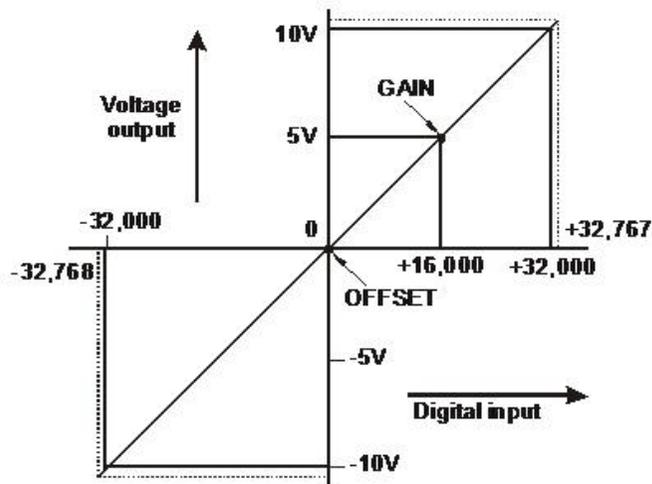
The analog output module:

- 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.
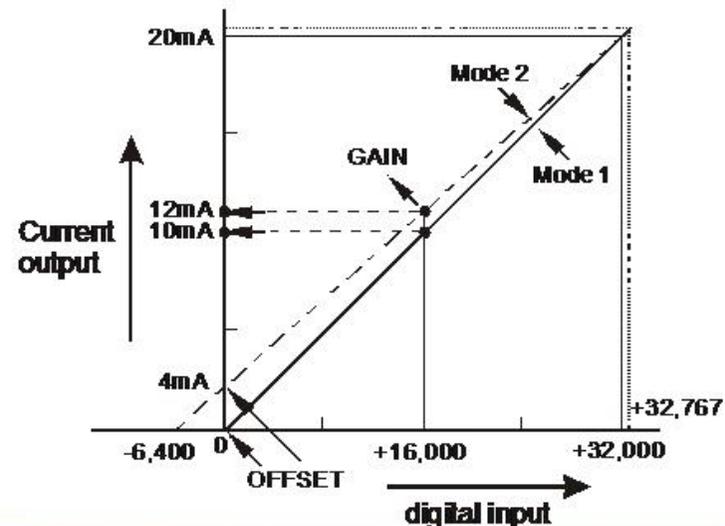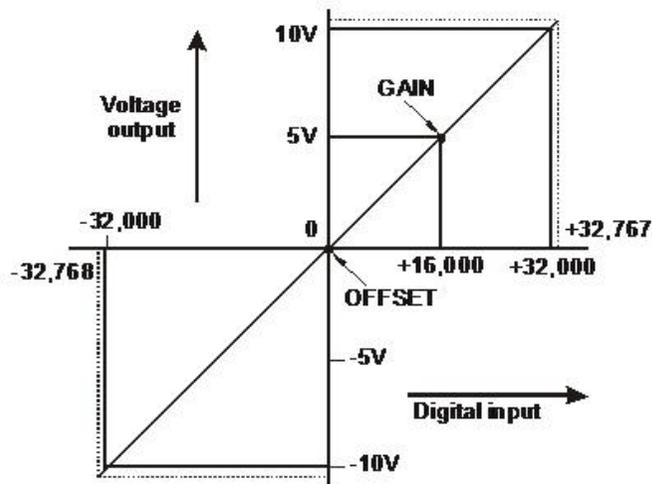
Q1:
In my huge system, I need many Modbus serial devices, but one RS-485/422 port can only connect to 32 devices. What can I do?

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?

DVPSCM12-SL (2)

Advanced Modbus data exchange (Modbus Advance)

Through RS-232 or Ethernet

DCISoft

Special communication format: UD-Link
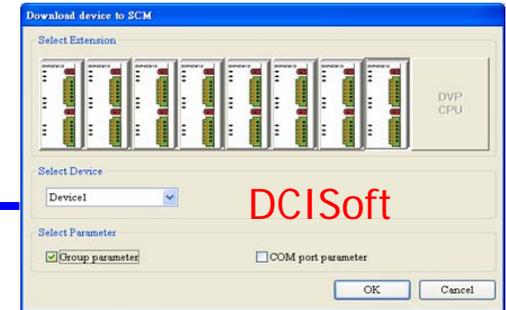
Temperature controller

PLC

Frequency inverter

Power meter

Card reader

Other devices

DVPSCM12-SL (3)

Max. 8 DVPSCM12-SL modules are extendable from DVP-PLC
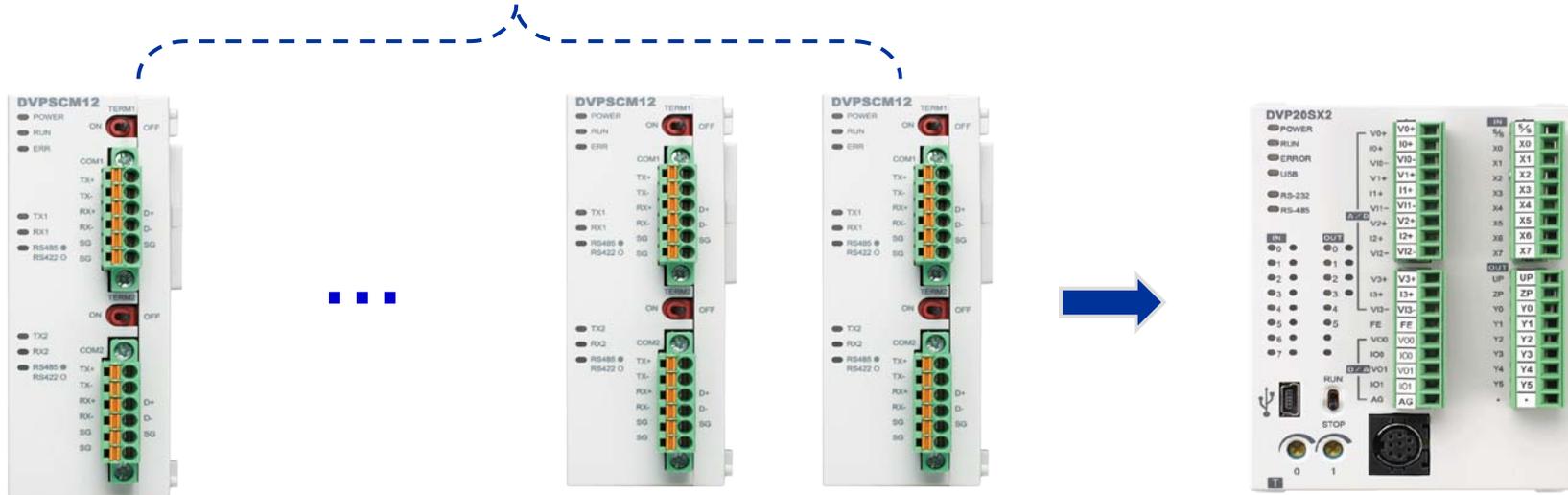
- Only one PLC is needed. Cost is saved by left-side extensions.
- Every DVPSCM12-SL has 2 serial ports, every port can be RS-422 or RS-485.
- Every port is connectable to 32 serial communication devices, supporting max. 460,800 bps
- Every port has full isolation between communication and power supply, 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
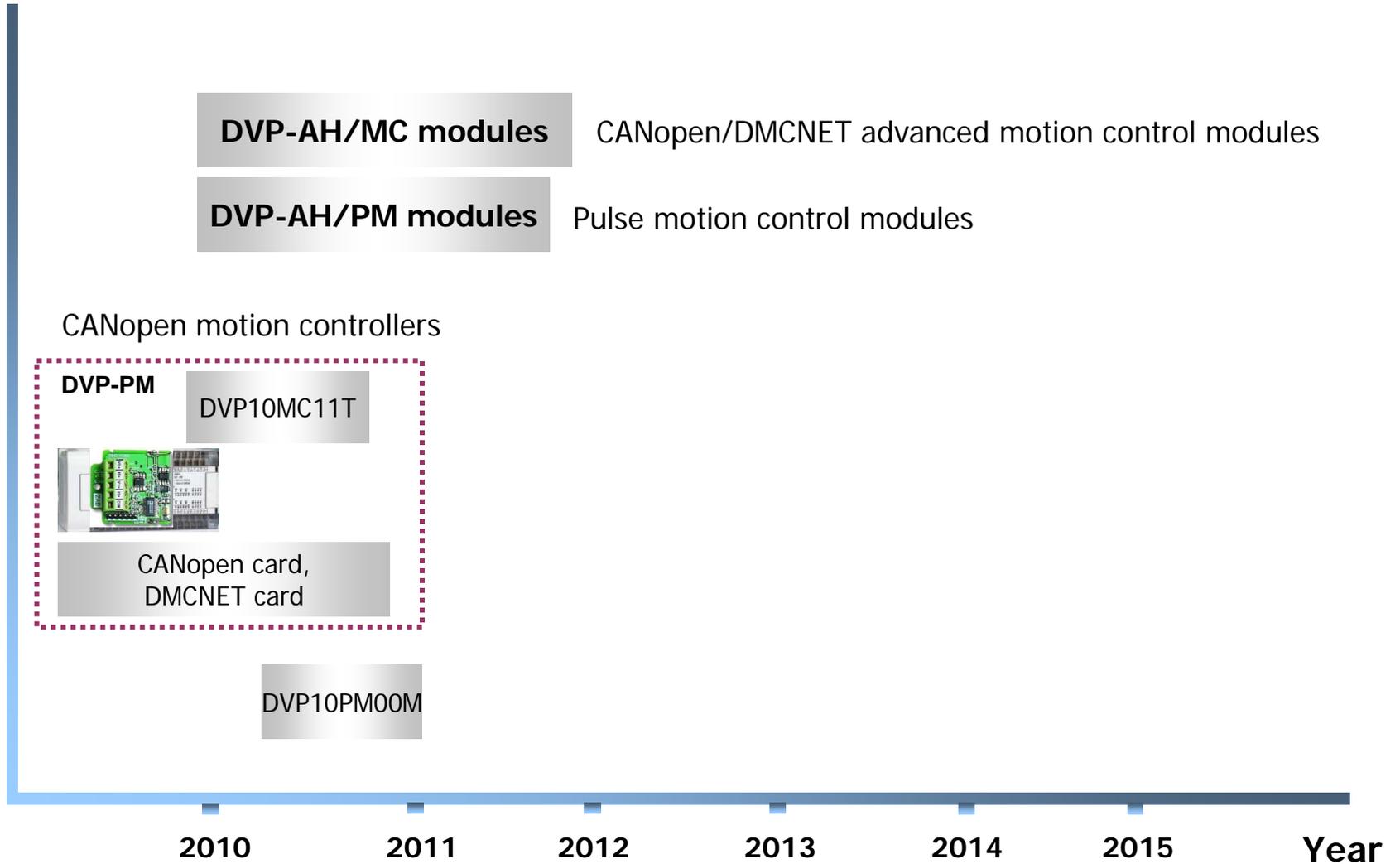
DVP-10PM General Purpose Motion Controller

- 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)

Input (8)

Encoder

Output (4)

Ethernet

COM2 (RS-485)

Power input (24 VDC)

DVP-10MC CANopen based Motion Controller
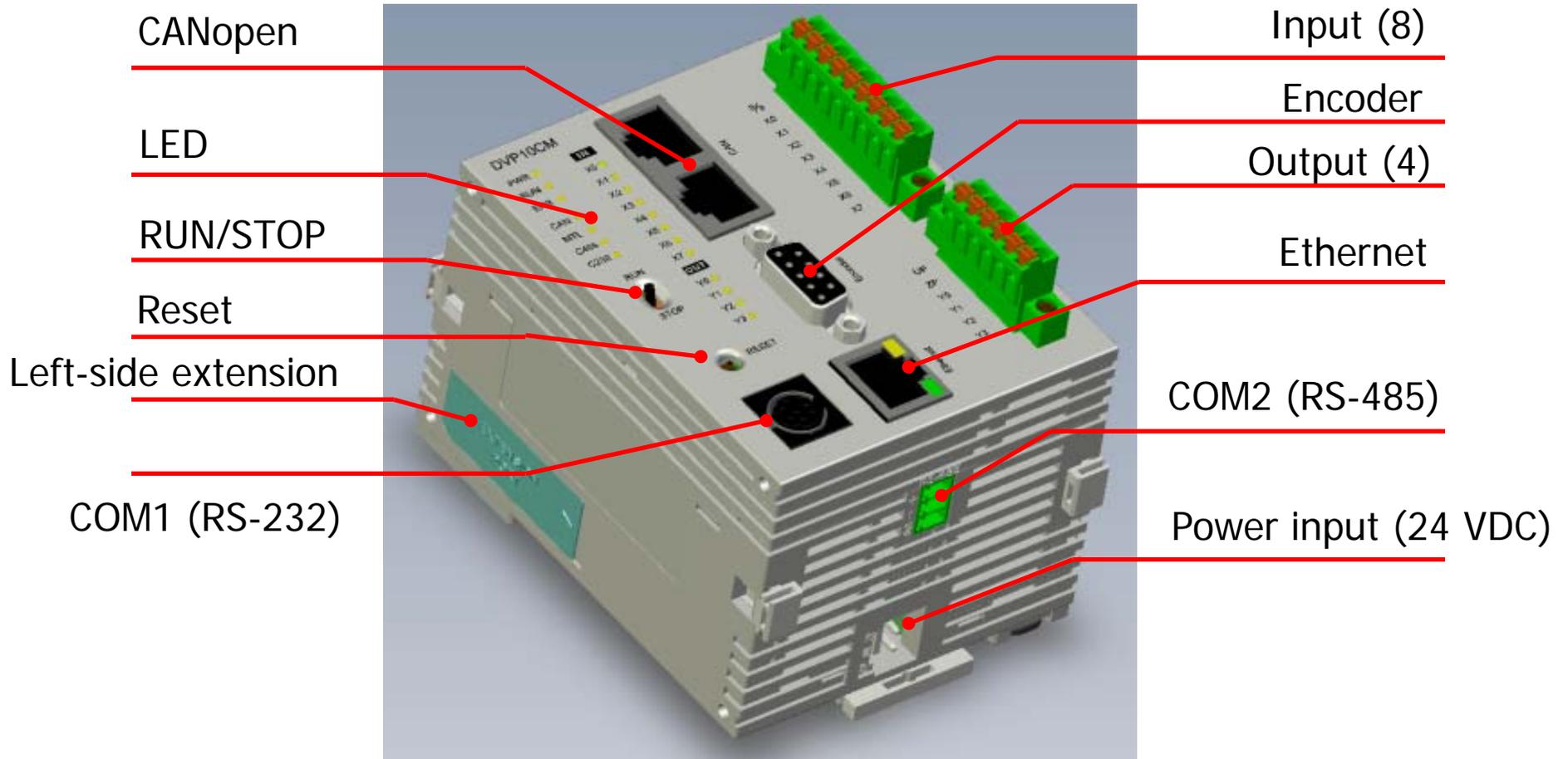
Advanced motion control functions:

- 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.

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

Large capacity:

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

User-friendly interface:
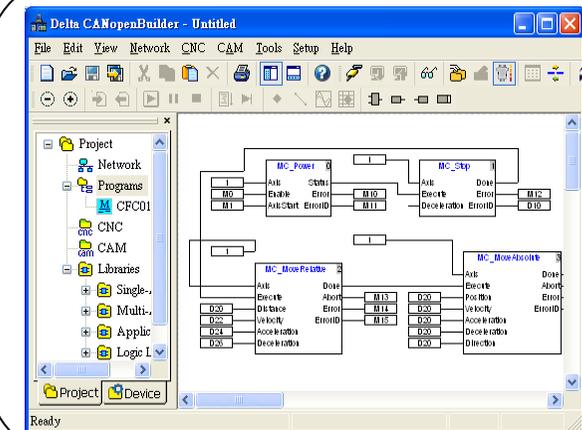
Industrial Fieldbus Solutions

Delta Industrial Automation Solutions

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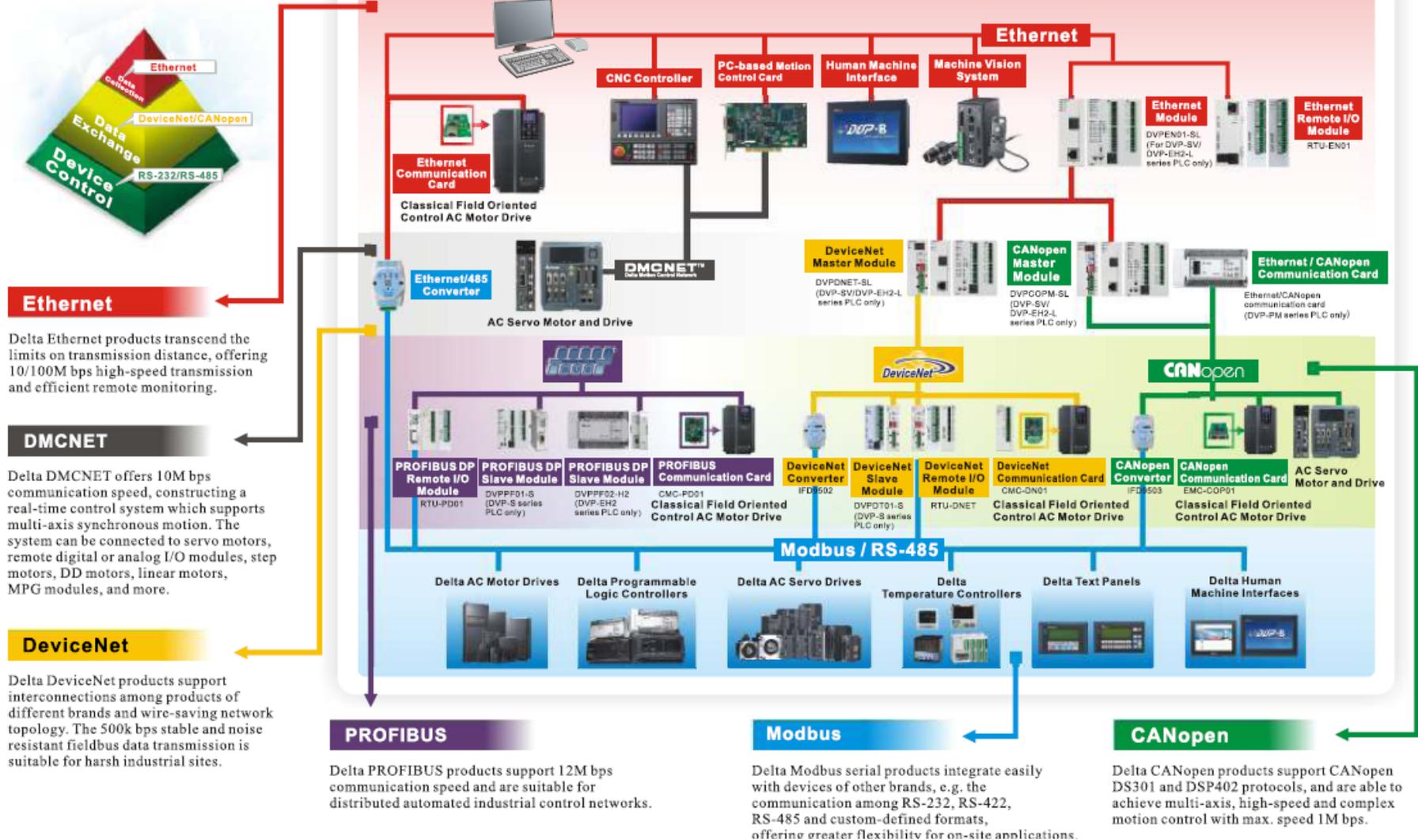
Ethernet

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 motion. The system can be connected to servo motors, remote digital or analog I/O modules, step motors, DD motors, linear motors, MPG modules, and more.

DeviceNet

Delta DeviceNet products support interconnections among products of different brands and wire-saving network topology. The 500k 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

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 DSP402 protocols, and are able to achieve multi-axis, high-speed and complex motion control with max. speed 1M bps.

Ethernet Solutions

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
- Fro 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
- RJ45 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

Q & A