



# Smart Manufacturing

Automation for a Changing World

## Delta Industrial Automation

2019 Full Range Catalogue



# About Delta



**Bruce Cheng**  
Founder and Honorary Chairman



**Yancey Hai**  
Chairman

## Corporate Mission

To provide innovative, clean, and energy-efficient solutions for a better tomorrow

Delta was founded in 1971. Delta offers energy efficient power products, switching power supplies with efficiency over 90%, telecom power with up to 98%, and PV inverters with up to 98.8% efficiency. We have also developed the world's first server power supply certified as 80 Plus Titanium. We regularly invest 6% to 7% of our annual sales revenues in R&D and have worldwide R&D facilities in China, Europe, India, Japan, Singapore, and the U.S.





















Delta is a frequent recipient of international awards and related recognition for innovation, design, energy management and corporate social responsibility. Since 2011, Delta has been selected each year for the prestigious Dow Jones Sustainability™ World Index (DJSI World Index). In 2018, we were also included in the DJSI Emerging Markets Index for the 6th consecutive year. In 2016-2017, Delta was ranked by CDP (formerly the Climate Disclosure Project) at the Climate Change Leadership Level.

# About Delta Industrial Automation (IABG)

Since the debut of our AC motor drive in 1995, Delta continues to develop our industrial automation business, providing superior quality, reliability and precision. Our range of complete smart manufacturing solutions covers equipment automation, automated production line design and integration, equipment IIoT and data collection, as well as manufacturing management and monitoring to maximize productivity and stabilize production. Delta applies AI and big data analysis to optimize production processes and implement digitalization for equipment, production lines and energy usage. With automation products, software, and system solutions integrated into an all-in-one digitalized smart manufacturing model of factory, processes, and equipment, Delta provides numerous production models, including customized, small volume and wide variety, and mass production for customers on a global scale.

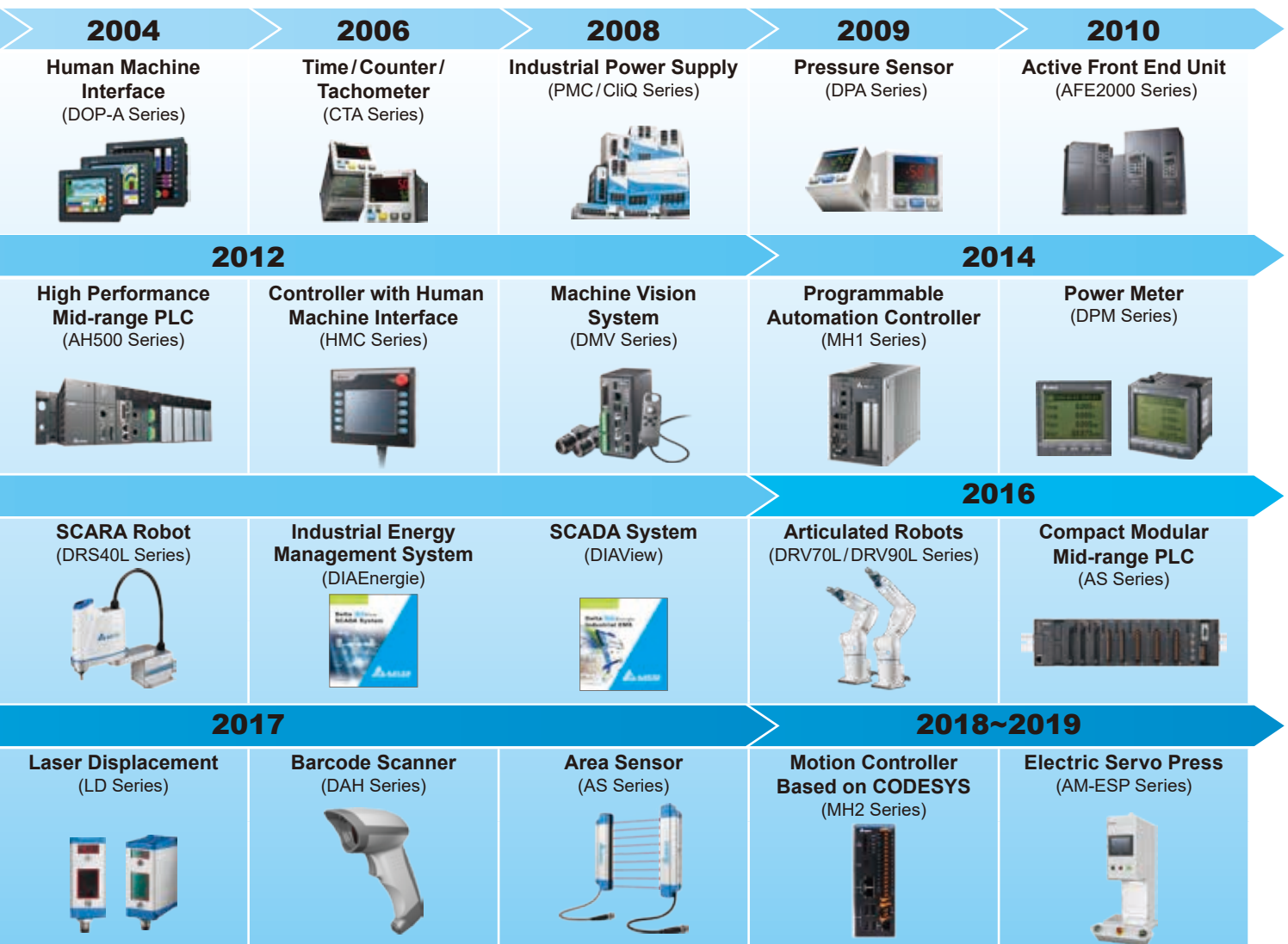
With robust R&D capability and abundant industry experience, Delta offers industrial automation products and solutions that find application in a broad range of industries, including electronics, components, photoelectric panels and food & beverages. We are dedicated to providing innovative and reliable smart, green manufacturing solutions for global customers, keeping our promise of "Automation for a Changing World".

## Delta IABG Milestones

<b>1995</b> <b>AC Motor Drive</b> (A Series) 		<b>1999</b> <b>Small PLC</b> (DVP-ES Series) 		<b>2003</b> <b>AC Servo Drive and Motor</b> (ASDA-A Series) 		<b>Temperature Controller</b> (DTA Series) 		<b>Optical Incremental Encoder</b> (ES/EH Series) 	
<b>2010</b> <b>Motion Control Card</b> (PCI Series) 		<b>2011</b> <b>CNC Controller</b> (NC300 Series) 		<b>Hybrid Energy Saving System</b> (HES) 		<b>Integrated Elevator Drive</b> (IED Series) 		<b>Unmanaged Industrial Ethernet Switch</b> (DVS Series) 	
<b>2015</b> <b>Photoelectric Sensor</b> (PS-F/PS-R Series) 		<b>Inductive Proximity Sensor</b> (M12/M18 Series) 		<b>Linear Shaft Motor</b> (ECML-S Series) 		<b>Linear Stage</b> (LU/LA-S Series) 		<b>Robot Controller with Servo Drive Integrated</b> (ASDA-MS Series) 	
<b>2016</b> <b>IIoT Cloud-based Platform</b> (DIACloud) 		<b>IIoT Industrial Cloud Routers</b> (DX-2100/2300 Series) 		<b>Industrial PCs</b> (DIAV Series) 		<b>Planetary Gearboxes</b> (PS Series) 		<b>Flow Switch</b> (DFM Series) 	

# IABG Profile

- Mission: To elevate the living environment through advanced automation technology with value-added innovation
- Headquarters in Taoyuan, Taiwan
- Founded in 1995
- Manufacturing and R&D technology centers in Taiwan (Taoyuan, Chungli, Taichung, Tainan), China (Shanghai, Wujiang), and India (Hosur)
- Number of employees: 7,240 (R&D 1,065)



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# High Performance / Standard Compact Drive New MH300 / MS300

## Compact-designed Powerful Multifunction Drives

### Optimized Space Utilization

- Compact design with up to 40% size reduction compared to existing models

### Outstanding Drive Performance

- Support both induction and permanent magnet motors
- MS300 series: supports open-loop control
- MH300 series: supports open-loop/closed-loop control

### Strong System Support

- High speed models: support up to 1500 Hz (MS300)/ 2000 Hz (MH300) output frequency under open-loop control
- Built-in PLC with 2k steps (MS300); 5k steps (MH300) program capacity
- Built-in braking choppers for the entire series
- Various communications: EtherCAT, PROFIBUS DP, DeviceNet, Modbus TCP, EtherNet/IP, CANopen



### High Safety, Stability and Reliability

- Built-in STO (SIL2/PLd) safety function and safety measures for sudden power outages
- Enhanced 100% PCBs conformal coating; compliant with IEC 60721-3-3 class 3C2
- Extended key components lifetime

### Easy to Install, Easy to Use

- A user-friendly and removable 5-digital LED keypad for the MS300 series; LCD keypad equipped with quick setting wheel dial for the MH300 series
- Macro function, quick parameter setting and duplication
- Built-in USB port for monitoring



Power Range	0.2 kW 0.25 HP	0.4 kW 0.5 HP	0.75 kW 1 HP	1.5 kW 2 HP	2.2 kW 3 HP	3.7 kW 5 HP	5.5 kW 7.5 HP	7.5 kW 10 HP	11 kW 15 HP	15 kW 20 HP	18.5 kW 25 HP	22 kW 30 HP
Standard Model MH300 & MS300 0~599 Hz	150V/1-phase											
	230V/1-phase											
	230V/3-phase											
	460V/3-phase											
High Speed Model MH300: 0~2000Hz MS300: 0~1500Hz				230V/1-phase								
					230V/3-phase							
							460V/3-phase					

### Applications

**MH300:** Machine tools, textile machines, woodworking machines, rubber & plastic machines and cranes

**MS300:** Machine tools, textile machines, woodworking machines, packaging machines, electronics, fans, pumps and air compressors

# Sensorless Vector Control Compact Drive VFD-E/EL

## Small Size with Multifunctions



- Optional extension modules for more flexible applications (High speed fieldbus, braking modules, I/O cards and PG cards for VFD-E Series)
- Modular fan design for easy maintenance and replacement
- Built-in EMC filter for 230V single-phase and 460V three-phase models to effectively minimize the electromagnetic interference
- Built-in RFI Switch for noise suppression (all models)
- Built-in PLC with 500 steps program capacity (VFD-E Series)
- Support common DC BUS. The regenerative braking power is shared by parallel connected AC motor drives to enhance the stability of the DC BUS voltage
- Support side-by-side installation and DIN-rail mounting
- Built-in PID feedback control, special functions for constant pressure pump
- Built-in RS-485, compatible with MODBUS communication (baud rate up to 38,400 bps)
- VFD-E Series provides two models for selection: CANopen drive with CANopen communication protocol, and the plate drive with no fan and colling fins installed



Power Range	0.2 kW 0.25 HP	0.4 kW 0.5 HP	0.75 kW 1 HP	1.5 kW 2 HP	2.2 kW 3 HP	3.7 kW 5 HP	5.5 kW 7.5 HP	7.5 kW 10 HP	11 kW 15 HP	15 kW 20 HP	18.5 kW 25 HP	22 kW 30 HP
VFD-E	115V/1-phase											
	230V/1-phase											
	230V/3-phase											
	460V/3-phase											
VFD-EL	115V/1-phase											
	230V/1-phase											
	230V/3-phase											
	460V/3-phase											

## Applications

Food packaging machines, textile machines, presses, conveyors

# Economy Vector Control Drive C200

## High Speed Frequency Output

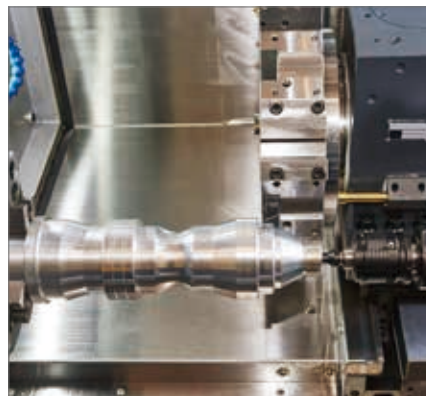
- Support both induction and permanent magnet motors
- Built-in PLC with 5k steps program capacity
- High-speed frequency output (V/F control mode) up to 2,000 Hz
- Flange mount design for Frame A and removable panel to facilitate installation process
- Built-in pulse input terminal with encoder for closed-loop control
- Built-in CANopen and RS-485 (Modbus) communication



Power Range	0.4 kW 0.5 HP	0.75 kW 1 HP	1.5 kW 2 HP	2.2 kW 3 HP	3.7 kW 5 HP	4 kW 5 HP	5.5 kW 7.5 HP	7.5 kW 10 HP
C200	230V/1-phase							
	230V/3-phase							
	460V/3-phase							

## Applications

Food packaging machines, conveyor equipment, textile machines, woodworking machines, fans and water pumps





# Vector Control Drive New

## C2000 Plus

### For General Drive Controls

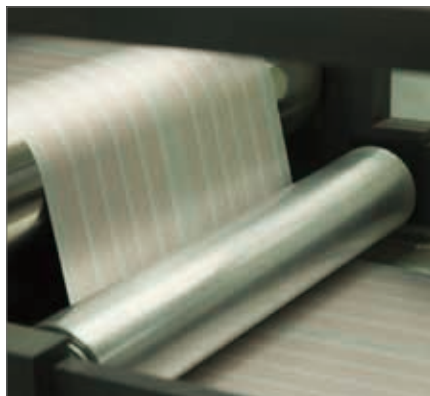
- Heavy Duty overload capability: 150 % / 60 sec. and 180 % / 3 sec., suitable for constant torque applications
- Support both induction and permanent magnet motors
- Field-oriented vector control
- Support P2P control
- Wide power range (up to 560 kW for 460 V model)
- User-friendly Start Wizard
- Display in 9 languages: English, Spanish, Portuguese, French, Russian, Turkish, German, Italian, Traditional/Simplified Chinese
- Built-in PLC with 10k steps program capacity
- Enhanced protections and adaptation with PCB coating, compliant with 3C3 standard
- Modular design for easy maintenance and extension
- Built-in Modbus and optional communication cards: New EtherCAT \ New PROFINET \ EtherNet/IP \ PROFIBUS DP \ DeviceNet \ Modbus TCP \ CANopen



Power Range	0.75 ~ 3.7 kW 1 ~ 5 HP	5.5 ~ 18.5 kW 7.5 ~ 25 HP	22 ~ 37 kW 30 ~ 50 HP	45 ~ 90 kW 60 ~ 125 HP	110 ~ 185 kW 150 ~ 250 HP	220 ~ 560 kW 300 ~ 750 HP	630 kW 850 HP
C2000 Plus	230 V/3-phase						
	460 V/3-phase						
	575 V/3-phase						
	690 V/3-phase						

### Applications

Machine tools, extruders, calender machines, paper machines, compressors, wire drawing machines, packaging machines

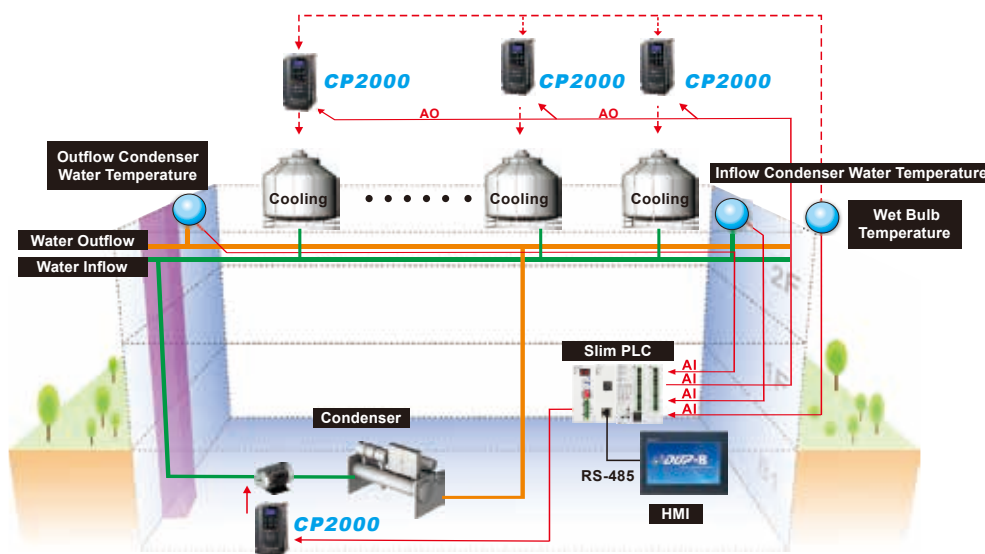


# Fan / Pump Vector Control Drive CP2000

## Excellent for Large Power Fans and Pumps Applications



- Built-in BACnet and RS-485 (Modbus) communication protocols
- Enhanced conformal coating on PCBs for superior durability in critical environments
- Fire mode and Bypass mode: continuous pressure output to extract smoke when a fire accident or other emergencies occur
- Quick setting functions to support self-defined parameter groups and parameter duplication for fast and easy installation
- Various modes for fans/pumps applications, including PID control, sleep/wake up functions, flying start and frequency-hopping functions
- Built-in LCD keypad is easy-to-use, and the TPEditor software allows users to customize the main page screen
- Multi-pumps synchronous control of up to 8 motors at one time, fixed amount and fixed time circulation control; optional relay expansion card
- Built-in PLC with 10k steps program capacity and real-time clock (RTC)
- Optional communication cards: PROFIBUS DP, DeviceNet, Modbus TCP, EtherNet/IP and CANopen



Power Range	0.75 ~ 3.7 kW 1 ~ 5 HP	5.5 ~ 18.5 kW 7.5 ~ 25 HP	22 ~ 37 kW 30 ~ 50 HP	45 ~ 90 kW 60 ~ 125 HP	110 ~ 185 kW 150 ~ 250 HP	220 ~ 450 kW 300 ~ 600 HP	560 ~ 630 kW 715 ~ 850 HP
CP2000	230 V/3-phase						
	460 V/3-phase						
	575 V/3-phase						
	690 V/3-phase						

### Applications

Factory automation, HVAC, fans and pumps

# IP55 Fan / Pump Drive **New** CFP2000

## For HVAC, Fans and Pumps Applications

- IP55 and IP41 enclosure protections
- Built-in main switch for the IP55 models (optional)
- Built-in Safe Torque Off (STO) SIL2
- Built-in EMC filter; IEC61800-3 C2, C1 standard
- Built-in DC reactor effectively reduces the harmonic distortion; IEC61000-3-12 standard
- Enhanced PCB (Printed Circuit Board) conformal coating improves drive durability; Class 3C3 standard
- 2 sets of PID controllers
- Built-in PLC with 10k steps program capacity and real-time clock (RTC)
- Built-in Modbus and BACnet MS/TP communication
- Optional communication cards: PROFIBUS DP, DeviceNet, Modbus TCP, EtherNet/IP, CANopen
- Built-in Quick Start function and application groups to simplify installation and setup



Power Range	0.75 ~ 5.5 kW 1 ~ 7.5 HP	11 ~ 22 kW 15 ~ 30 HP	30 ~ 37 kW 40 ~ 50 HP	45 ~ 55 kW 60 ~ 75 HP	75 ~ 90 kW 100 ~ 125 HP
<b>CFP2000</b>	<b>380 to 480V/3-phase</b>				

## Applications



Fans



Chiller



Water Supply & Water Treatment

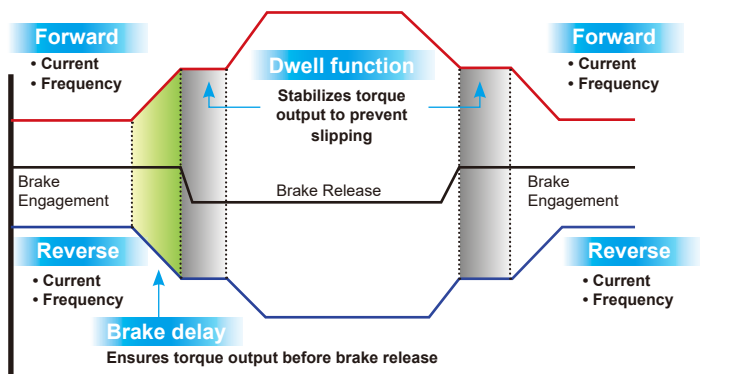
# Heavy Duty Vector Control Drive CH2000

## Large Overload Capability Excellent for Impact Loading Applications

- Fast response to impact loads
- Super Heavy Duty (SHD) setting for high overload capability: 150% of rated current for 60 secs and 200% of rated current for 3 secs
- Large starting torque: above 200% at 0.5Hz, and 200% at 0Hz in FOC+PG mode
- Support both induction and permanent magnet motors
- Various crane functions for high operation performance
- Modular design: easy installation and maintenance
- Built-in PLC with 10k steps program capacity
- Built-in Modbus communication
- Optional communication cards: PROFIBUS DP, DeviceNet, Modbus TCP, EtherNet/IP, EtherCAT and CANopen



### Advanced Crane Functions

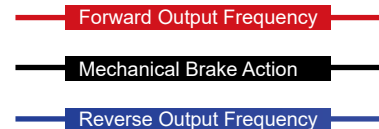


#### ▲ Mechanical Brake Control

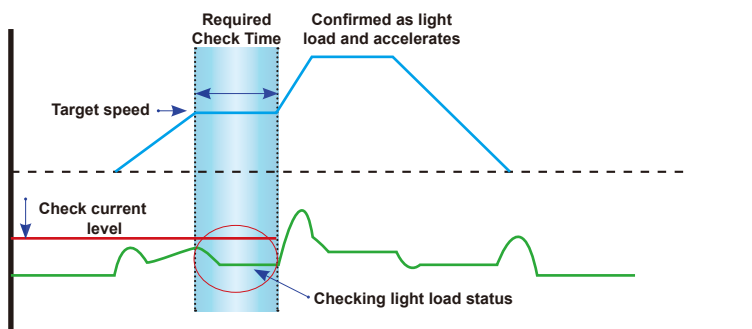
8 independent brake control settings for different criteria; high flexibility to meet complex application needs and to ensure operation safety

#### ▲ Advanced Crane Time Sequence

Brake delay and dwell function for smooth operation



### Light Load Acceleration



### Applications

Machine tools, punching machines, cranes and hoists



Power Range	0.75 ~ 3.7 kW 1 ~ 5 HP	5.5 ~ 18.5 kW 7.5 ~ 25 HP	22 ~ 37 kW 30 ~ 50 HP	45 ~ 75 kW 60 ~ 100 HP	90 ~ 185 kW 125 ~ 250 HP	220 ~ 280 kW 300 ~ 375 HP
CH2000	230V/3-phase					
	460V/3-phase					

# Textile Vector Control Drive CT2000

## Highly Flexible Flange Mount and Wall Mount Methods

- Fanless design with highly effective heat sink to prevent fiber and dust from clogging or entering the drive, solving overheating problems<sup>(\*)</sup>
- Flange-mount installation to enhance system safety and stability, providing excellent heat dissipation performance<sup>(\*)</sup>
- Support external fan connection (optional)<sup>(\*)</sup>
- Wall-mount installation model with an enlarged fan<sup>(\*\*)</sup>
- Deceleration Energy Backup (DEB) function for smooth motor deceleration control
- Support induction and permanent magnet motors
- Common DC BUS design
- Built-in PLC with 10k steps program capacity RS-485, support Modbus communication
- Optional communication cards available upon request

\*1: For model names ending with code A or B

\*2: For model names ending with code C



Flange Mount



Wall Mount



Power Range	11 kW	15 kW	18.5 kW	22 kW	30 kW	37 kW	45 kW	55 kW	75 kW	90 kW
CT2000	460 V/3-phase									

## Applications

Textile machines and all textile applications that require flange-mount or wall-mount installation

\* Flange-mount: Please refer to the CT2000 user manual for airway design requirements before installation



# Elevator Drive

## VFD-ED

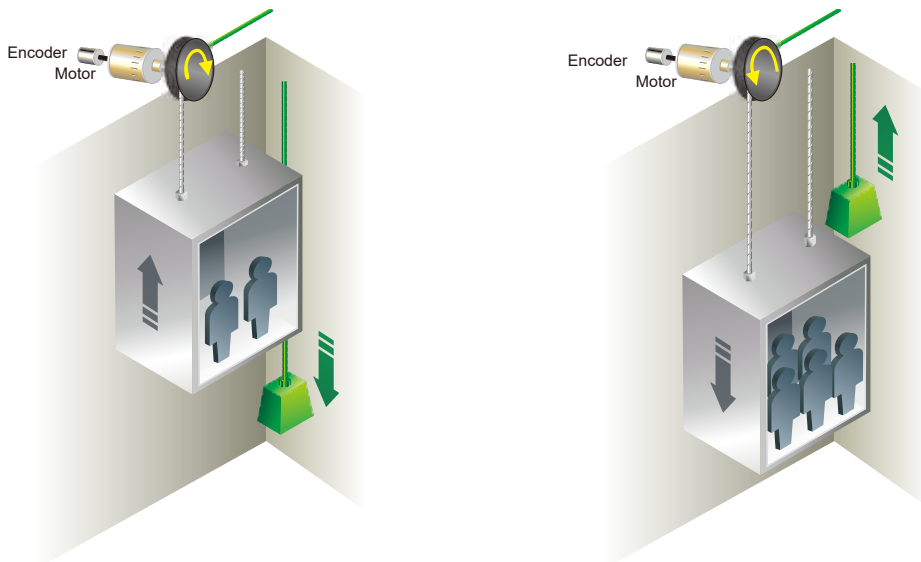
### Excellent Time Sequence Control for Smooth Rides

- Support induction and permanent magnet motors
- Precise control of S curve performs smooth start and stop for a comfortable ride
- Optional PG feedback cards (for ABZ & Heidenhain encoder)
- Highly precise field-oriented vector control
- Automatic torque compensation function to prevent elevator from slipping or vibrating
- Emergency operation enabled with UPS or battery when power outage occurs
- Wall-mount or embedded installation
- Built-in LED digital keypad
- 4 relay output and 2 multi-function digital signal output terminals (MO)
- 2 analog signal input (AI) and 2 analog signal output (AO)
- 1 CANopen and 2 RS-485 (Modbus)



### Emergency Operation

- Support single phase 230VAC Uninterrupted Power System (UPS)
- Automatically determine the light load operation direction when a power outage occurs



CE EAC cUL<sup>us</sup> (UL: does not include VFD22ED21S and VFD037ED21S models)

Power Range	2.2 kW 3 HP	3.7 kW 5 HP	4 kW * 5 HP	5.5 kW 7.5 HP	7.5 kW 10 HP	11 kW 15 HP	15 kW 20 HP	18.5 kW 25 HP	22 kW 30 HP	30 kW 40 HP	37 kW 50 HP	45 kW 60 HP	55 kW 75 HP	75 kW 100 HP
ED	230V/1-phase													
	230V/3-phase													
	460V/3-phase													

\*Min. power range of the 460V model: 4kW

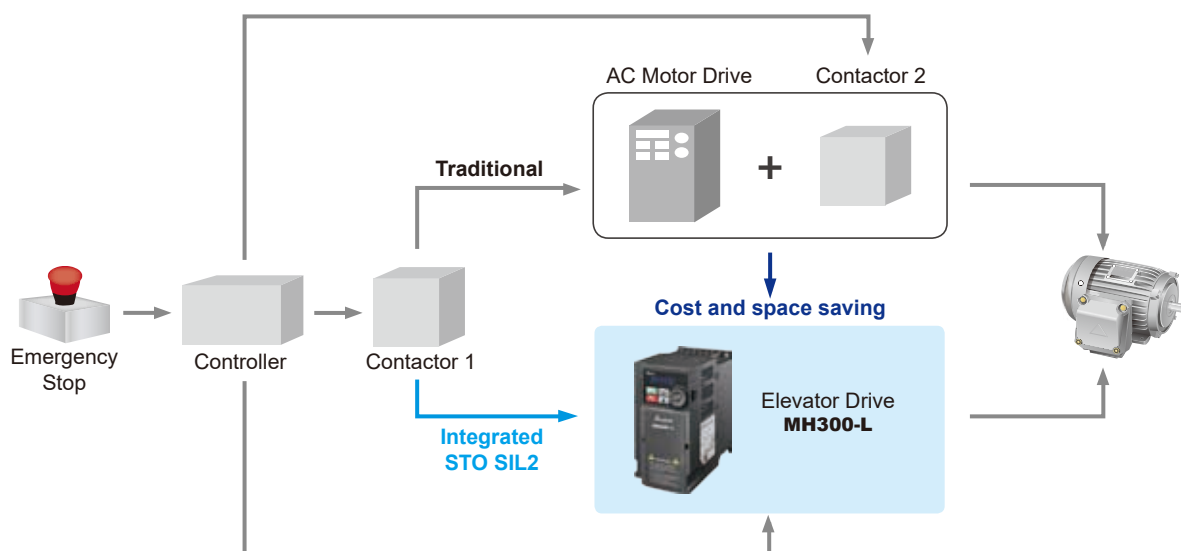
# Compact Elevator Drive New

## MH300-L

New Compact Design with Open Loop Control



- Support asynchronous motors with open loop control
- Precise control of S curve performs smooth start and stop for a comfortable ride
- Compact design and user-friendly operation
- EPS/ARD and sequence control functions for elevator applications
- Built-in 5-digit 16-segment LCD digital keypad
- Built-in USB connection port
- Built-in EMC filter
- Built-in brake chopper
- 7 digital inputs (extension up to 10) and 1 relay output (extension up to 3)
- Integrated Safe Torque Off (STO) SIL2



Power Range	2.2 kW 3 HP	3.7 kW 5 HP	5.5 kW 7.5 HP	7.5 kW 10 HP	11 kW 15 HP	15 kW 20 HP
MH300-L	230V/3-phase					
	460V/3-phase					



# Door Control Drive

## VFD-DD

### Door Control Solution

- Compact Design
- Distance Control Mode
- Speed Control Mode
- Multi-step Speed Control Mode



- Simplified elevator door control system
- Support induction and permanent magnet motors
- Easy to install with I/O input/output design
- Various protection functions ensure passenger safety
- Auto-tuning of door width
- Auto-positioning when power is applied
- Smooth door re-open/re-close curve
- Demo mode
- Support elevator door obstruction detection

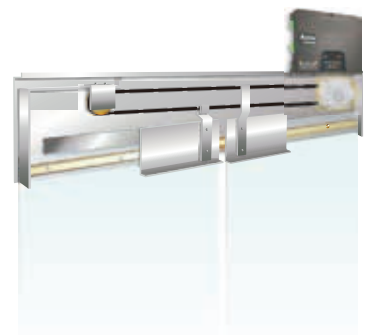
### Optional Motors

- ECMD-B91207MS
- ECMD-B91608MS
- ECMD-B81610MS



### Applications

Elevator doors



Power Range	0.2 kW 0.25 HP	0.4 kW 0.5 HP
VFD-DD	230V/1-phase	





# Integrated Elevator Drive IED

## Integrated Drive and Control to Save Installation Space

### Control

- Highly efficient group control function, capable of controlling multiple elevators without additional control cards
- Various operation modes: demo mode, attendant service mode and time-based mode
- Single/Double-door elevator applications
- Max. 48 floors

### Design

- Compact design, suitable for limited installation spaces
- Modular design of fans and capacitors for easy replacement and maintenance
- A small-size LED keypad allows users to check and set the drive control

### Drive

- Support induction and permanent magnet motors
- Emergency Power Supply (EPS) function
- Dual safety protection functions: torque output check before releasing mechanical brake

### Tune

- Auto-learning hoistway and auto floor height detection
- Auto-tuning motor parameters without load disconnection
- PC software monitors motor operation status

### Energy Saving

- Power regeneration function available when installed with Delta's Active Front End (AFE2000 Series) or Power Regenerative Unit (REG2000 Series)
- Lighting and air circulation scheduling for elevator cars
- Standby mode to save energy

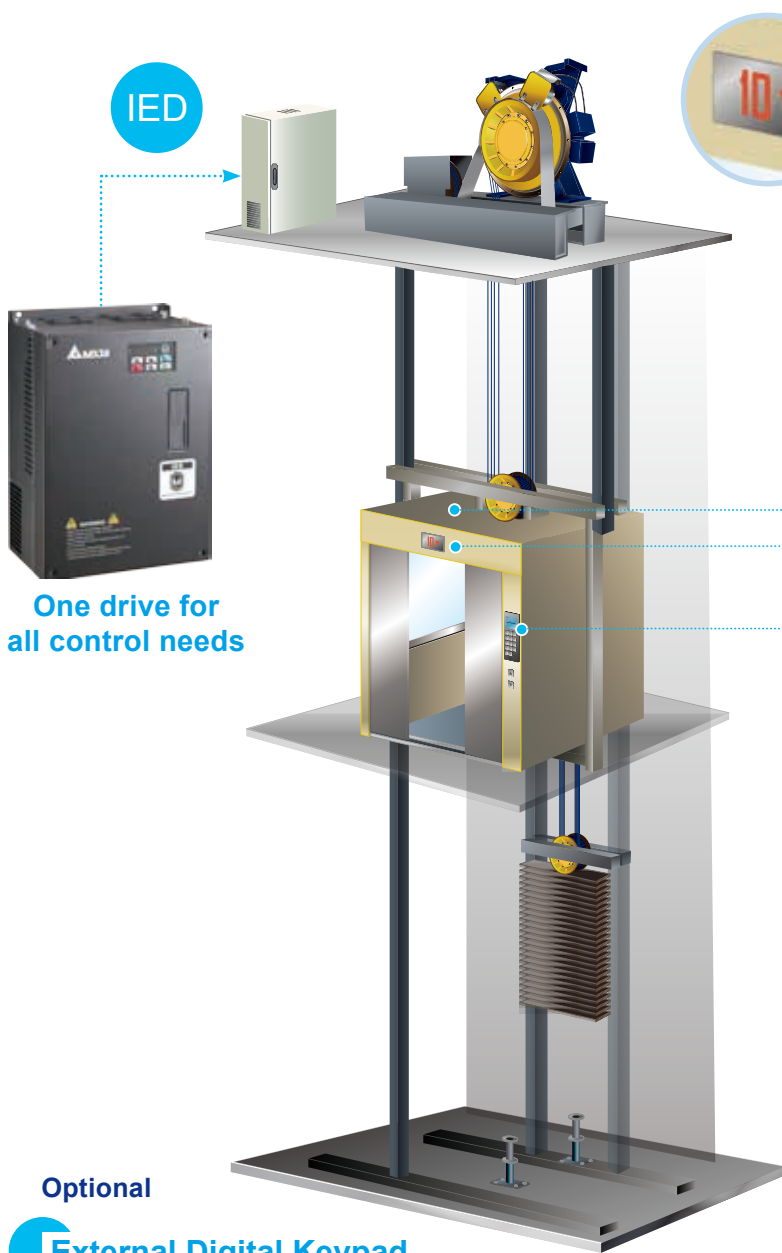
### Efficiency

- Direct stop: multi-speed control to provide a comfortable ride with higher efficiency
- Peak hour operation: improves peak hour operation efficiency
- Full-load bypass operation: arrives at designated floor without stopping



CE EAC

Power Range	2.2 kW 3 HP	3.7 kW 5 HP	4 kW 5 HP	5.5 kW 7.5 HP	7.5 kW 10 HP	11 kW 15 HP	15 kW 20 HP	18.5 kW 25 HP	22 kW 30 HP	30 kW 40 HP	37 kW 50 HP	45 kW 60 HP	55 kW 75 HP	75 kW 100 HP
IED	230 V/1-phase													
	230 V/3-phase													
	460 V/3-phase													



IED

One drive for all control needs

Optional

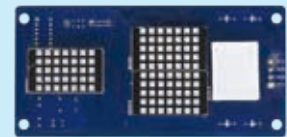
### External Digital Keypad

- Controller setting
- Drive setting
- Parameter copy

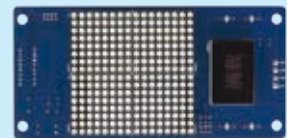


### Floor Display Board

- Vertical matrix display board - Standard Type



- Vertical/Horizontal matrix display board - Standard Type



### Integrated Cartop and Button Board

- Integrated cartop and button board

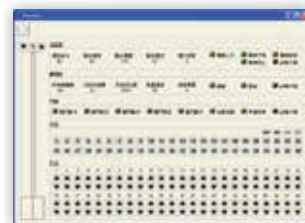


- Button extension board



### PC Software

USB port facilitates program upload/download and tuning process



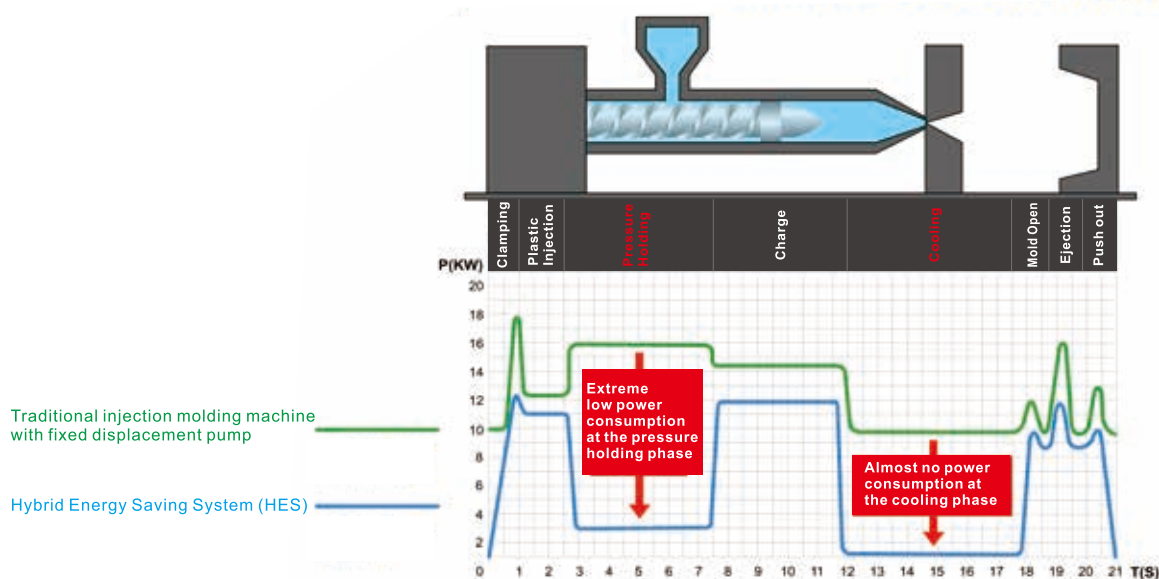
# Hybrid Energy Saving System HES

## Energy Saving for Injection Molding Machine

- **Superior Energy-Saving Outcomes:** 40% less energy consumption than variable pump hydraulic systems; 60% less energy consumption than traditional quantitative pump hydraulic systems
- **Low Oil Temperature:** oil temperature decreased by 5°C to 10°C, saving costs on oil cooler
- **Reduce Oil Usage:** 50% to 60% oil usage savings and a 50% smaller oil tank
- **High Duplication Accuracy:** Precise flow and pressure control featuring duplication of products with less than 0.09% difference
- **Long Holding Pressure:** Keep mold halves securely closed for a longer period for thick plastic products formation
- **Fast Frequency Response:** High speed frequency response up to 50 ms with permanent magnet servo motor (PMSM)
- **Suitable for Harsh Environments:** Resolver is resistant to earthquakes, oil and dust
- **Easy to Refurbish Old Machines:** Analog command 0~10V and linear correction (3 points), no need to replace the computer
- **Flow Convergence:** Saves cost on tubes; enlarged flow capacity enhances energy-saving performance



### Power Consumption Curve of the Injection Molding Process



Power Range	50 L/min	63 L/min	80 L/min	100 L/min	125 L/min	160 L/min	200 L/min	250 L/min	320 L/min
HES	230V/3-phase								
	460V/3-phase								

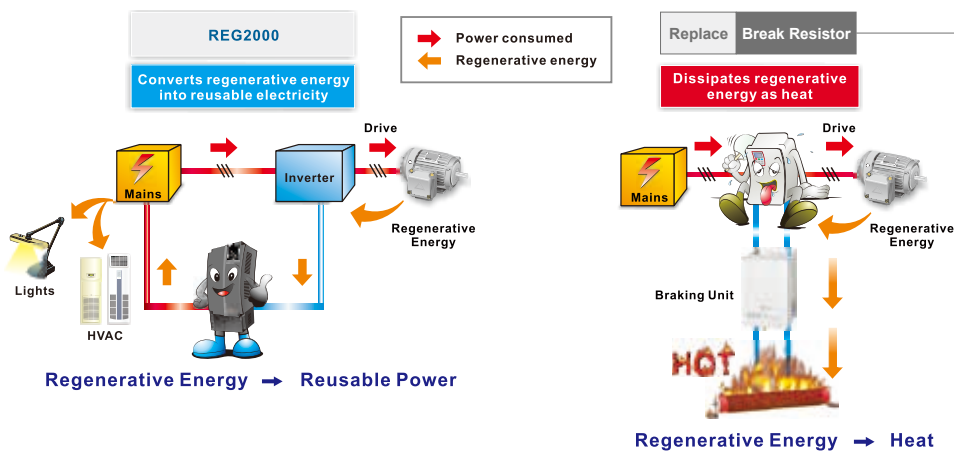
### Applications

Injection molding machines, bottle blowing machines, pipe bending machines, bending machines and other hydraulic equipment

# Power Regenerative Unit REG2000

## Replaces Traditional Brake Resistor and Features Power Regeneration

- Compact design with reactor included, easy to install
  - Outstanding energy-saving performance with more than 95% power regeneration efficiency
  - Replace traditional brake resistors to reduce the generation of heat
  - Compatible with the drives and servo drives that have DC terminals
  - Support parallel connections for large power applications
  - Improve motor braking capability from 125% to 150%
  - Built-in RS-485 (Modbus) communication and real-time monitoring of energy-saving performance and cost
  - Optional communication cards: <sup>(1)</sup> Modbus TCP, EtherNet/IP, CANopen, PROFIBUS DP and DeviceNet
- \* Please contact Delta Industrial Automation



Power Range	7.5 kW	11 kW	15 kW	18.5 kW	22 kW	30 kW	37 kW	45 kW	55 kW
REG2000	230 V/3-phase								
	460 V/3-phase								

### Applications

**Large-inertia load applications:** centrifuge equipment, industrial laundries, roving machines and more

**4-quadrant load applications:** elevators, cranes, pumpjacks and more

**Quick braking applications:** machine tools, bag making machines, auto storage and retrieval systems, presses and more

**Long-term energy feedback applications:** printing machines, escalators and more



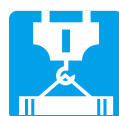
Escalator



Elevator



Tension Control



Crane



Centrifuge Equipment



Press



Industrial Laundry



Machine Tool

# Active Front End AFE2000

## The Best Energy Saving Device with AC Motor Drives

- More than 95% power regeneration efficiency
- Improve power factor to more than 99% with input current THD  $\leq 5\%$
- Realize 4-quadrant operation with variable frequencies and speed control when applied with AC motor drives
- Maintain constant DC BUS voltage and current when the voltage provided by the mains is unstable
- Support all kinds of fieldbus for real-time power status monitoring and control\*



CANopen

DeviceNet

MODBUS TCP

EtherNet/IP

\*Available from Delta upon request



ERC

Power Range	7.5 kW 10 HP	15 kW 20 HP	22 kW 30 HP	37 kW 50 HP	45 kW 60 HP	75 kW 100 HP
AFE2000	230 V 3-phase					
	460 V 3-phase					

### Applications

**Large-inertia loads applications:** centrifuge equipment, dewatering machines and roving machines

**4-quadrant loads applications:** elevators, cranes and pumpjacks (oil extraction machines)

**Quick braking applications:** machine tools, bag making machines, auto storage and retrieval systems, and lathes

**Long energy feedback time applications:** wind power, water power, steel printing and paper making machinery (winding equipment)

**Power quality improvement:** semiconductor and panel industries

# Static Var Generator SVG2000

## Comprehensive Reactive Power Compensation to Improve Power Efficiency

- Compensate both leading and lagging reactive current; improve power factor to 0.99
- Adopt special Delta power supply modules to provide a wide range application from 220 V ~ 480 V and 525 V ~ 690 V
- Modular design of fan, power, drive, control and reactor modules
- 7" touch screen TFT LCE expression in 65,536 colors

Capacity	300 k VAR	500 k VAR
SVG2000	220 V ~ 480 V / 3-phase	
	525 V ~ 690 V / 3-phase	

### Applications

A new solution to replace traditional phase-leading capacitors, applicable to the power distribution systems of industry, infrastructure, commercial buildings and homes



# Active Power Filter

## APF2000

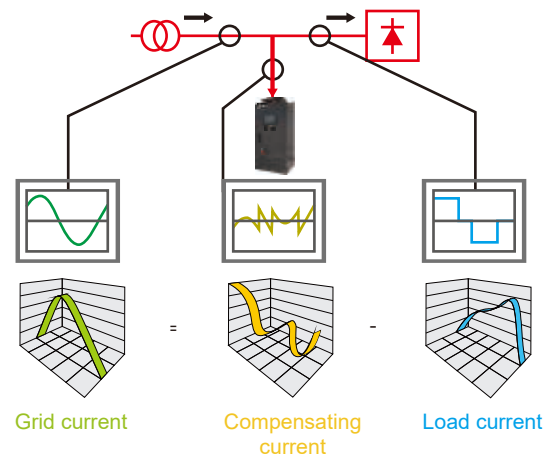
### For Power Quality Improvement

- Filter the 2<sup>nd</sup> to 50<sup>th</sup> order harmonics with efficiency of more than 90%, compliant with IEEE519 standard
- Full response speed faster than 20 ms
- Selection to compensate either harmonic wave or reactive power, or both at the same time
- Modular design of fan, power, drive control and reactor modules
- 7" touch screen TFT LCD expression in 65,536 colors
- Compact design: the 300A model only measured 600Wx800Dx2200H (mm)
- Parallel connection of multiple units to expand total capacity
- Built-in RS-485 communication and provides various communication and fieldbus card options



### Concept

An active power filter is a large power electrical device that monitors the three-phase current in real time and provides an equally opposite phase to relevant devices to filter out the harmonics. It is parallel connected to the grid and uses a current transformer to inspect the 3-phase current waveform and obtain the required compensation data of harmonic current and reactive power. The active power filter will then inject an equally opposite current input to the power system for harmonic filtering results. In addition, the active power filter can also create phase that complements the leading and lagging reactive current. It effectively improves the power factor of the grid and provides compensation to the reactive power.



Capacity	50 A	100 A	200 A	300 A
APF2000	200V ~ 480V/3-phase			

### Applications

#### Metallurgy and petrochemicals industries:

Rectifier, converter, rolling mill, electric arc furnace, medium frequency furnace and inverter

#### Chemical and electrolysis industries:

Rectifier, calcium carbide furnace, electric soldering and inverter

#### Mechanical industries:

Rectifier, rolling mill, inverter, electric arc equipment

#### Metal, paper, plastic processing and textile industries:

Rectifier, rolling mill, inverter, electric arc furnace and electric furnace

#### Transportation industries:

The rectifier and the inverter of electric vehicles, electric motorcycles and metro systems

#### Automobile manufacturing industries:

Soldering equipment, car painting equipment, battery charger and inverter

#### Telecommunication, medical and construction industries:

Server station, EPS, UPE, converter, charger and inverter



# AC Servo Drive & Motor New

## ASDA-A3

24-bit Absolute Type Encoder

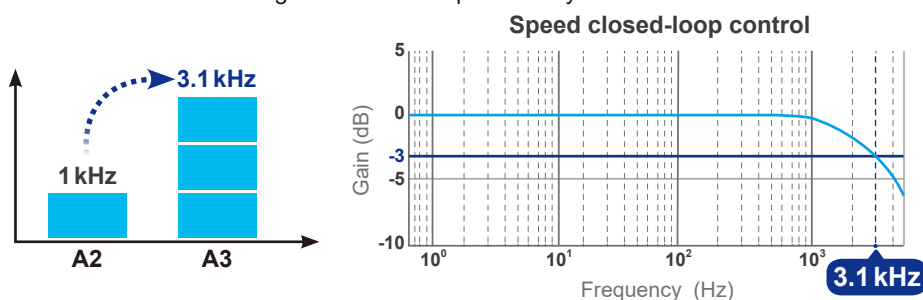
3.1 kHz Bandwidth

Advanced Motion Control Functions Inside



### 3.1 kHz Bandwidth

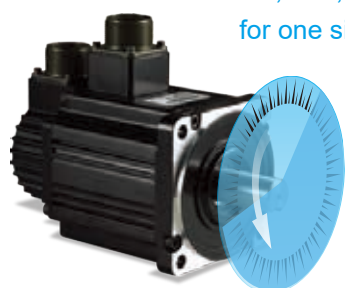
- Response bandwidth increased by 3.1 times (compared to the ASDA-A2 Series), providing higher speed for commands
- Higher responsiveness and shorter settling time increases productivity



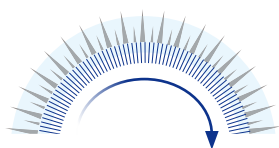
### 24-bit Absolute Type Encoder

- Positioning precision enhanced by the 16,777,216 pulses/turn encoder
- Reduced speed variance at low speed to ensure smooth process and enhance machine efficiency
- Absolute type encoder helps to keep the motor's position when the power is off

**16,777,216** pulses  
for one single turn



**46,603** pulses for one degree



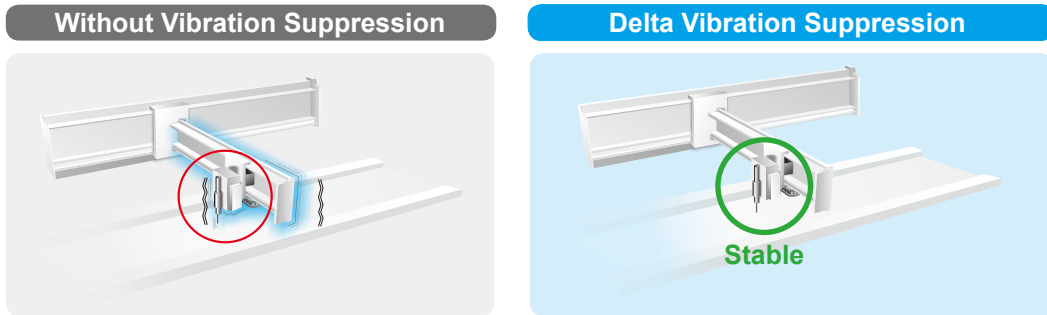
### Advanced Motion Control Functions

- 99 sophisticated motion commands and segments allowed
- Graphical user interface offers simple setup and programming
- Arithmetic operation and condition jump commands are added
- General motion functions: homing, position, speed, superimposition, blending, on-the-fly change motion commands and E-CAM functions are available



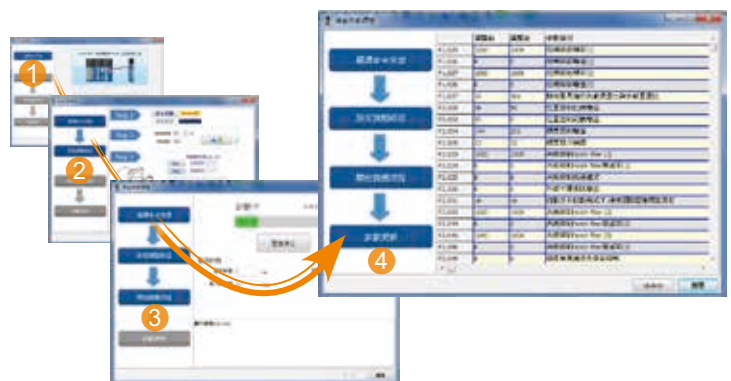
## Low Frequency Vibration Suppression Function

- Keep the machining process stable when mechanisms with higher elasticity such as a belt or a swing arm are applied



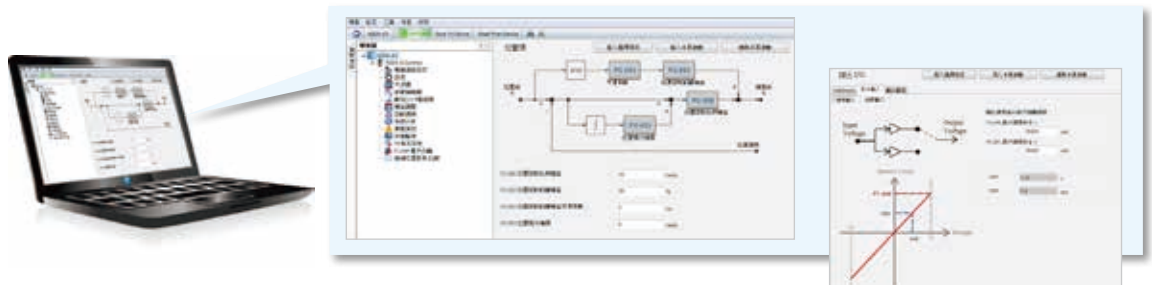
## Auto-Tuning Function

- Optimize machine performance with less tuning effort and simple setup procedures via panel keypad or software



## Smart and Intuitive Software Interface

- Tree-view index window with organized list and collapsible menu helps to access functions easily
- Intuitive user interface provides set up functions and parameters with efficiency and accuracy



## Compact Size Design

- ASDA-A3 is 20% smaller than the ASDA-A2 in dimensions, requiring less installation space

**ASDA-A3**

200 W

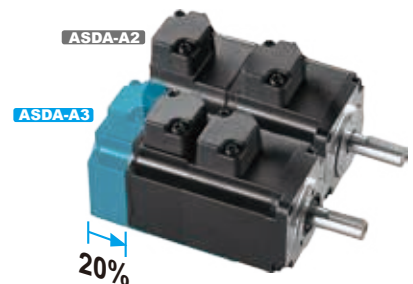


**ASDA-A2**

200 W



Servo motor shorter in length



## Applications

Machine tools, electronic assembly or detection equipment, industrial robots, packaging machines, labeling machines, semiconductor processing equipment and textile equipment



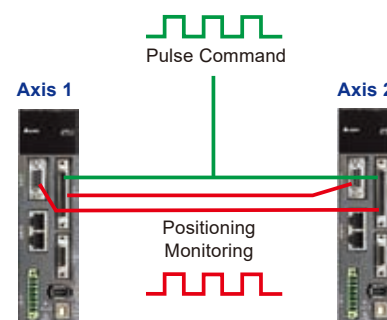
# AC Servo Drive & Motor ASDA-A2

Implements 20-bit (1,280,000 p/rev) superior resolution encoder as a standard



## Built-in Motion Control Functions

- Electronic Cam (E-CAM) function for mark tracing, positioning, synchronous control applications; max. 720 points for E-CAM outline
- High-speed Capture and Compare function for position latch and detection; max. 800 records stored in the memory
- Built-in gantry control algorithm

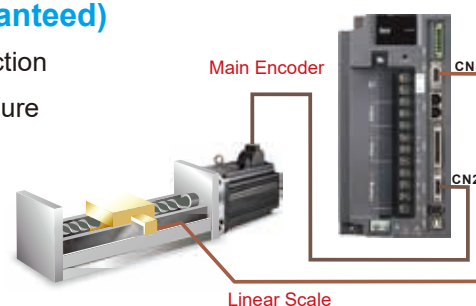


## High Precision, High Performance Servo Motors

- Support incremental type and absolute type encoders
- Incremental type encoder provides up to 1,280,000 p/rev resolution for high-precision positioning

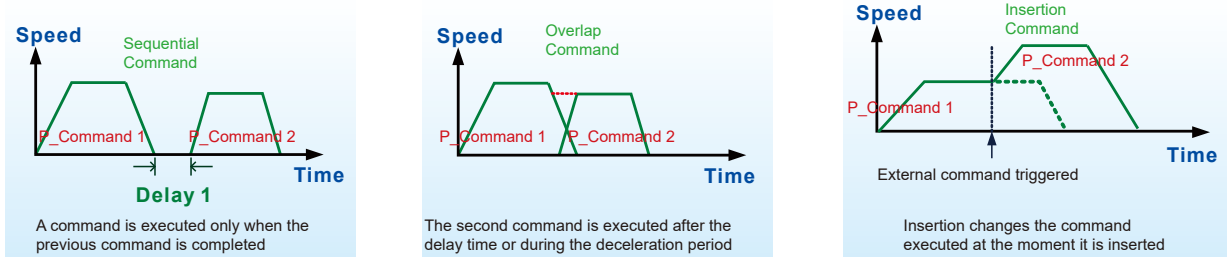
## Full-Closed Loop Control (Accuracy of Positioning Guaranteed)

- Direct signal transmission through CN5 port to perform full-closed function
- Reduce the effect of backlash and flexibility from the machine and ensure the accuracy of positioning



## Versatile PR mode

- 64 procedures can be applied for various and multiple points continuous motion movements
- 35 homing modes/jump mode/parameter editing mode/speed mode/position mode



## Basic Features

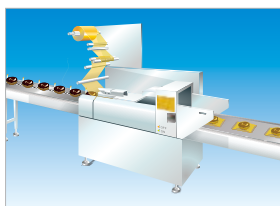
- Input voltage: 200 V<sub>AC</sub> ~ 230 V<sub>AC</sub>, 0.1 kW ~ 15 kW, 1-phase / 3-phase, or 3-phase
- Input voltage: 400 V<sub>AC</sub>, 0.4 kW ~ 15 kW, 3-phase
- Up to 1 kHz bandwidth for high speed and high precision applications
- CANopen, DMCNET, EtherCAT communication protocols
- ASDA-A2-E model is equipped with Safe Torque Off function (STO), compliant with IEC31800-5-2

	Type	RS-485 (CN3)	Full Closed-loop Control (CN5) <sup>*1</sup>	Extension Port for Digital Input (CN7)	PR Parameters <sup>*2</sup>	E-CAM <sup>*3</sup>	EtherCAT <sup>*4</sup>	CANpen	DMCNET	Analog Voltage Control	Pulse Input Port
Standard Model	L	O	O	X	O	X	X	X	X	O	O
	U	O	O	O	O	O	X	X	X	O	O
Network Model	E	X	X	O	O	X	O	X	X	X	X
	F	O	O	X	O	X	X	X	O	X	X
	M	O	O	X	O	O	X	O	X	O	O

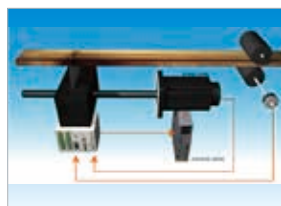
\*1. In PR mode, only ASDA-A2-F supports full-closed control function.  
 \*2. PR parameters can be read and written through communication by DMCNET only.  
 \*3. E-CAM function can only be used in PR mode.  
 \*4. For information about ASDA-A2-E EtherCAT interface servo drive, please refer to the ASDA A2-E brochure.

## Applications

Food packaging machines, filling and bottling equipment, labeling machines, feeding machines, TFT LCD cutting machines, IC packaging machines, injection processing equipment, lathes, electric discharge machines (EDM), woodworking machines, wire cutting machines, printing machines, textile equipment



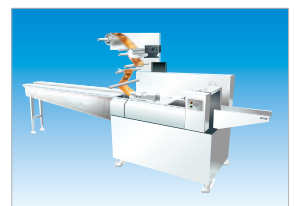
Food Packaging Machine



Wire Cutting Machine



Feeding Machine



High-speed Labeling Machine

# AC Servo Drive EtherCAT<sup>®</sup>

## ASDA-A2-E

### Supports EtherCAT High-speed Communication

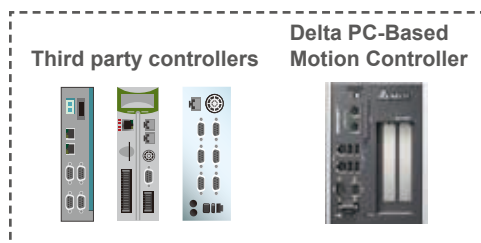
Delta's ASDA-A2-E Series, advanced AC servo drives with EtherCAT communication interface, complies with IEC61158 and IEC61800-7 to enable faster, real-time, and accurate performance in high-end applications. The series also support a CoE device profile based on CiA402, and all command types of EtherCAT.

In addition to the EtherCAT communication function, the ASDA-A2-E Series feature:

- Wide power range: 400V 400W~7.5kW, 220V 100W~3kW
- Integrated Safe Torque Off (STO), compliant with IEC61508, SIL2; IEC62061, SILCL2; ISO13849-1, Cat. 3 PL=d
- Short cycle time, ideal for high-speed synchronous multi-axis control
- Touch probe function can be enabled with two dedicated Digital Inputs (DI) on CN7 or an external encoder
- Support absolute type and incremental type ECMA Series motors



#### EtherCAT controllers



### Applications



Metal Working Machine



Woodworking Machine



Food Processing

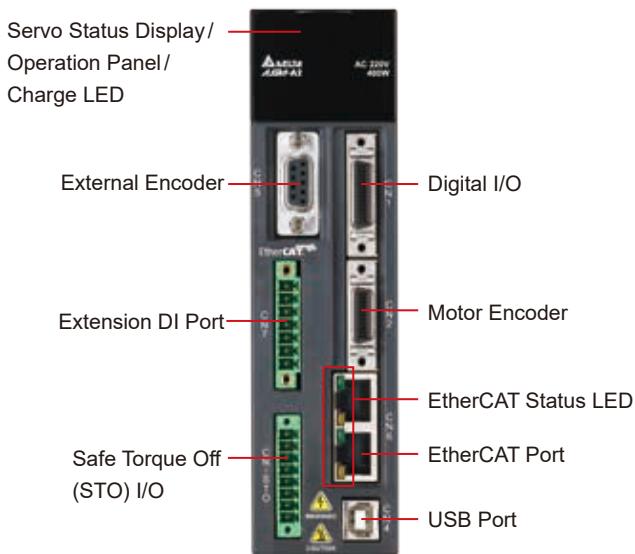


Printing Machine

## Communication Specifications

<b>Physical Layer</b>	IEEE802.3u (100 BASE-TX)
<b>EtherCAT Commands (Data Link Layer)</b>	APRD, FPRD, BRD, LRD, APWR, FPWR, BWR, LWR, ARMW, FRMW, APRW, FPRW, BRW, LRW
<b>Device Profile (CiA402)</b>	Homing Mode, Profile Position Mode, Profile Velocity Mode, Profile Torque Mode, Interpolated Position Mode, Cyclic Syn. Position Mode, Cyclic Syn. Velocity Mode, Cyclic Syn. Torque Mode, Touch Probe Function, Torque Limit Function
<b>Process Data Size</b>	Tx: 8 Object (max. 32 bytes) Rx: 8 Object (max. 32 bytes), supports Dynamic Mapping
<b>Bus Clock</b>	DC cycle with min. 250 $\mu$ s
<b>LED Indicator</b>	EtherCAT Link/Activity Indicator (L/A) x2 EtherCAT RUN Indicator (RUN) x1 EtherCAT ERROR Indicator (ERR) x1

## Part Names and Functions



## Accessories for ASDA A2-E

<b>Part Number</b>	ASD-CNSC0026
<b>Description</b>	CN1 connector



<b>Part Number</b>	ASD-CNFS0808
<b>Description</b>	Pack of connectors used for STO Wiring connectors (8 pcs/pack)



# AC Servo Drive & Motor ASDA-B2

Implements 17-bit (160,000 p/rev) high resolution encoder as a standard



## Power Range: 0.1 kW~3 kW

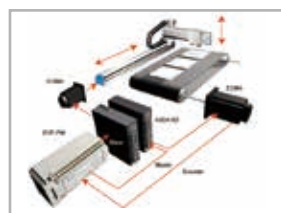
- Input voltage: 200 V<sub>AC</sub>~230 V<sub>AC</sub>, 1-phase/3-phase, or 3-phase
- Meets high precision positioning control requirements of general-purpose machine tools:
  - Built-in Position, Speed and Torque modes (Speed and Torque modes can be controlled via internal parameters or external voltage)
  - Provides pulse input (up to 4 Mpps) and analog voltage commands
  - Three notch filters are provided to optimize the operation of the mechanical system automatically
  - Friction compensation and motor protection functions are available to reinforce the system
  - Separated power supply for main circuit and control circuit, easy to maintain
  - Built-in regenerative resistor featured as standard (400 W and above models), saving wiring and cost



## Applications



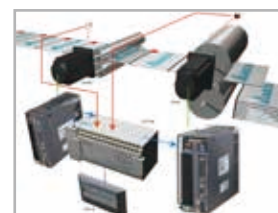
Bar Feeder



Transporting and  
Conveying Equipment



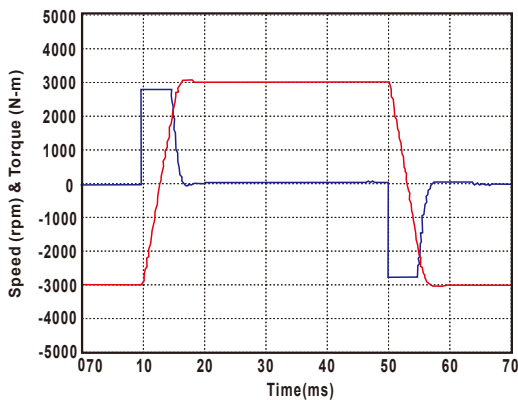
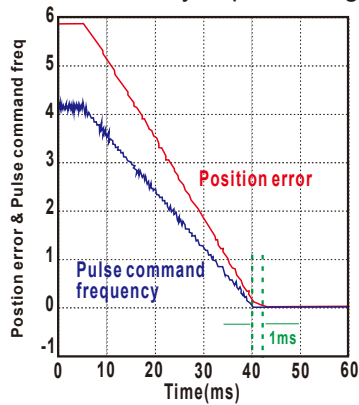
Electric Discharge  
Machines (EDM)



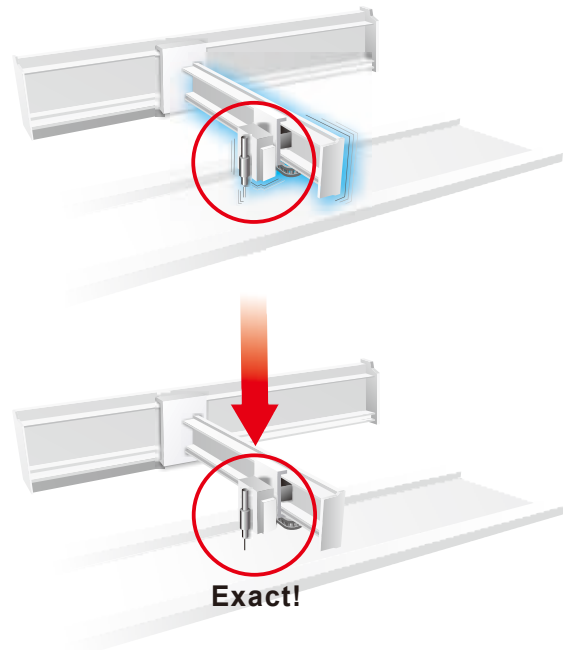
Cutting Machine

## High Accuracy for Positioning

- ASDA-B2 Series feature an incremental encoder with 17-bit resolution (160,000 p/rev) which can eliminate unstable commands at low speed, smooth the motor operation and enhance the accuracy of positioning



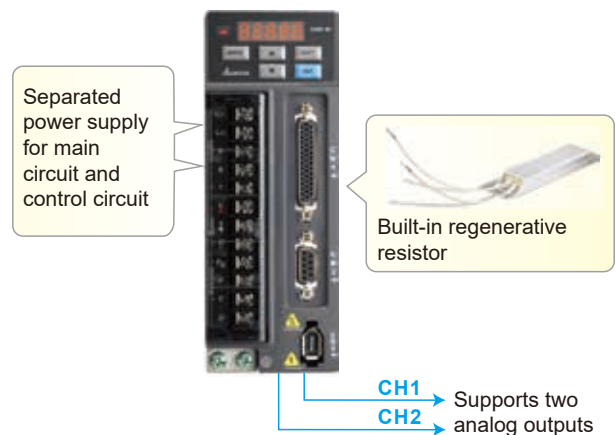
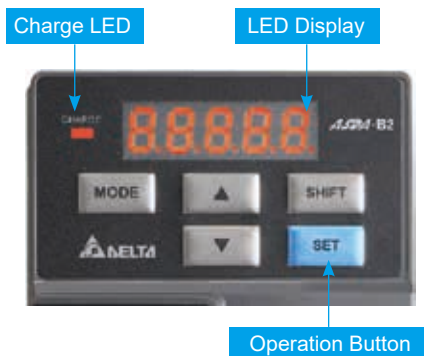
- Three auto notch filters to suppress mechanical resonance efficiently



## Easy-to-Use and Cost-Saving

- Same power and encoder cables as the ASDA-B Series
- User-friendly digital keypad, ideal for parameter settings and monitoring

- Built-in regenerative resistor (400W and above models), simplifying wiring and minimizing space



# AC Servo Drive & Motor

## ASDA-M

Three-in-one Intelligent Servo System Harmonizing Motion Controller and Servo Drive

### Impeccable Motion Control

- 3-axis synchronous servo module with higher performance
- Built-in motion control and PLC functions
- Multi-axis synchronous interpolation and built-in motion control commands, ideal for applications that require high synchronous control accuracy
- Versatile PR mode for various continuous motion movements

### New PC Software Functions

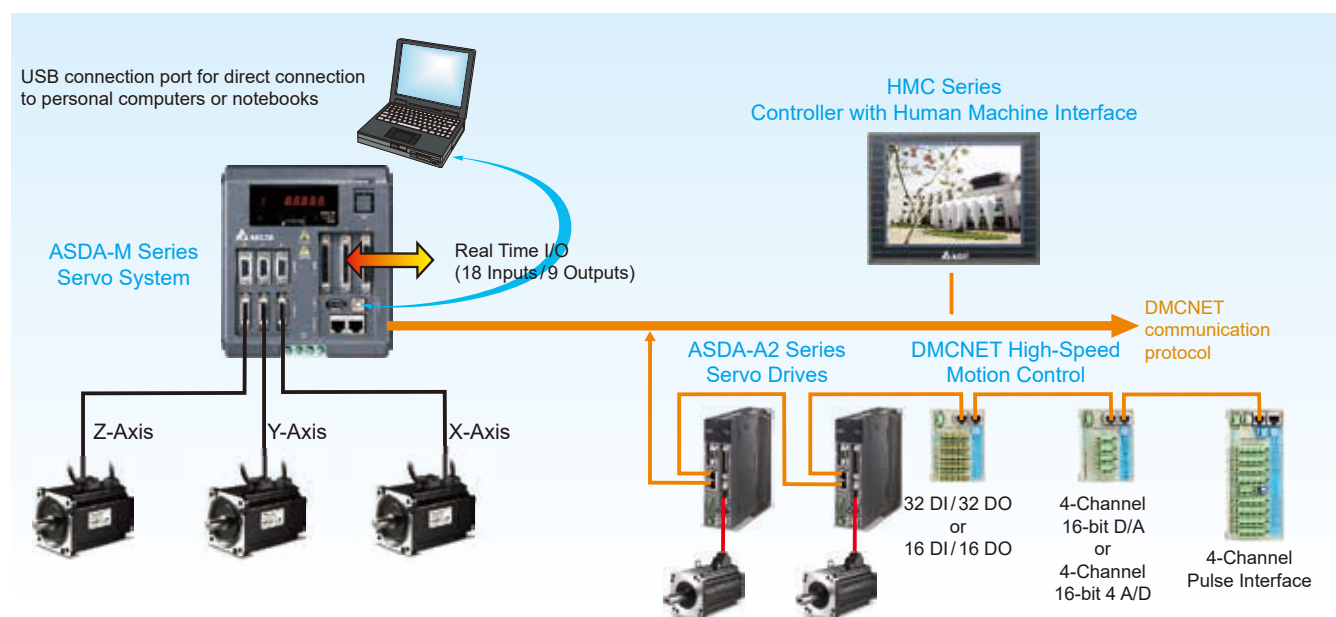
- ASDA-Soft provides built-in contour analysis function
- EzASD provides PLC programming and motion commands editing environment

### High Precision, High Performance Servo Motors

- Support incremental type and absolute type encoders
- Incremental type encoder provides up to 1,280,000 p/rev resolution for high-precision positioning



### Product Line-up

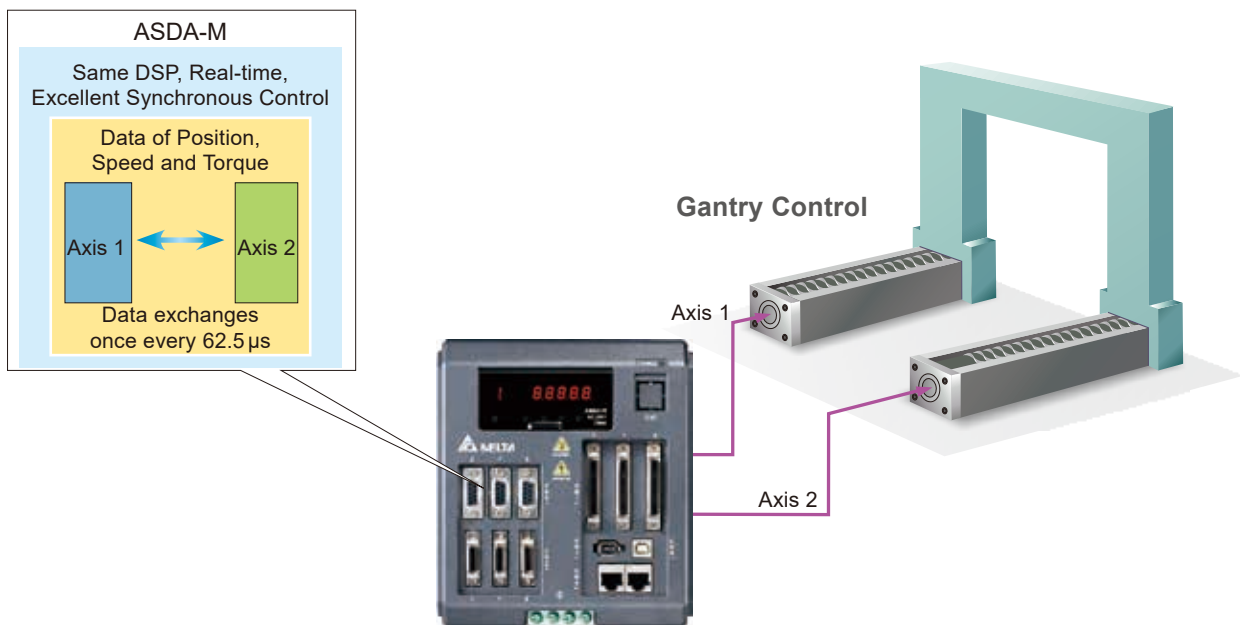


## Real Time, Reliable and High-Speed Motion Control Network

- Support DMCNET and CANopen communication protocols
- Builds an integrated system configuration by DMCNET with the aid of Delta's Controller with Human Machine Interface (HMC)
- Support DMCNET extension digital input and output modules

## Advanced Gantry Control

- Real-time data exchange among 3 axes greatly increases the efficiency and performance of gantry control
- Simultaneously performs precise motion control and drive for each axis in rigid or general mechanical systems whether the loading on multiple axes is equal or not



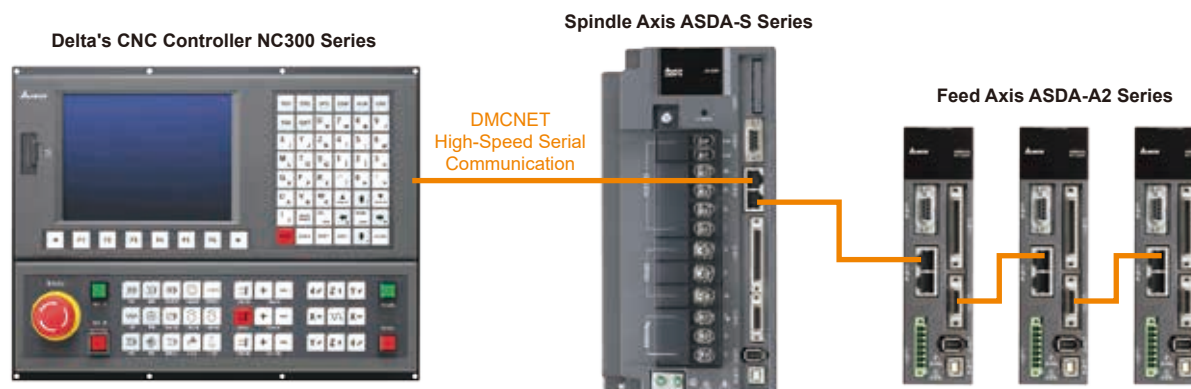


# Spindle Motor Drive ASDA-S

Ensuring Premium Surface Finish Quality for the CNC Industry

**Power range: 3kW~15kW**

- Support Delta permanent magnet spindle motors and other induction motors
- Provide high performance servo vector control as in the ASDA-A2 Series
- Support pulse encoder signals (ABZ phase) via CN5 port, no external converter card required
- Built-in induction motor parameter measuring and estimating function
- Offers V/F control for induction motors without encoders
- Equipped with analog speed and resolution switching function
- Accept analog voltage, position pulse and DMCNET communication commands
- 200V models and 400V models are available for selection
- Capable of connecting to CNC controllers via DMCNET high-speed serial communication



# IPM Spindle Motor ECMS

**Power range: 3.7kW/6.7kW**

- Encoder Type: Incremental 20-bit
- Max. torque: 14.72N-m / 26.65N-m
- Speed range: 6000 r/min~12000 r/min
- Options: Coolant through spindle
- IP degree: IP54



# Linear Motion Drive

## ASDA-A2R

### Delivering a Superior Linear Motor

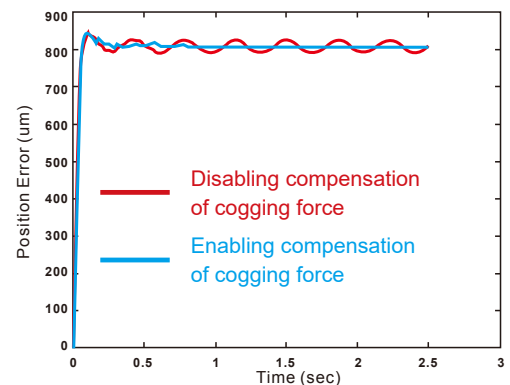
The new ASDA-A2R Series linear drive system provides high accuracy, high rigidity and high response. It not only expands the applications of the servo system, but also increases the work efficiency of the motion control system and satisfies high-precision requirements.

The ASDA-A2R follows in the footsteps of Delta's successful servo system and provides the same functions such as high-speed and high response performance, excellent vibration and resonance suppression, versatile PR mode, DMCNET and CANopen communication interfaces, built-in E-Cam and gantry control functions.



#### Power range: 100W~3kW

- Intelligent motor parameter measuring, easy and fast auto tuning
- Accurate positioning and initiation without a Hall sensor unit
- High flexibility in connecting various kinds of linear motors and servo motors
- Optional signal converter box (Delta) available for high speed and high precision requirements
  - Support AB phase square waves of digital signals
  - Sine waves of analog signals
  - Signals can be divided up into a multiple of 2,048 to increase positioning resolution for precise position control
- Detection and compensation of cogging force

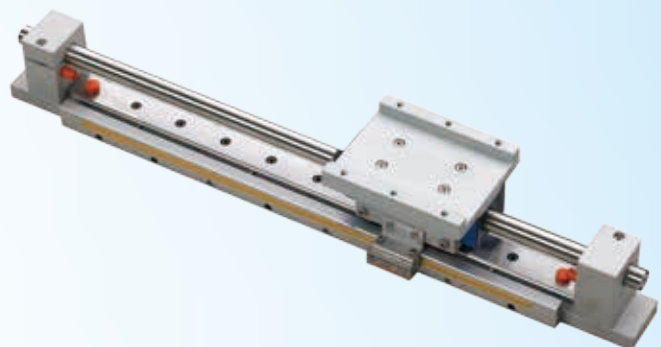


# Ironless Linear Motor

## ECML

#### Power range: 100W~750W

- Rated thrust: 21~1380N
- Direct driving mechanism, high speed and high precision control
- No cogging forces and low thrust ripple



# Linear Shaft Motor

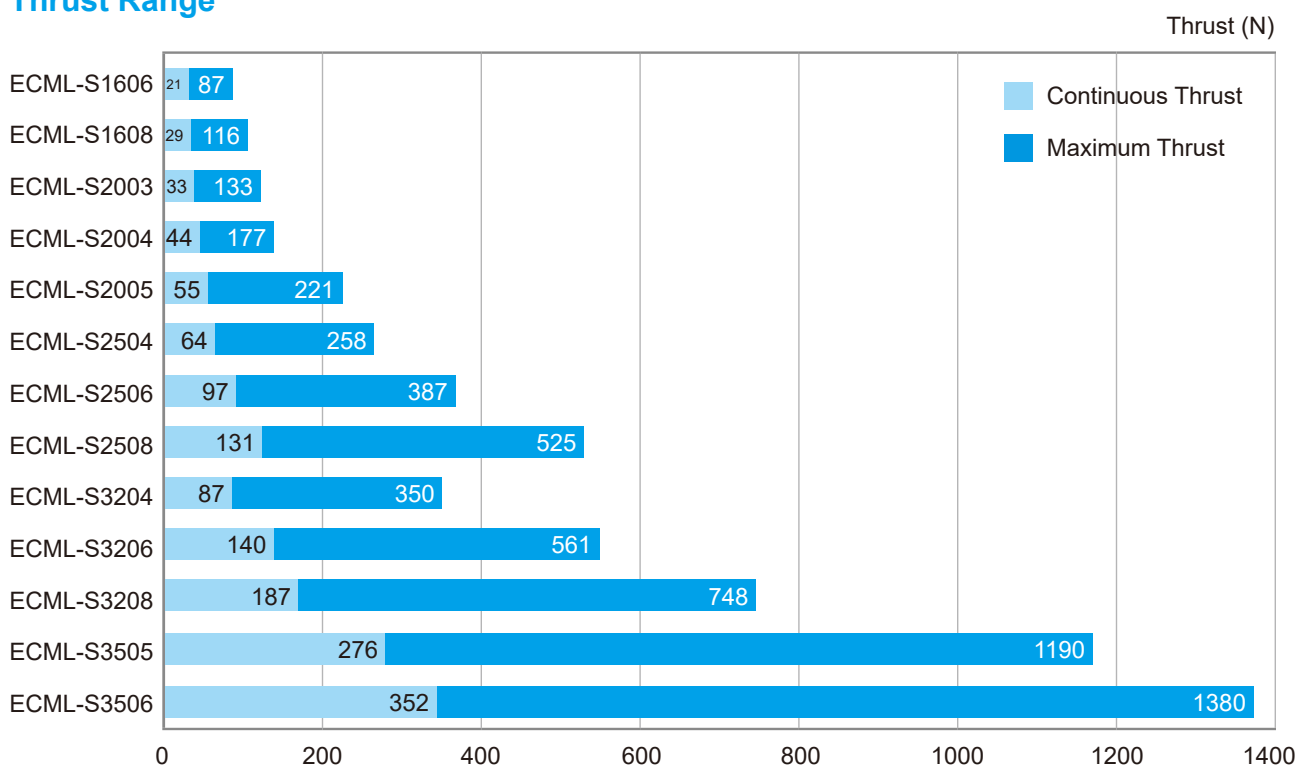
## ECML-S

High-speed, High-precision Linear Motor  
Position Repeatability within  $\pm 1\mu\text{m}$

- Simple mechanism structure for quick installation
- Direct driving mechanism, easy to replace ballscrew mechanism
- No cogging forces, low thrust ripple
- Excellent dynamic response
- No backlash
- Built-in temperature sensor and hall sensor units
- Large air gap for easy installation
- Installation holes on both sides in the coil assembly for easy mounting



### Thrust Range



### Length of Magnetic Way (Unit: mm)

Shaft Diameter	Minimum Length	Maximum Length	Increments
ECML - SM16	250	1,240	30
ECML - SM20	250	1,270	60
ECML - SM25	330	1,650	60
ECML - SM32	450	2,790	60
ECML - SM35	810	2,790	60

# Linear Stage

## LU

High Precision Steel Ballscrew Driven Stage  
Position Repeatability of  $\pm 3\mu\text{m}$

- Non-coupling mechanism design
- Compact size for space saving
- High rigidity and high accuracy
- Fast response
- Low inertia ratio



### Characteristic Analysis

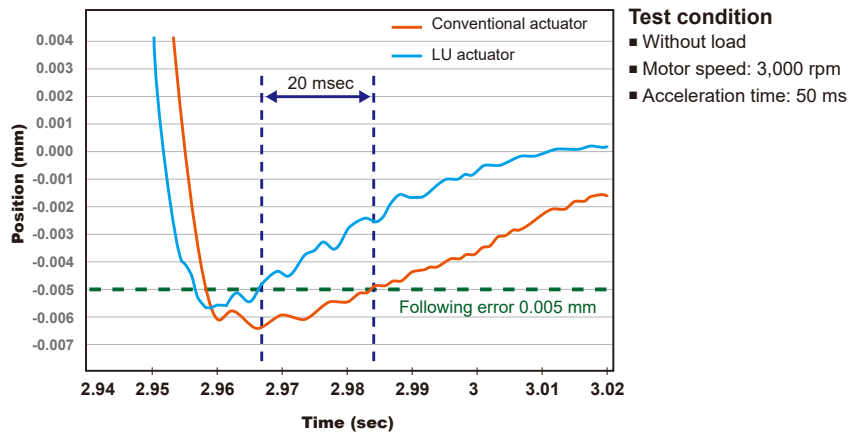


Delta LU Series  
(without coupling)

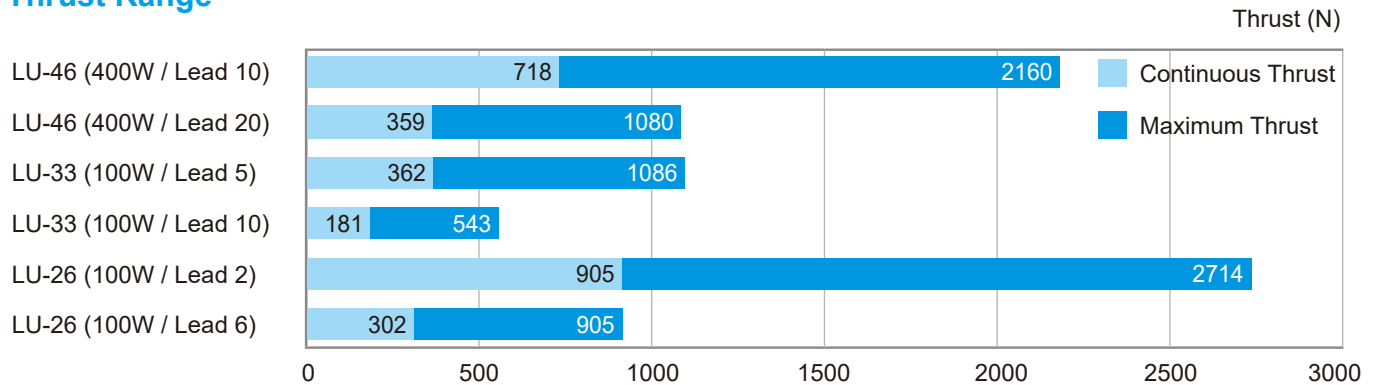


Conventional Linear Stage  
(with coupling)

### Measured Data by Laser Interferometer



### Thrust Range



# Linear Stage

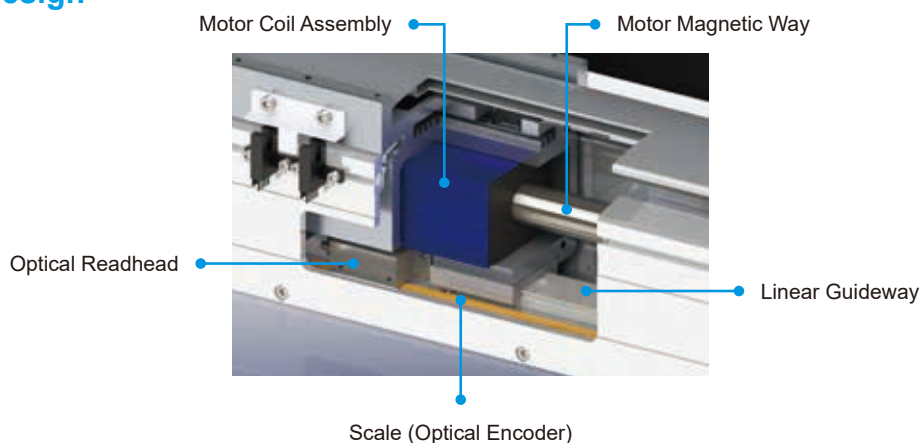
## LA-S

### High Speed, High Precision Linear Motor Driven Stage Position Repeatability of $\pm 1 \mu\text{m}$

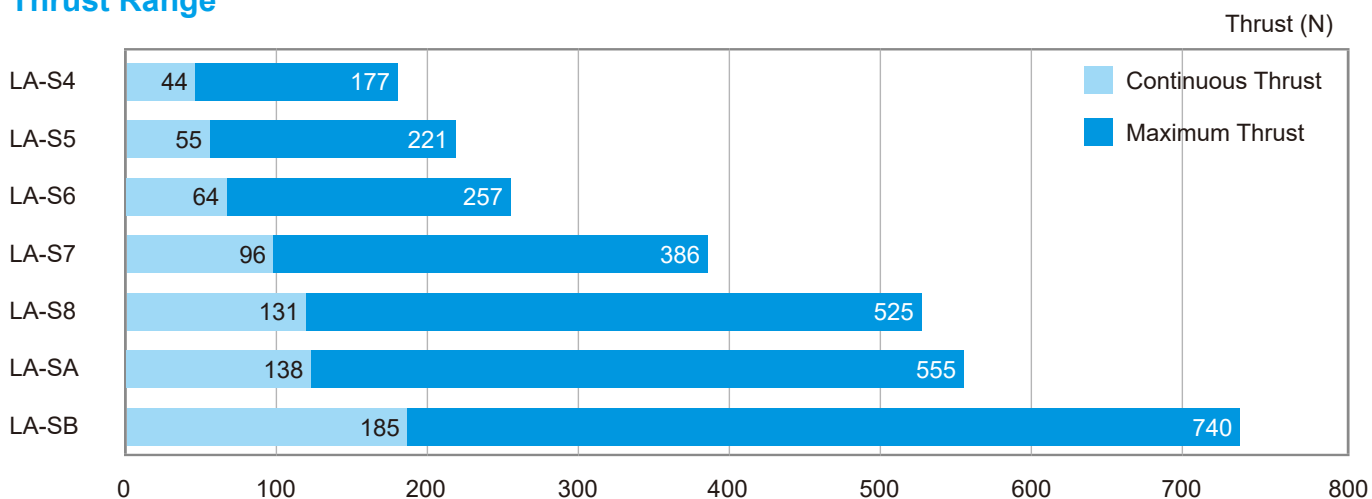
- **Direct drive with zero backlash**  
Directly driven by Delta's linear motor without backlash and alignment issues
- **High speed and high precision**
  - Provide high-precision and high-stability motion operation: high speed capability of up to 4m/s
  - Integrate with linear motor and optical linear encoder for direct drive and preventing backlash and accumulated offsets caused by changing machines
- **Cog-free design with low thrust ripple**  
Use an ironless forcer for zero cogging and low thrust ripple to perform smooth motion, even at low speed
- **Long travel distance with multiple sliders**
  - Good performance on long travel distances (up to 1.5 m) for various positioning applications
  - Single-axis platform supports more than 2 linear motors, creating multiple sliders within one stage unit for efficient space savings and independent operation



### Mechanism Design



### Thrust Range



# High Precision Planetary Gearbox PS



- **Support all series of Delta servo motors**
- **Provide concentric and right-angle models**
- **High precision**
  - Backlash for concentric 1-stage gearbox is under 3 arcmin
  - Backlash for right angle 1-stage gearbox is under 4 arcmin
- **High input speed**

Input speed allows for 5,000 RPM
- **High torque**

Helical gear design offers higher output torque in comparison with spur gearbox

- **High efficiency**
  - Efficiency for 1-stage model exceeds 97%
  - Efficiency for 2-stage model exceeds 94%
- **Low noise**

Under 65dB
- **Lifetime lubrication**

Protective class IP65 sealed design avoids leakage problems and requires no maintenance during the product's lifetime

# Precision Planetary Gearbox PA



- **Support all series of Delta servo motors**
- **Provide concentric models**
- **High rigidity and high torque**
  - Employ uncaged needle roller bearings with a set design
  - including ring teeth, gearbox and helical gears for high rigidity and output torque
- **High precision**
  - Backlash for 1-stage gearbox is under 8 arcmin
  - Backlash for 2-stage gearbox is under 12 arcmin

- **High efficiency**
  - Efficiency for 1-stage model exceeds 95%
  - Efficiency for 2-stage model exceeds 92%
- **Low noise**
  - Use helical gears capable of meshing to ensure smooth and quiet operation
- **Lifetime lubrication**
  - Protective class IP65 sealed design avoids leakage problems and requires no maintenance during the product's lifetime

# PC-Based Motion Controller (PAC)

## MH1 / MH2 **New** / MP1

Support DMCNET/EtherCAT fieldbus for various motion control applications

- **Energy Efficiency and Robust Hardware**

- The MH1/MH2 Series: cable less, fan-less and low-power consumption design supports stable operation; built-in CFast card, SD card and SSD slots provide fast and stable data transmission
- The MP1 Series: equipped with a 10.1-inch touchscreen for more flexible operation

- **Multiple Peripheral Interfaces for Communication**

Equipped with USB ports, serial COM ports, Gbps Ethernet ports and PCI/PCIe extension slots

- **Support Master and Slave Modules**

Built-in DMCNET and EtherCAT protocols, able to connect and control DMCNET modules and servo axes (max.12 units / 12 axes), and EtherCAT modules and servo axes (max.100 units / 64 axes); DMCNET / EtherCAT extension cards are also available to extend axes and units

- **High Security**

Customizable IC device for programming security and confidential protection

- **OS and Software Support**

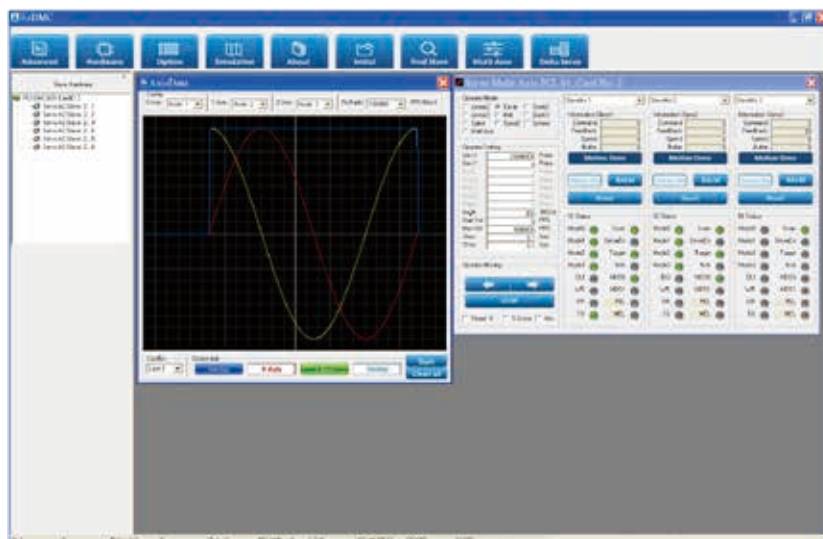
The MH1/MH2 Series support real-time OS (RTE, VxWorks) and general Windows 7/10\*. Users can choose to program with the built-in Dynamic-link library (DLL), and development tools SoftHMI and SoftPLC

\*Please contact customer service if changing to this environment



### Motion Control Functions

- Point-to-point position control
- Multi-axis linear interpolation
- Single-axis two-speed motion
- Circular interpolation
- Helical interpolation
- Backlash compensation
- Helix deviation compensation
- Compare
- Table motion
- JOG
- PT/PVT
- Gantry control (EtherCAT)
- E-CAM (EtherCAT)



- **Speed Curve Tracing**

Speed curve tracing function to trace current motion speed and adjust commands

- **Simulation Scope**

Captures figures of motion commands or real motion tracks with X/Y-axis monitor to simulate motion commands or monitor motion tracks

- **DMCNET/EtherCAT Automation Software**

The EzDMC/EcNavi development software includes a DMCNET/EtherCAT master controller and slave devices for data communication, functional identification, programming and debugging, providing a fast and easy way for first-timers to understand the solution

- **Motion Control Platform Based on CODESYS **New****

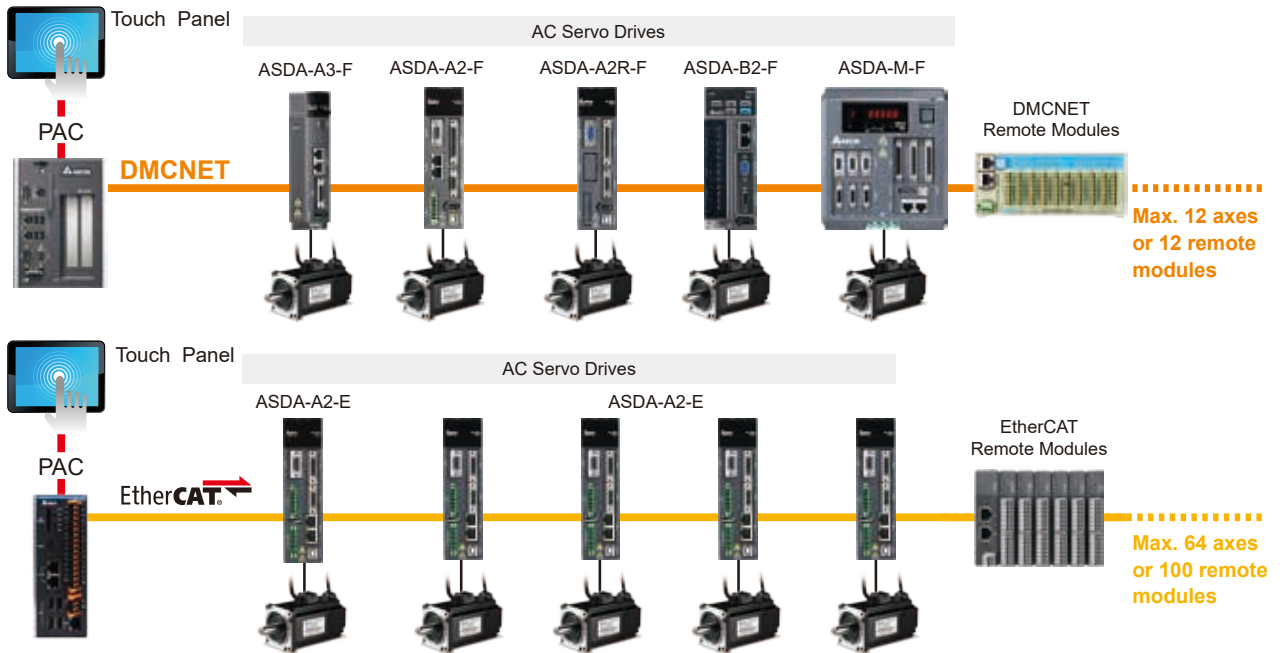
The PC-Based Motion Controller AX864E Series based on CODESYS Series saves development time and cost (available in 2019 Q3)

## Applications

**Electronics Production:** PCB machines, Automated Optical Inspection (AOI) machines, semi-conductor machines, LED machines, TFT inspection machines, glue-dispensing machines, SMT pick-and-place machines, winding machines, optical lens processing machines, glass grinding machines

**Woodworking:** CNC drilling machines, woodwork cutting machines, board slitting machines, mortise & tenon machine, solid wood door machine

**Other:** Pipe-bending machine



## Centralized Slave Modules

- **Gateway Type E-BUS Remote Power Couplers**

**R1-EC5500D0 / R1-EC5512D0**

Connect to digital I/O, analog I/O and pulse I/O extension modules

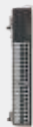


With E-BUS power module

- **16 Digital Input Remote Modules**

**R1-EC6002D0 / R1-EC6022D0**

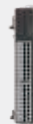
Provides digital IN signals remote control for EtherCAT master



- **1-Channel Pulse Remote Module**

**R1-EC5621D0**

Connects to digital I/O, analog I/O, pulse I/O and MPG signal extension modules with EtherCAT master



- **4-Channel Analog Input Remote Module**

**R1-EC8124D0**

Provides analog IN signals remote control for EtherCAT master



- **16 Digital Output Remote Modules**

**R1-EC7062D0 / R1-EC70A2D0 / R1-EC70E2D0 / R1-EC70F2D0**

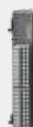
Provides digital OUT signals remote control for EtherCAT master



- **MPG Module**

**R1-EC5614D0**

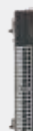
Receives Manual Pulse Generator (MPG) signals remotely for EtherCAT master



- **4-Channel Analog Output Remote Module**

**R1-EC9144D0**

Provides analog OUT signals remote control for EtherCAT master





# Delta High-Speed Motion Control System DMCNET

Delta's Motion Control NETWORK (DMCNET) is a high speed, real-time communication system.

- Up to 12 axes servo control with-in 1ms simultaneously; with 3-axis helical and linear interpolation divided into 4 groups, or 2-axis linear and arc interpolation divided into 6 groups
- Support 64-bit dual-precision floating point, allowing high-precision system calculations and flexible operation
- Support absolute commands, incremental commands and T-curve/S-curve velocity profiles
- Built-in 35 homing modes
- Built-in position, speed and torque control modes; able to receive real-time servo information/parameters or change control modes via communication command, offering fast communication and motion control for various applications

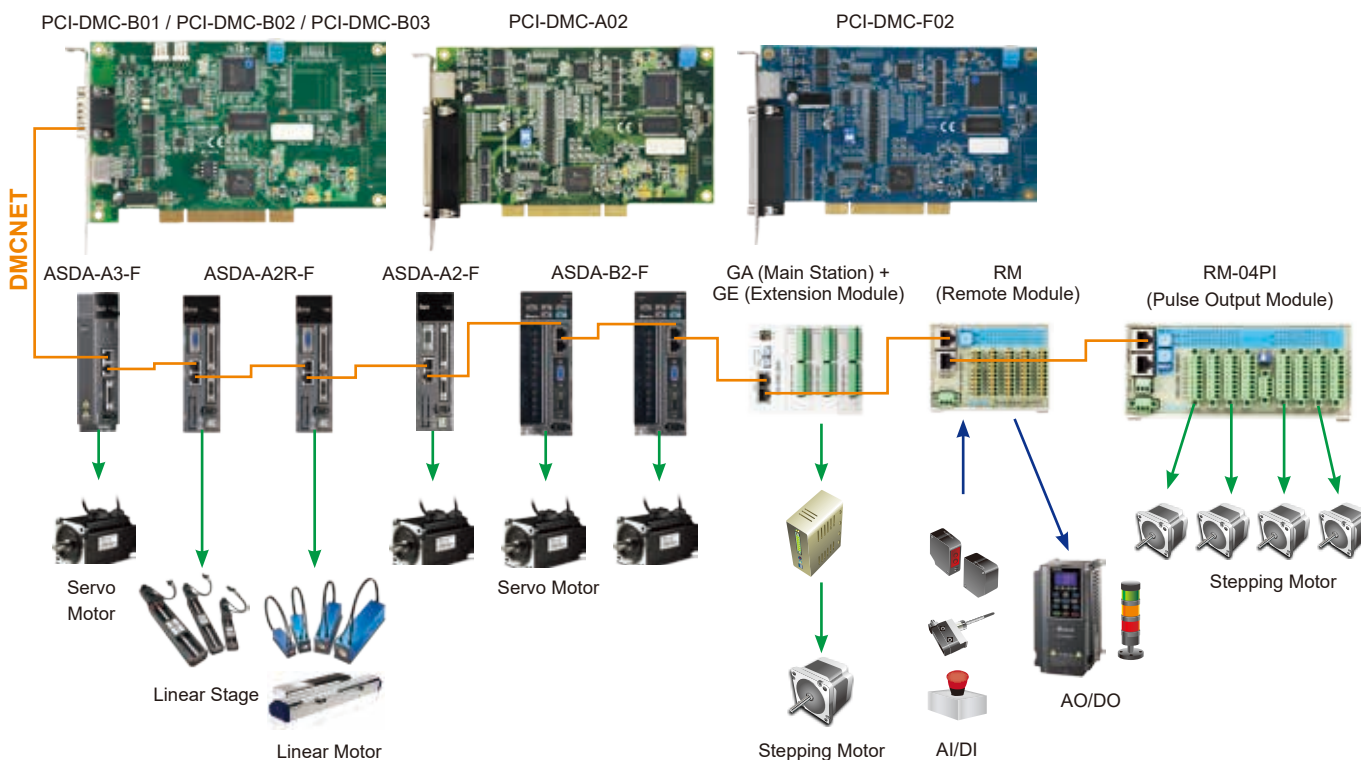


The DMCNET is equipped with the high-speed and reliable one-wire DMCNET communication protocol for diverse motion control applications. Adapted for customer's needs, Delta's PCI motion control cards are available in three series:

- 12-axis PCI-DMC-A02
- 6-axis PCI-DMC-F02 with digital I/O interfaces
- PCI-DMC-B01/PCI-DMC-B02/PIC-DMC-B03 with pulse compare & capture functions

All series are able to connect to multiple servo systems, such as the advanced ASDA-A3-F Series, high performance ASDA-A2-F Series, and standard ASDA-B2-F Series, as well as ASDA-A2R Series with linear motors. The DMCNET establishes a total motion control solution enabling lower system cost and superior performance to increase end-product value and competitiveness.

## DMCNET System Configuration



## Applications

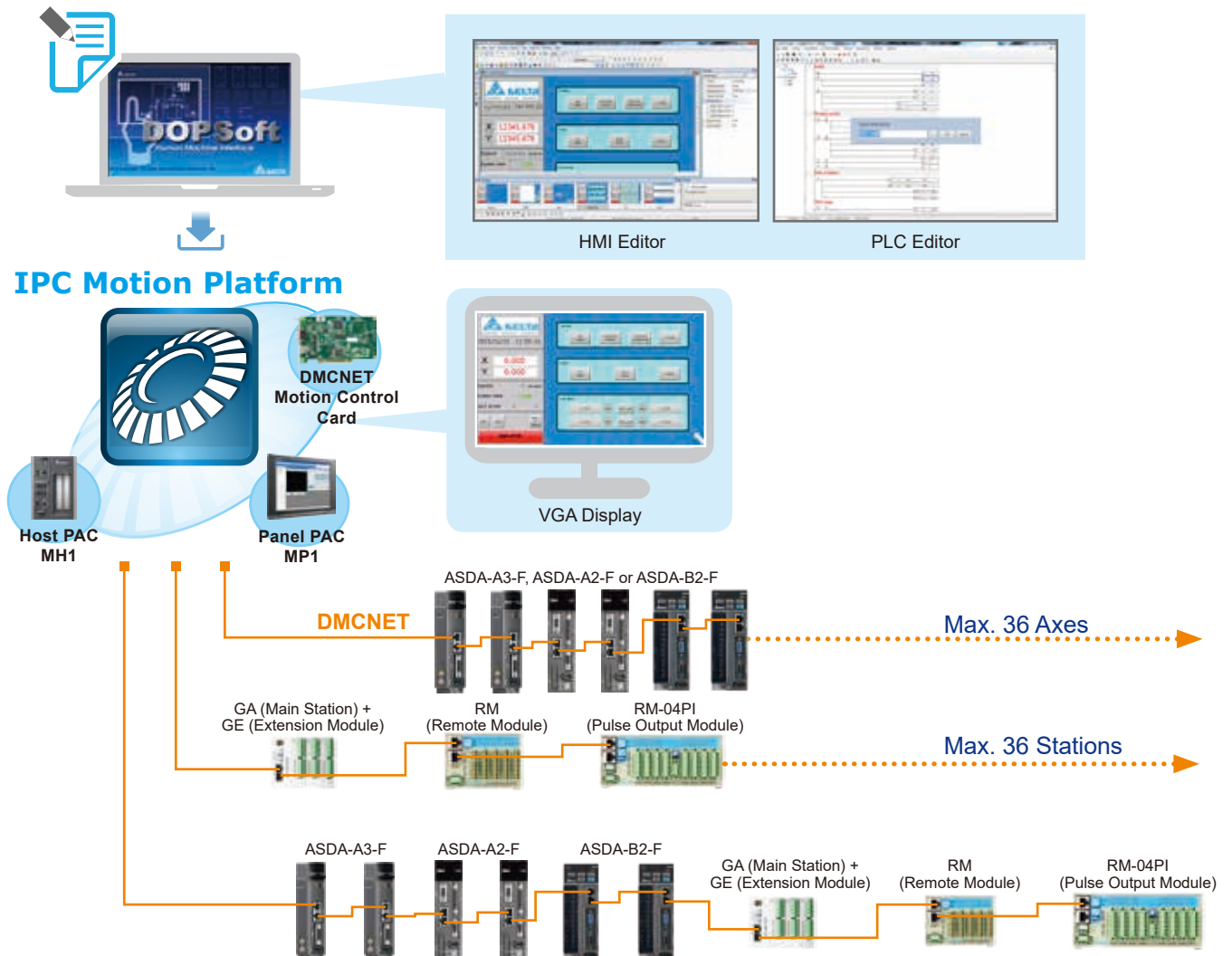
Integrated electronics applications, glue dispensing machines, woodworking machines, pipe bending machines

## IPC Motion Platform (IMP1.5)

### A Simple and Fast Setup Development Platform for Realizing Unsurpassed Motion Control

High-speed, flexible and scalable development platform which combines powerful motion control functions and integrates Delta's HMI editing and PLC logic programming software tools to achieve complex and precise motion control based on customers' requirements

- **Power Motion Control Core:** Upgrades Delta's PAC or PC with a motion control card to become a high-speed communication motion controller with HMI and PLC functions
- **Simple Secondary Development Platform:** Combines with Delta's standard HMI editor DOPSoft and PLC editor WPLSoft in one platform to simplify programming and IMP project development
- **Scalable Communication for Expandable Network:** Through PCI extension slots, three DMCNET communication networks with up to 36 stations can be established; it is able to control 36 axes of servo motors simultaneously without connecting to any remote modules
- **Industry-Oriented Controller:** Provides Soft Numeric Control (SNC) and Motion Program Macro (MPM) to adjust and modify self-defined motion paths and commands according to application requirement changes
- **Standard Communication Interfaces:** Built-in Modbus and Modbus TCP gateways enable convenient data transmission between machines



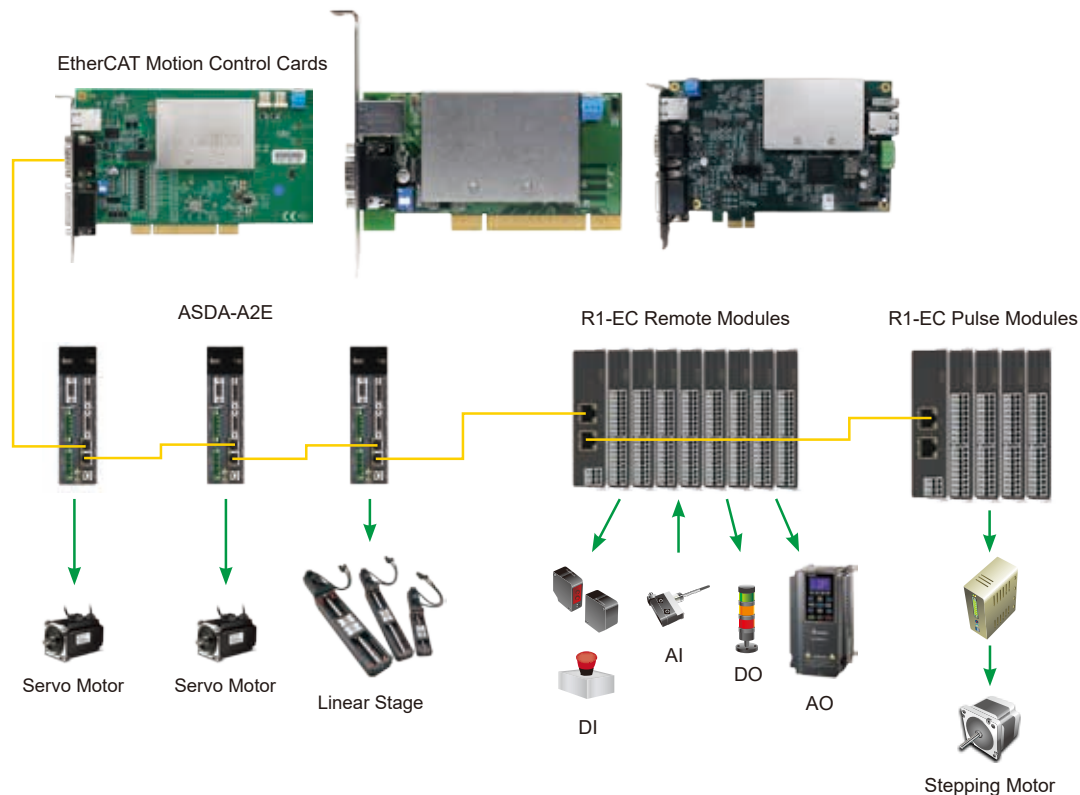
# EtherCAT High-Speed Motion Control System

EtherCAT Motion Control Products (Ethernet Control Automation Technology) is an open Ethernet-based fieldbus system that provides high-efficiency and high-performance synchronization quality for automation control. Delta's EtherCAT motion control cards feature:

- PCI-L221-XXD0 and PCIE-L221-B1D0 motion control cards provide complete functions for EtherCAT masters and support device descriptions in XML format (EtherCAT Slave Information-ESI), allowing quick identification of ESI files and offering the capability of real-time connection via EtherCAT for high level integration
- High-speed motion control of up to 64 slave stations, including 32 servo axes within 1ms cycle time
- Communication cycle time between stations: within 1 ms to 0.5 ms based on customer needs
- Motion control functions: 35 homing modes, point-to-point position control, 2-axis/3-axis interpolation, multi-axis synchronization, continuous motion control, gantry control, speed control, torque control and more



## EtherCAT System Configuration



## Applications

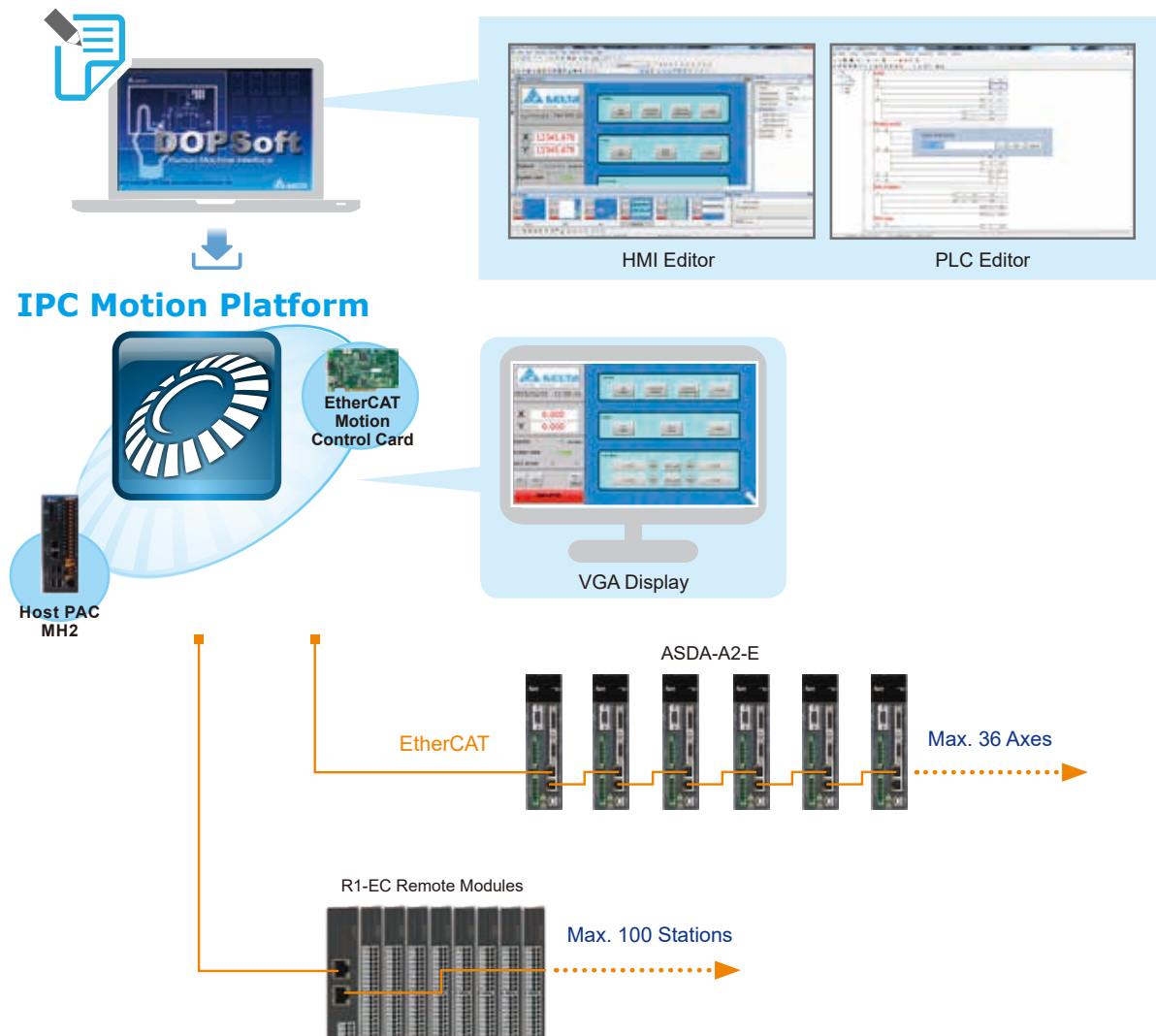
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- **Motion Control Core:** Upgrades Delta's PAC or PC with a motion control card to become a high-speed communication motion controller with HMI and PLC functions
- **Simple Secondary Development Platform:** Combines with Delta's standard HMI editor DOPSoft and PLC editor WPLSoft in one platform to simplify programming and IMP project development
- **Scalable Communication for Expandable Network:** The EtherCAT fieldbus system with IMP is able to connect max. 100 stations and control max. 64 axes of servo motors
- **Industry-Oriented Controller:** Provides Soft Numeric Control (SNC) and Motion Program Macro (MPM) to adjust and modify self-defined motion paths and commands according to application requirement changes
- **Standard Communication Interfaces:** Built-in Modbus and Modbus TCP gateways enable convenient data transmission between machines

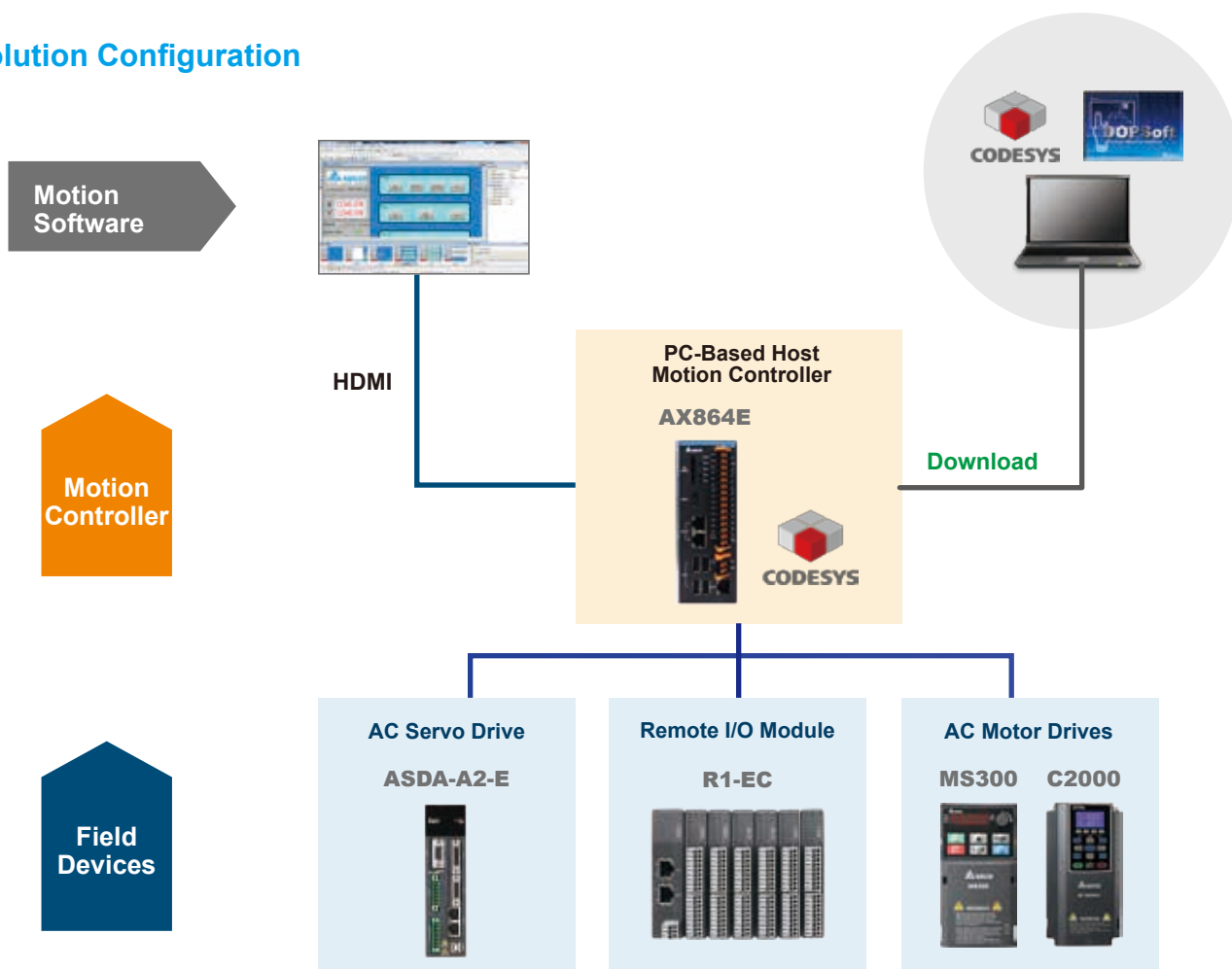


# CODESYS SoftPLC Platform

CODESYS is an IEC 61131-3 compliant SoftPLC development system, supporting SoftHMI and PLC programming software to develop. Delta's PC-Based motion controller based on CODESYS offers complete functionalities of a development tool, including:

- **Programming based on CODESYS:** Equipped in the PC-Based Motion Controller AX864E Series for real-time motion commands via RTE real-time OS and EtherCAT communications
- **PLCopen Standard Motion Control:** Single and multi-axis motion control with standard PLCopen Motion POU's
- **E-CAM:** Synchronized E-CAM function and graphic CAM curve editing surface; each cam supports 65,535 points
- **Standard IEC 61131-3 Programming Languages:** Supports IL, ST, LD, FBD, SFC standard programming languages
- **Debugging Mode:** Displays application data in simulation mode on SoftPLC, reading/writing/forced setting of variable values directly in the respective editor, monitoring specific selected values in watchlists and single step code execution
- **Servo Axes Control:** Up to 64 axes servo control within 1ms communication cycle

## Solution Configuration



# Open CNC Solution NC E

Open-structured CNC Control System for Customization and Flexibility



## Solution 1: Standard

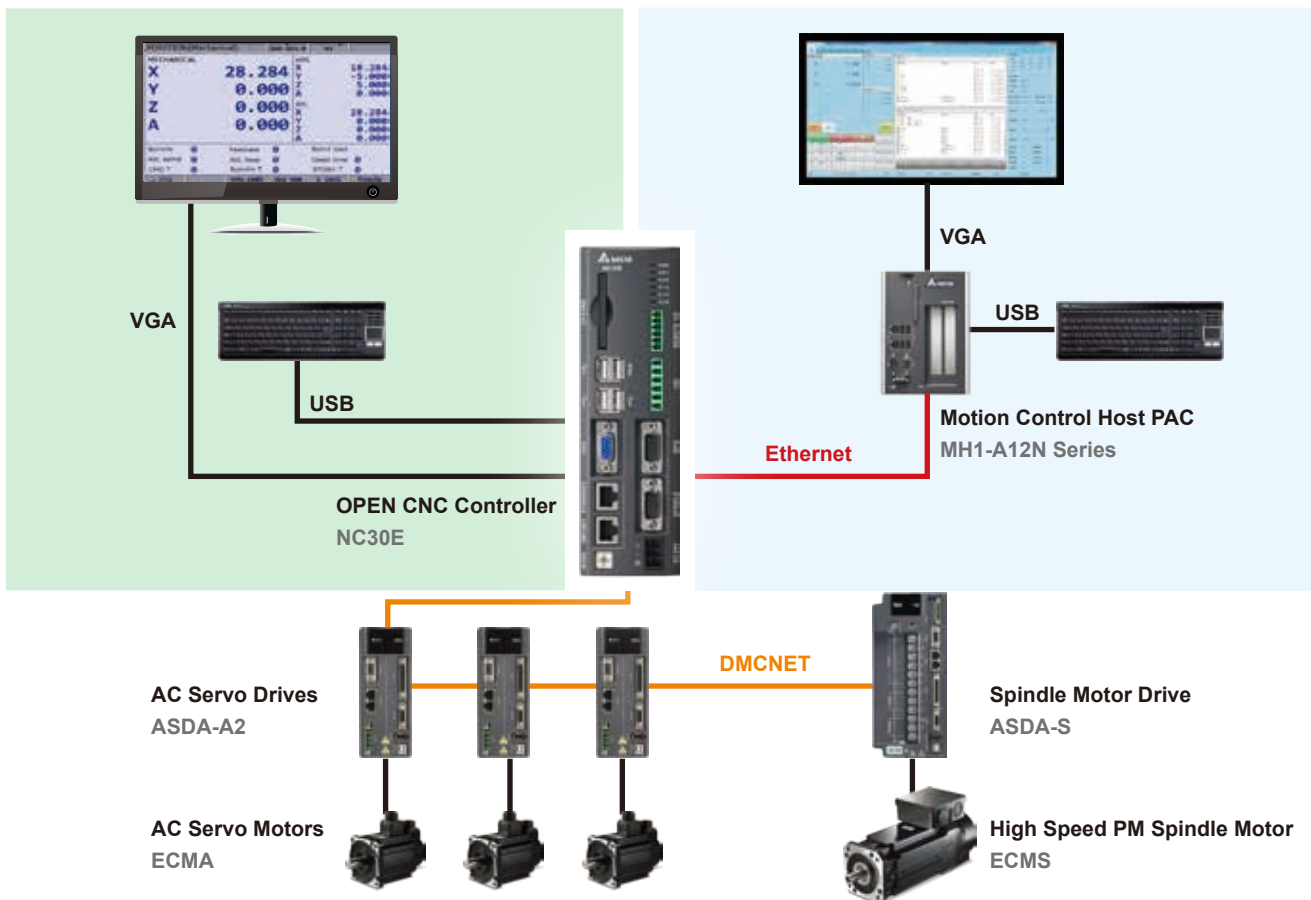
VGA output for external display with Delta's standard interface

- Two-language CNC operation interface (Chinese, English)
- Embedded control system provides high efficiency
- Allow easy customization with accessories including a monitor and a keyboard
- Support DMCNET communication for easy wiring and excellent synchronous multi-axis control

## Solution 2: Function-Oriented

Match with panels or other products based on applications

- API platform and template are provided for users to self-define the HMI functions
- Easy integration with third party software via IPC
- Reduce additional hardware cost for customers to focus more on software upgrades and better integration for higher operation performance



## Applications

Customized CNC systems, woodworking machines, lathes, grinding machines, glass cutting machines, soldering machines, rim engraving, milling machines, industrial robots

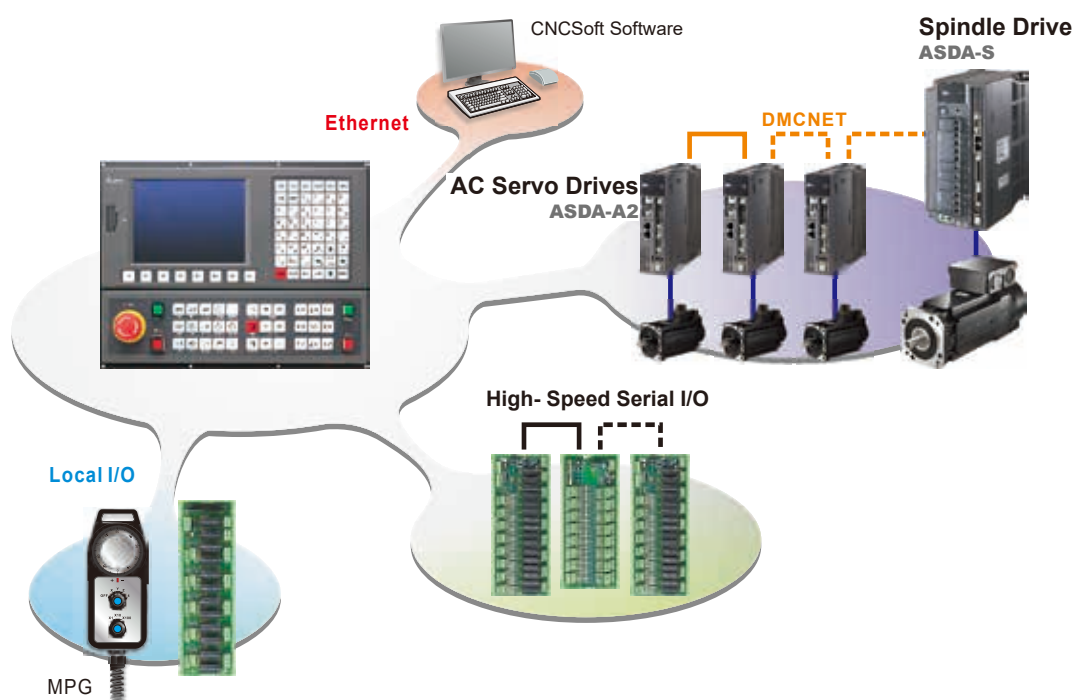
# CNC Solution

## Integrated Total Solution for the CNC Machine Tools Industry



- Built-in 32-bit high speed and high processing dual CPU to construct a real-time and multi-functional control center
- High-quality digital data transmission when matched with Delta's high-speed servo and spindle systems
- Auto-gain tuning allows automatic servo system parameter settings to achieve easy and real-time optimum control
- CNCSoft software offers user-friendly setup and user-defined operation to build customized interface
- Capable of connecting serial digital I/O modules to greatly improve the extension capacity

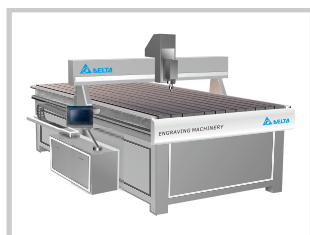
## System Configuration



## Applications



CNC Machining Center/  
High-speed Tapping Machine



Engraving Machine



CNC Gantry Control Machine



CNC Woodworking Machine

# Robot Controller with Servo Drive Integrated ASDA-MS

An Innovative and Comprehensive  
Development Platform for Robot Control

## Complete Robot Solution

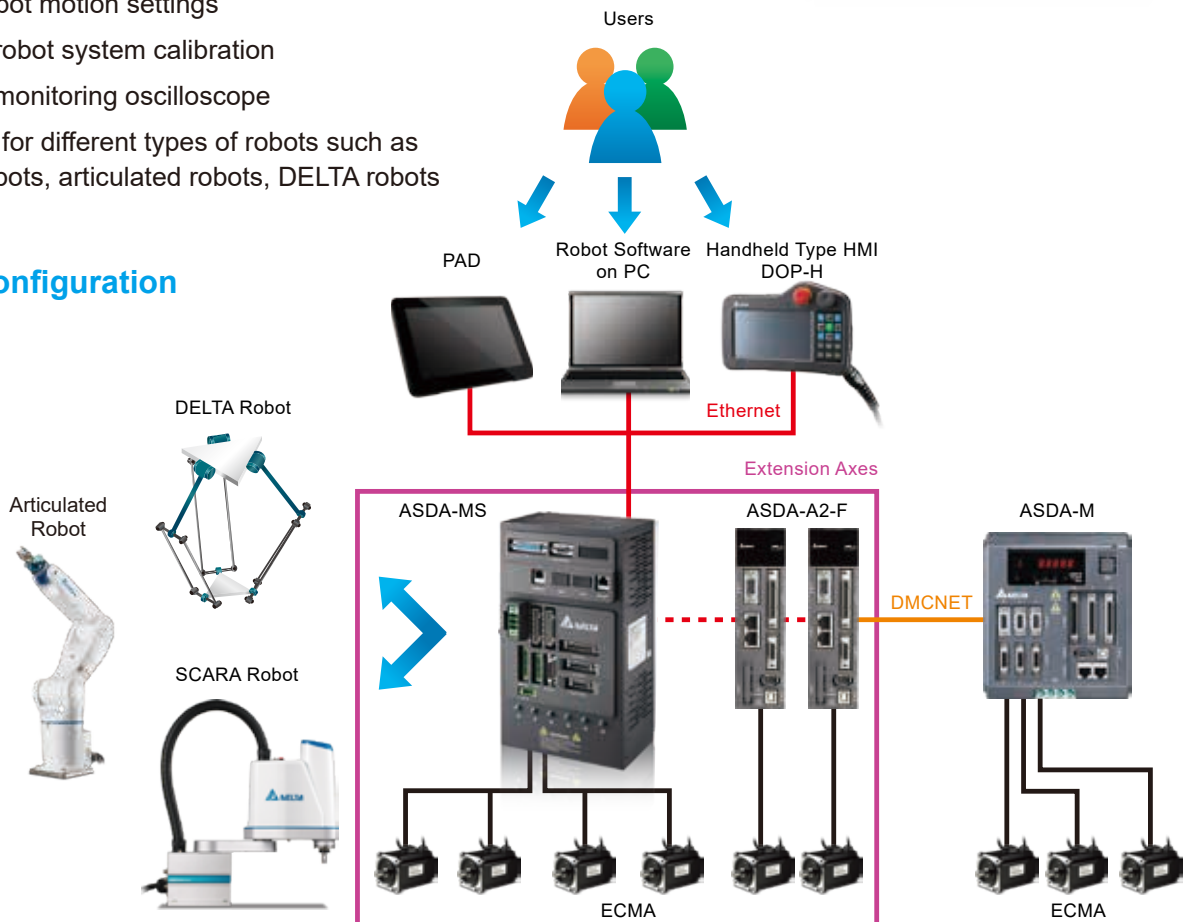
- Integrated servo drive and controller in one single unit for real-time motion control with high flexibility and reliability
- Various communication protocols
- Built-in with diverse robot control modules
- Up to 10 axes motion control: 4-axis robot + 6 external axes
- Support 5 kinds of programming languages with IEC 61131-3 standard and the PLCopen motion function block
- Offer DRL Languages for robot application programming
- Support G-code programming

## User-Friendly Robot Software

- IEC61131-3 PLC programming
- DRL programming
- Multiple robot motion settings
- Intelligent robot system calibration
- Real-time monitoring oscilloscope
- Applicable for different types of robots such as SCARA robots, articulated robots, DELTA robots and more



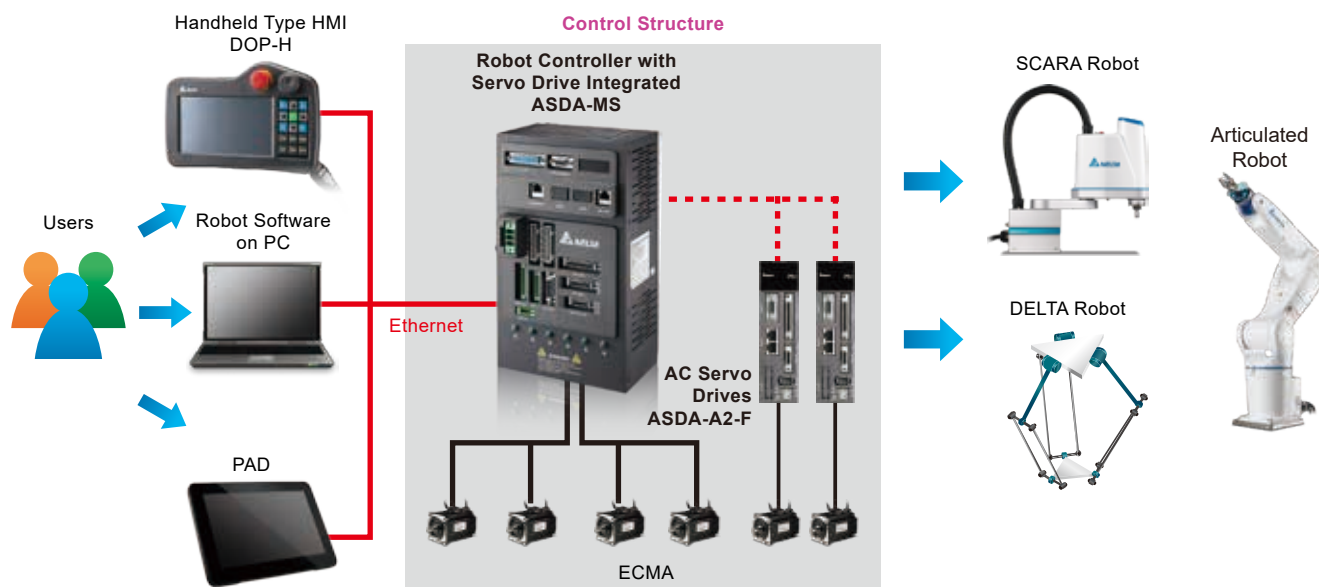
## System Configuration





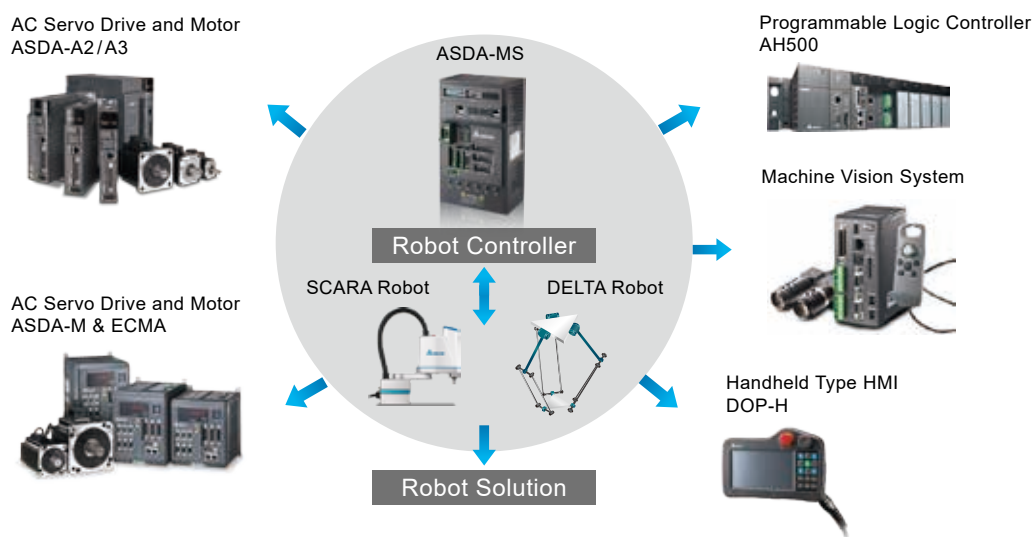
## All-in-One Robot Controller

- Integrates motion controller, robot controller and 4 servo drives into one single unit to speed up data transmission, enhance system control performance and dynamically compensate non-linear terms that affect robot motion during robot moving processes, meeting the requirements of high speed and high precision for robot or motion control applications
- Provides a variety of tools for implementing required functions and supports different types of robots such as the 4-axis SCARA robot, the Linear DELTA, DELTA robot, and the 2 axes extension via DMCNET for 6-axis articulated robot to meet diverse requirements with flexibility and reliability



## Comprehensive Development Platform

- Provides a comprehensive development platform for customers to design their specific applications, enhancing value-added secondary development and efficiency of various manufacturing techniques
- Integrates with Delta's industrial automation products and related robot peripheral devices to create a complete robotic automation solution, meeting the requirements for both single robot and robot workstation applications



## Applications

**Industries:** Consumer electronics, electrical /electronics, rubber and plastics, packaging, metal fabrication

**Processing:** Insertion, screw driving, assembly, glue dispensing, soldering, loading /unloading, stacking, inspection

# Controller with Human Machine Interface HMC

Optimum Combination of Controller and Display

## 7-inch Controller with Widescreen Handheld HMI HMC07-N411H5C5(A)

- 7" 16:9 widescreen 65,536 colors TFT
- Display Resolution: 800x480 pixels
- Built-in PLC functions
- Built-in emergency stop switch
- Built-in enable switch (rear side)
- Optional MPG (Manual Pulse Generator)
- Supports SDHC card
- Supports DMCNET
- Compact and lightweight 750g design



## 7-inch Controller with Handheld HMI HMC08-N500S52

- 7" 65,536 colors TFT
- Display Resolution: 800x600 pixels
- Built-in PLC functions
- RS-422 high-speed remote I/O connection
- Supports Ethernet
- Supports DMCNET
- Supports SDHC card
- Supports audio output: MP3, Wav files
- USB Host for direct connection to USB disk, printer, mouse and keypad

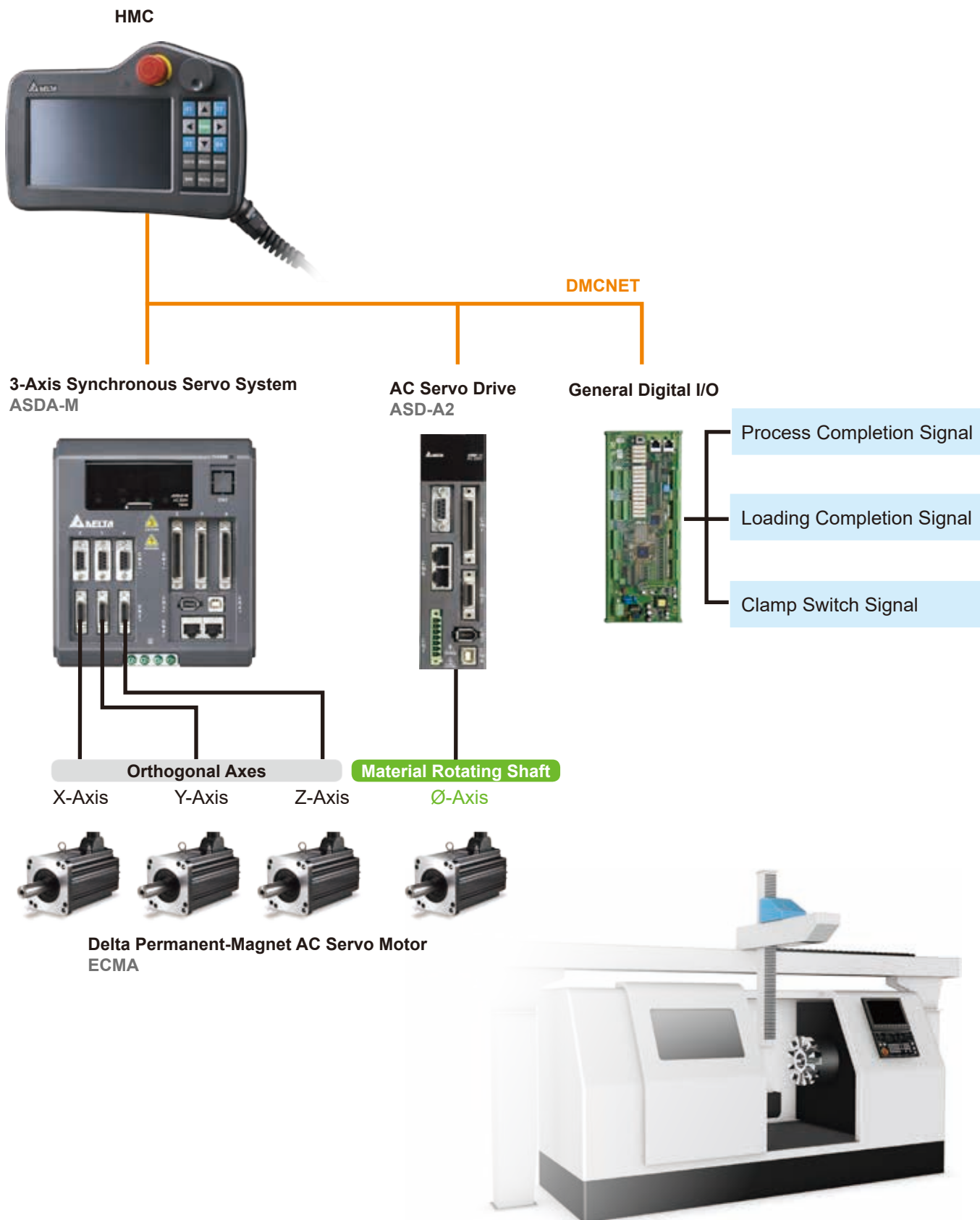


## 8-inch Controller with HMI HMC08-N500S52

- 8" 65,536 colors TFT
- Display Resolution: 800x600 pixels
- Built-in PLC functions
- RS-422 high-speed remote I/O connection
- Supports MPG (Manual Pulse Generator) Input
- Supports Ethernet
- Supports DMCNET
- Supports SDHC card
- Supports audio output: MP3, Wav files



## Robotic Loading / Unloading Control for Machine Tools



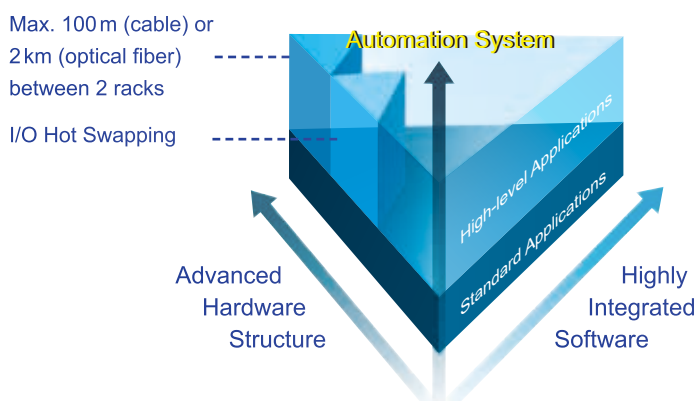
# Hot Swappable Mid-range PLC AH

The Smart Solution for High-end Machinery  
and System Integration



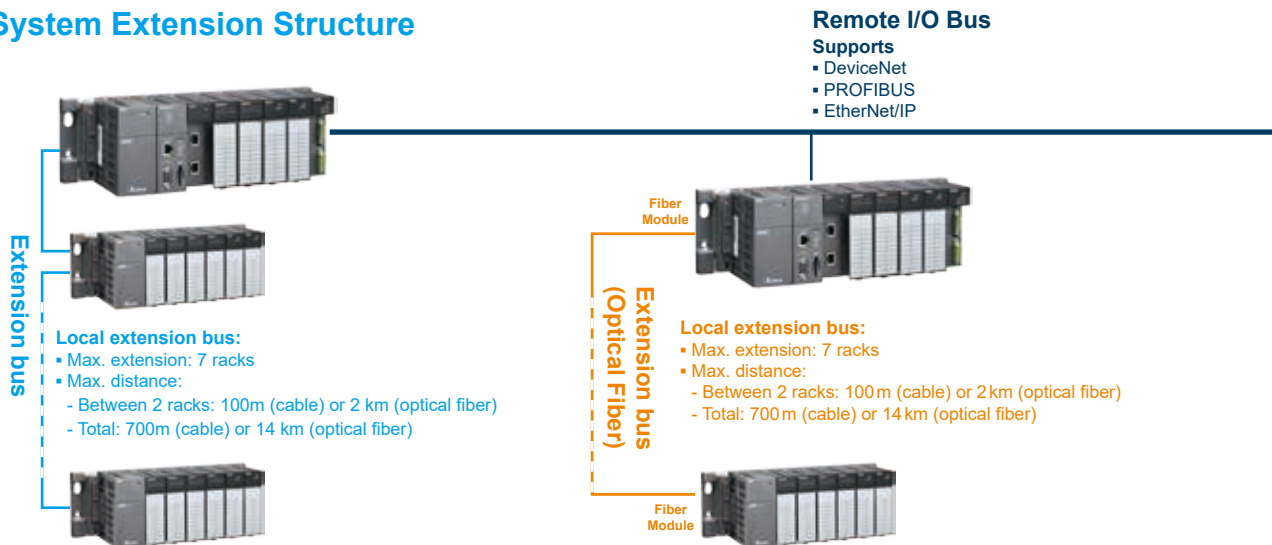
- 32-bit dual-core multitasking processor
- Excellent program execution speed: LD: 20ns
- Max. I/O:
  - DIO: Max. 4,352 points
  - AIO: Max. 544 channels
  - RIO: Max. 125,440 digital points/3,920 analog channels
- Program capacity: Max. 1M steps (4 MB)
- Data register (D+L): 512k words
- CPU with built-in fully isolated RS-232 / 422 / 485 ports, Mini USB port, Ethernet port and SDHC card slot (compatible with the memory cards on the market)
- Abundant selection of AIO modules, DIO modules, temperature modules, network modules, pulse-train and DMCNET motion control modules

## Modularized Hardware Structure and Highly Integrated Software



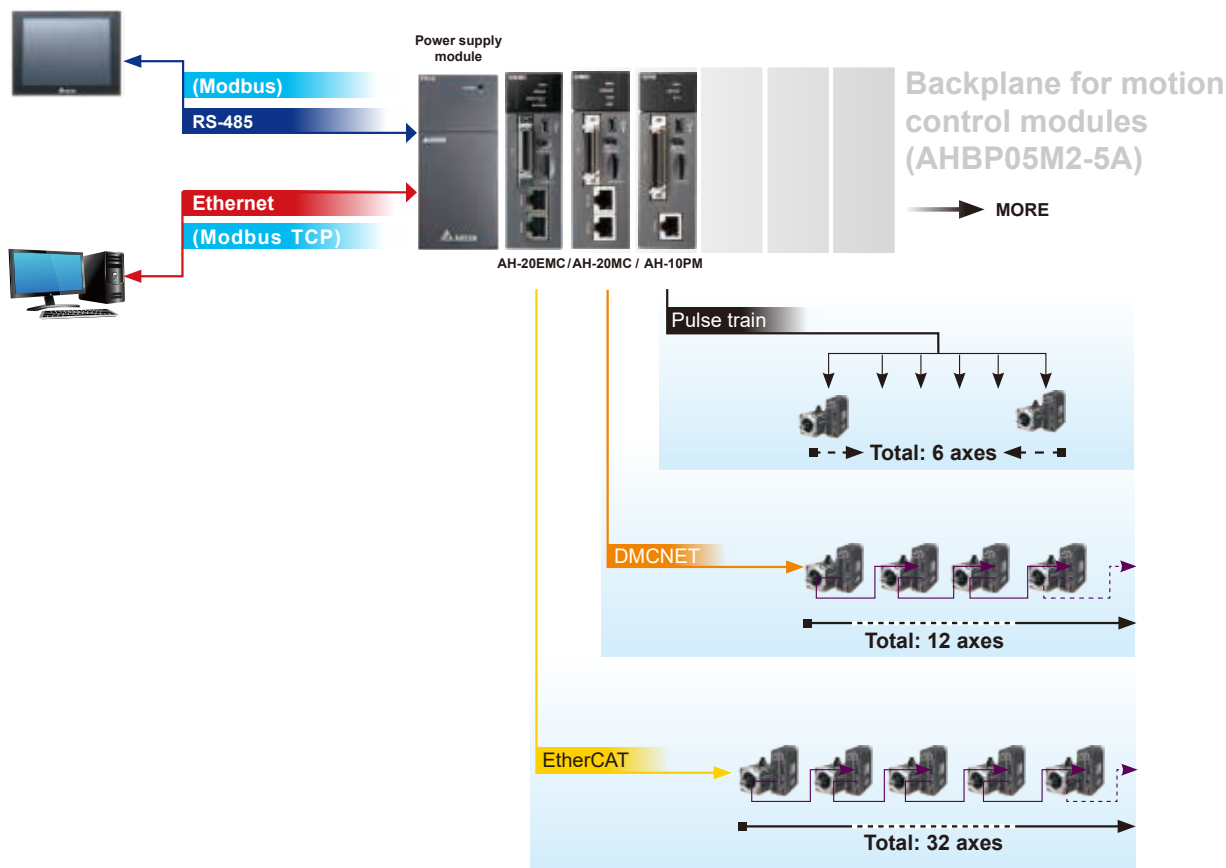
- Highly integrated programming software ISPSOft: Graphical interface with 5 programming languages
- Enhanced flexibility: Max. 100m (cable) or 2 km (optical fiber) between 2 local extension racks
- Redundant system and hot-swapping function ensure non-stop system operation for improved maintainability

## System Extension Structure



## Motion Control Structure

Example: AH20EMC



## Applications

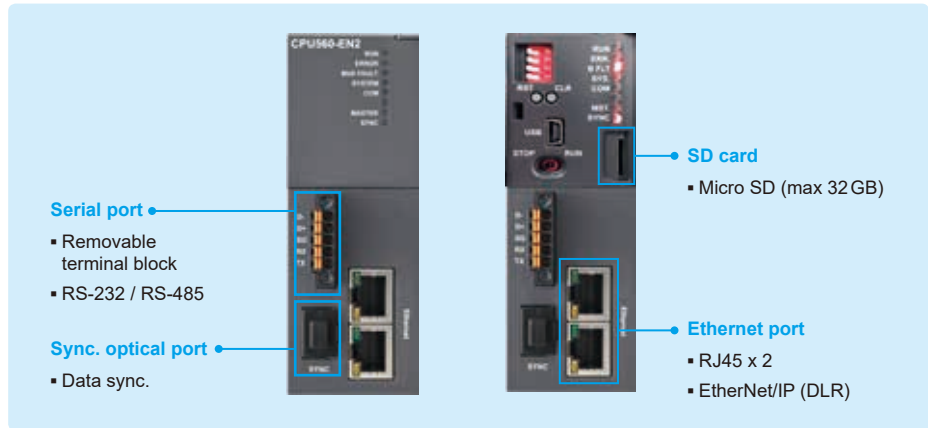
High-end industrial equipment: textile machines, packaging machines, injection and molding machines, electronics equipment, printing machines, paper making machines, warehousing management systems, and logistics management systems

System integration applications: water treatment, HVAC system, traffic monitoring system

## Redundant CPU

The redundant CPU of the AH Series adopts a reliable redundancy structure, and integrates synchronous modules, Ethernet ports and serial communication interfaces for a more competitive control solution.

AHCPU560-EN2



## Redundant Backplane

The redundant backplane of the AH Series provides redundant power supply and communication interfaces for a complete control solution.

### Redundant main backplane: AHBP04MR1-5A (4-slot)



### Redundant expansion backplane: AHBP06ER1-5A (6-slot), AHBP08ER1-5A (8-slot)



## Redundant System

### Full Redundancy Structure

Redundant CPU	Redundant main backplane	Redundant power	Redundant ext. ports	Ring topology
---------------	--------------------------	-----------------	----------------------	---------------

### Modules

Main backplane	Expansion backplane	RTU rack
<ul style="list-style-type: none"> <li>Ethernet module - AH10EN-5A (V3)</li> <li>Serial module - AH10SCM-5A (V3)</li> </ul>	<ul style="list-style-type: none"> <li>DIO</li> <li>AIO (includes temperature modules)</li> <li>Serial modules - AH10SCM-5A, AH15SCM-5A</li> </ul>	<ul style="list-style-type: none"> <li>DIO</li> <li>AIO (include temperature modules)</li> </ul>

### Tasks

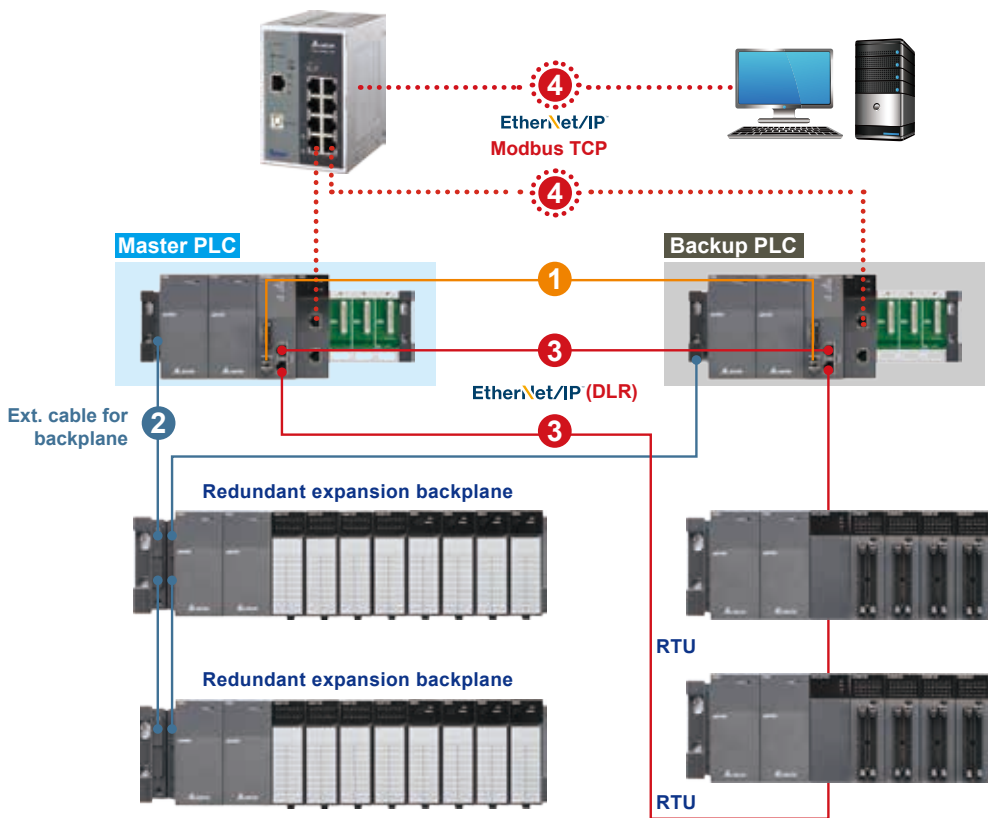
Cyclic	Timer interrupt
--------	-----------------

CPU built-in sync. module

CPU switch-over time: 20 ms

RTU nodes to support expansion backplanes

Standard backplanes available (under some conditions)



- 1 Sync. optical fiber
- 2 Ext. cable for backplane
- 3 EtherNet/IP ring topology (DLR)
- 4 Star topology EtherNet/IP, Modbus TCP

# Compact Modular Mid-range PLC

## AS

Flexible, Smart, Friendly - The Best Choice for Automated Equipment Control



- Max. I/O: 1,024 points
- Program capacity: 128k steps
- Data register: 60k words
- Max. extension ability: 32 modules
- 32-bit SoC (System on Chip) CPU for high-performance and high-speed computing
- CPU with built-in RS-485 port\*2, mini USB port, Ethernet port, and Micro SD card slot
- Max. 8 axes control via CANopen motion network / max. 6 axes control via pulse control (200kHz)
- Robust rackless design and patented DIN rail clips for direct plug-in/plug-out module installation and replacement
- Various modules for selection: digital I/O modules, analog I/O modules, load cell modules, temperature measurement modules, serial communication modules, industrial bus modules
- PLC programming software (ISPSOft) for program editing, hardware and network configuration, system diagnosis and axes positioning control

### Advanced CPU Performance

High speed execution: up to 40k steps/ms  
(Condition: 40% LD instruction / 60% MOV instruction)

LD instruction 25ns

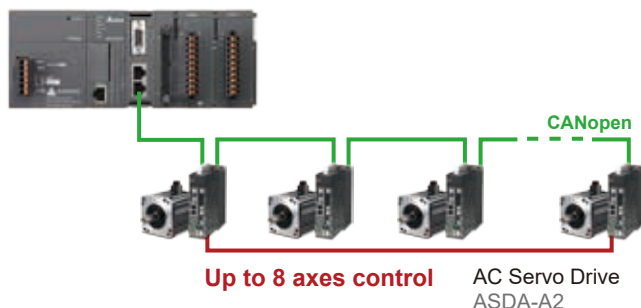
MOV instruction 0.15µs

Floating point operation instruction 1.6µs

Trigonometric function instruction 3.5µs

### Positioning Control - Delta's CANopen Control

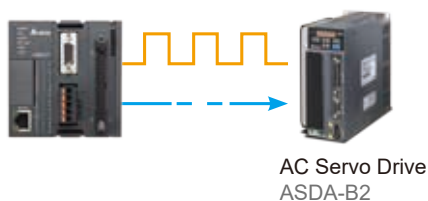
- Up to 8-axis CANopen positioning control with AS-FCOPM communication card
- Fast positioning configuration in one initialization instruction without building CANopen data exchange table
- Batch download of programmable servo drive parameters to avoid data loss
- Axis control by instructions to enhance the legibility and maintainability of PLC programs





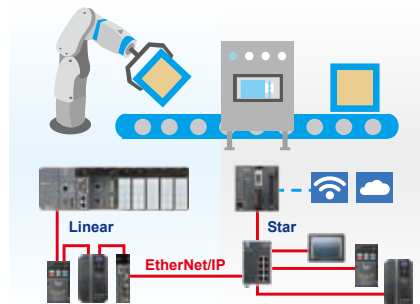
## Positioning Control - High-speed Pulse

- AS332T-A / AS332P-A transistor CPU: 6 axes (or 12 channels) 200kHz
- AS324MT-A differential CPU: 2 axes 4 MHz + 4 axes 200kHz
- Positioning planning table for fast positioning planning and path simulation
- Choose any given 2 axes for linear and arc interpolation



## Flexible Network System Configuration

- Supports star, linear network topology for fast expansion and management on production lines
- Compatible with IT network; no independent network or IT technician required
- Combines with Delta's industrial Ethernet solutions to construct IoT for more automation application and industrial upgrades



## New Programming Software

### Various, Convenient Software Wizards for Effortless Planning

#### Positioning Planning Table



- ##### 2D simulation

Intuitive 2D track simulation without complicated calculation for real-time path planning

- ##### Path list

Multiple combination for positioning modes and tracks; and fast path planning via table-structured planning



- ##### Axis parameter setting

Intuitive configuration interface for easy axis parameter setting without manual reference

### Complete Diagnosis Tools for Quick and Effective System Monitoring

#### Data Logger / Tracer

- ##### Real-time monitoring:

High-speed tracer for fast sampling within 1 scanning cycle
- ##### Stable logging:

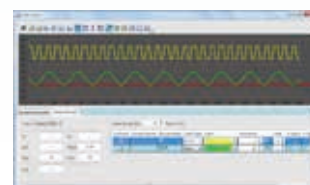
Long-time data logger saves up to 32,768 data records, able to be transferred to SD cards
- ##### Precise data capture:

Supports a variety of sampling intervals, trigger modes, software settings, and hardware execution
- ##### Convenient comparison:

Multiple data logs in various data formats can be recorded at the same time
- ##### Efficient data analysis:

Supports trend display, scaling, arrangement, merge and measurement

- Real-time
- Stable
- Precise



## Applications

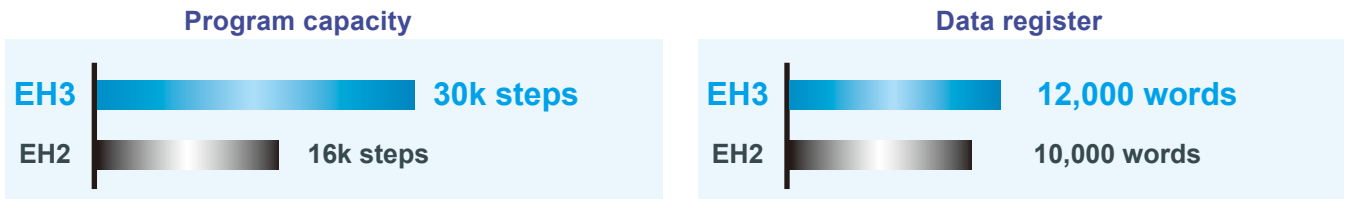
High-end equipment for electronics manufacturing, machinery processing, food packaging and other industries

# High Performance PLC

## DVP-EH3

Excellent for OEM Monitoring Solutions

High-end model of Delta's DVP-E Series PLC with large program capacity and data registers for demanding and complex applications



### Excellent Motion Control

- High-speed pulse output: max. 4 axes of 200 kHz pulse output (DVP40/48/64/80EH00T3)
- Supports max. 4 hardware 200 kHz high-speed counters
- Various motion control instructions to achieve high-speed and high-precision positioning control for labeling machines, packaging machines, printing machines and more applications
- Linear/ arc interpolation motion control function
- Up to 16 external interrupt pointers



### Complete Program Protection

- Auto backup function prevents program and data loss even when the battery runs out
- Secondary backup function saves an extra copy of programs and data to enhance program safety
- Up to 4-level password protection protects your source programs and intellectual property

### Function Cards

- For RS-232/RS-422 Communication (COM3 Port, DVP-EH3 Series PLC only)



- For Ethernet Communication



- Analog Input/Output



# Standard PLC / Analog I/O PLC

## DVP-ES2/EX2

### Comprehensive Functions for General Applications

Standard PLCs with integrated communication and highly efficient processing ability for your control systems

- Standard PLC DVP-ES2 Series:
  - 16/20/24/32/40/60/80 I/O points for a variety of applications
  - No battery required; RTC function operates for at least one week after power off (hardware version 2.0 or above)
  - DVP32ES2-C model with built-in CANopen (Baud: 1 Mbps)
- Analog I/O PLC DVP-EX2 Series:
  - DVP-20EX2 model:
    - Built-in 12-bit 4 analog inputs / 2 analog outputs; and 14-bit analog I/O extension module
    - Built-in PID auto tuning function for complete analog control solution
  - DVP30EX2 model as temperature and analog I/O PLC
- Program capacity: 16k steps
- Data register: 10k words
- Max. execution speed of basic instructions: 0.35  $\mu$ s
- Highly efficient processing ability: 1 k steps of programs can be completed within 1ms
- Max. 100kHz pulse control; specific motion control instructions (mark/masking and instant frequency changing) available for multi-axis applications
- Up to 4-level password protection protects your source programs and intellectual property



reddot design award  
winner 2010

# Network Type Advanced Slim PLC

## DVP-SE

Complete network communication functions for advanced industrial applications

- Program capacity: 16k steps
- Data register: 12k words
- Max. execution speed of basic instructions: 0.64  $\mu$ s
- Built-in Ethernet
  - DVP12SE: Modbus & Ethernet/IP (explicit message)
  - DVP26SE: Modbus & Ethernet/IP (adapter mode, explicit message)
- IP Filter function as firewall for first line protection against malware and network threats
- No battery required; RTC function operates for 15 days after power off
- Support DVP-S Series modules (left-side and right-side) (DVP26SE only supports right-side modules)



# High Performance Slim PLC

## DVP-SV2

Best Choice for Slim Type PLC

High-end model of DVP-S Series with larger program capacities and data registers for more demanding and complex applications



### Excellent Motion Control







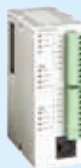


- High-speed pulse output: 4 axes of 200 kHz pulse output
- Support max. 4 hardware 200 kHz and 2 hardware 20 kHz high speed counters
- Various motion control instructions to achieve high-speed and high-precision positioning control for labeling machines, packaging machines, printing machines and more applications
- Linear/arc interpolation motion control function
- Provide up to 16 external interrupt pointers

### Complete Program Protection

- Auto backup function to prevent program and data loss even when the battery runs out
- Secondary backup function saves an extra copy of programs and data to enhance program safety
- Up to 4-level password protection protects your source programs and intellectual property

Support DVP-S Series modules (left-side and right-side); additional new Ethernet communication command (ETHRW)

### High-speed Modules (Left-side)

Network Modules		Analog Input/Output Modules	
<ul style="list-style-type: none"> <li>• <b>DeviceNet Master</b> DVDPNET-SL</li> </ul> 	<ul style="list-style-type: none"> <li>• <b>CANopen Master</b> DVPCOPM-SL</li> </ul> 	<ul style="list-style-type: none"> <li>• <b>Analog Input</b> DVP04AD-SL</li> </ul> 	<ul style="list-style-type: none"> <li>• <b>Analog Output</b> DVP04DA-SL</li> </ul> 
<ul style="list-style-type: none"> <li>• <b>Ethernet</b> DVPEN01-SL</li> </ul> 	<ul style="list-style-type: none"> <li>• <b>PROFIBUS DP Slave</b> DVPPF02-SL</li> </ul> 	<h3>Load Cell Modules</h3> <ul style="list-style-type: none"> <li>DVP01LC-SL</li> <li>DVP02LC-SL</li> <li>DVP201LC-SL</li> <li>DVP211LC-SL</li> <li>DVP202LC-SL</li> </ul> 	
<ul style="list-style-type: none"> <li>• <b>RS-422/RS-485 Serial Communication Module</b> DVPSCM12-SL</li> </ul> 	<ul style="list-style-type: none"> <li>• <b>BACnet MS/TP Slave Serial Communication Module</b> DVPSCM52-SL</li> </ul> 		

## Standard Slim PLC DVP-SS2

### Economic and compact model

- Max. I/O: 480 points
- Program capacity: 8 k steps
- Data register: 5k words
- Max. execution speed of basic instructions: 0.35  $\mu$ s
- Built-in RS-232 and RS-485 ports (Master/Slave)
- Support standard MODBUS ASCII/RTU protocol and PLC Link function
- Motion control functions:
  - 4 points of 10 kHz pulse output
  - 8 points of high-speed counters: 20 kHz/4 points, 10 kHz/4 points



## Advanced Slim PLC DVP-SA2

### Advanced model supporting high-speed modules (left-side)

- Program capacity: 16k steps
- Data register: 10k words
- Max. execution speed of basic instructions: 0.35  $\mu$ s
- Built-in 1 RS-232 and 2 RS-485 ports (Master/Slave)
- Support standard Modbus ASCII/RTU protocol and PLC Link function
- No battery required; RTC function operates for 15 days after power off
- Support DVP-S Series modules (including left-side high-speed modules)
- Motion control functions:
  - 4 points of high-speed pulse output: 100 kHz/2 points, 10 kHz/2 points
  - 8 points of high-speed pulse input: 100 kHz/2 points, 10 kHz/6 points, 1 set of A/B phase 50 kHz
  - Support 2-axis linear and arc interpolation



## Analog I/O Slim PLC DVP-SX2

### Analog model with highly efficient PID control function

- Program capacity: 16k steps
- Data register: 10k words
- Max. execution speed of basic instructions: 0.35  $\mu$ s
- Built-in 4 analog inputs/2 analog outputs
- Support standard Modbus ASCII/RTU protocol and PLC Link function
- No battery required; RTC function operates for at least one week after power off (hardware version 2.0 or above)
- Support DVP-S Series modules (including left-side high-speed modules)
- Motion control functions:
  - 4 points of high-speed pulse output: 100 kHz/2 points, 10 kHz/2 points
  - 8 points of high-speed pulse input: 100 kHz/2 points, 10 kHz/6 points
  - Support 2-axis linear and arc interpolation



# Multi-axis Motion Controller

## DVP-10MC / 15MC / 50MC New

High Speed, High Precision, and High Performance Motion Control

### 6-axis Motion Controller

DVP15MC11T-06 (CANopen)  
DVP50MC11T-06 (EtherCAT)

### 16-axis Motion Controller

DVP10MC11T (CANopen)

### 24-axis Motion Controller

DVP15MC11T (CANopen)  
DVP50MC11T (EtherCAT)



DVP-10MC



DVP-15MC

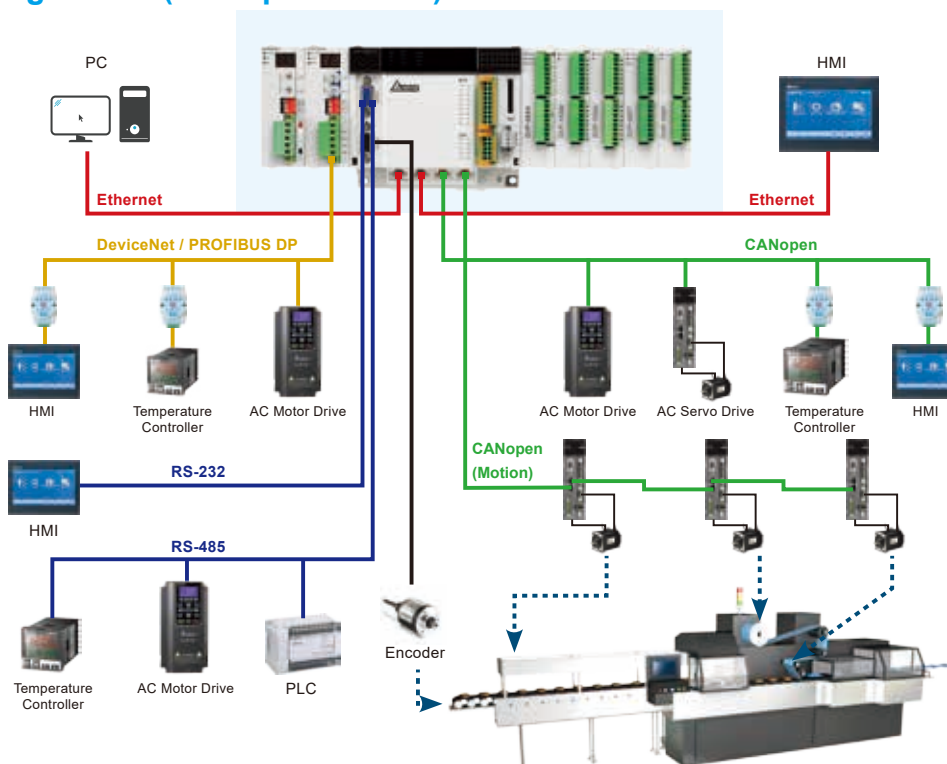


DVP-50MC

### Perfect Controllers for EtherCAT / CANopen Motion Solutions

- Built-in 16/24 I/O points; max. 480 I/O points
- Program capacity:
  - DVP10MC: Ladder 16k steps / Motion 1Mbytes
  - DVP15MC/50MC: 20M bytes
- Built-in Ethernet, RS-232 and RS-485 ports, and support standard Modbus ASCII/RTU protocol
- e-CAM function (2,048 points) for rotary / flying shears
- Support DVS-S Series modules (both left and right side) for multiple options
- Flexible industrial networking applications (DeviceNet Master/Slave, CANopen Master/Slave and PROFIBUS DP Slave modules)
- Provide standard communication cables, terminal resistors, distribution boxes and more accessories for easy wiring and connection

### System Configuration (CANopen Motion)



# General Motion Controller

## DVP-PM

### Standard Motion Controller

#### DVP10PM00M

- Built-in 24 I/O points. Max. 256 I/O points
- Program capacity: 64k steps
- Data register: 10k words
- Execution speed LD: 0.1375  $\mu$ s, MOV: 2.1  $\mu$ s
- Built-in RS-232 and RS-485 ports
- 2 / 3 / 4 / 5 / 6 axes linear interpolation motion control
- Highly accurate PWM 200 kHz output, resolution 0.3%
- 8 groups of high-speed captures (mark correction, frequency measurement), comparative output, Mark / Mask function (for bag making)
- Support standard Modbus ASCII/RTU protocol
- Motion control functions:
  - High-speed pulse output: built-in 6 sets of A/B phase pulse outputs
  - 6 sets of high-speed counters and hardware digital filter for counting
  - Single-axis motion control function (supports MPG, single-speed and two-speed positioning)
  - Electronic gear function



### Advanced Motion Controller

#### DVP20PM00M / D / DT

- Built-in 16 I/O points. Max. 512 I/O points
- Program capacity: 64k steps
- Data register: 10k words
- Built-in RS-232 and RS-485 ports
- Compatible with G-code / M-Code
- 3-axis linear/arc/helical interpolation
- Support electronic cam (2,048 points) function for flying shear and rotary cut applications
- All models can be applied as motion controllers or extension modules
- Support standard Modbus ASCII/RTU protocol
- Motion control functions:
  - Built-in A/B phase differential signal outputs: 2 sets (DVP20PM00D)/3 sets (DVP20PM00M) with differential output frequency of max. 500 kHz
  - Support MPG inputs
  - Single-axis motion control function (supports MPG, single-speed and two-speed positioning)
  - Electronic gear function



# Human Machine Interface

## DOP-100

Connect Your Work, Step into the Cloud

### Advanced Type HMI

## 12-inch Advanced Multimedia HMI

### DOP-112MX

- 12" 24 bits colors TFT/Display resolution: 1,024 x 768 pixels
- Dual core 1GHz CPU/1 GB RAM/8 GB ROM
- 2 built-in Ethernet ports/Support SD card
- 2 sets of COM ports/2 extension COM ports, support up to 4 RS-485
- Support Analog/IP camera functions & multilingual input
- Mini USB client/USB host
- Support FTP/Email/VNC/Web monitor



## 15-inch Advanced Multimedia HMI

### DOP-115MX

- 15" 24 bits colors TFT/Display resolution: 1,024 x 768 pixels
- Dual core 1GHz CPU/1 GB RAM/8 GB ROM
- 2 built-in Ethernet ports/Support SD card
- 2 sets of COM ports/2 extension COM ports, support up to 4 RS-485
- Support Analog/IP camera functions & multilingual input
- Mini USB client/USB host
- Support FTP/Email/VNC/Web monitor



## 4.3-inch Advanced HMI

### DOP-103WQ

- 4.3" 65,536 colors TFT/Display resolution: 480 x 272
- Cortex-A8 800MHz CPU/512 MB RAM/256 MB ROM
- Built-in Ethernet
- 1 COM port/1 extension COM port
- Multilingual input
- USB host
- Support FTP/Email/VNC/Web monitor





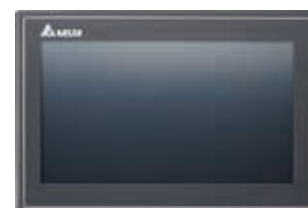
## 7-inch Advanced HMI DOP-107WV

- 7" 65,536 colors TFT/Display resolution: 800 x 480
- Cortex-A8 800MHz CPU/512 MB RAM/256 MB ROM
- Built-in Ethernet
- 2 sets of COM ports/1 extension COM port
- Multilingual input
- USB host
- Support FTP/Email/VNC/Web monitor



## 10-inch Advanced HMI DOP-110WS

- 10.1" 65,536 colors TFT/Display resolution: 1,024 x 600
- Cortex-A8 800MHz CPU/512 MB RAM/256 MB ROM
- Built-in Ethernet/Support SD card
- 2 sets of COM ports/1 extension COM port
- USB host
- Support FTP/Email/VNC/Web monitor



## 12-inch Advanced HMI DOP-112WX

- 12" 24 bits colors TFT/Display resolution: 1,024 x 768 pixels
- Dual core 1GHz CPU/1 GB RAM/8 GB ROM
- 2 built-in Ethernet ports/Support SD card
- 2 sets of COM ports/2 extension COM ports, support up to 4 RS-485
- Multilingual input
- Mini USB client/USB host
- Support FTP/Email/VNC/Web monitor



## Advanced Type HMI

### 15-inch Advanced HMI DOP-115WX

- 15" 24 bits colors TFT/Display resolution: 1,024 x 768 pixels
- Dual core 1GHz CPU/1 GB RAM/8 GB ROM
- 2 built-in Ethernet ports/Support SD card
- 2 sets of COM ports/2 extension COM ports, support up to 4 RS-485
- Multilingual input
- Mini USB client/USB host
- Support FTP/Email/VNC/Web monitor



## Standard Type HMI

### 7-inch Standard Ethernet HMI DOP-107EV

- 7" 65,536 colors TFT/Display resolution: 800 x 480
- Cortex-A8 800MHz CPU/256 MB RAM/256 MB ROM
- Built-in Ethernet
- 2 sets of COM ports/1 extension COM port
- USB host
- Support FTP/Email/VNC/Web monitor



### 7-inch Standard Ethernet HMI DOP-107EG

- 7" 65,536 colors TFT/Display resolution: 800 x 600
- Cortex-A8 800MHz CPU/256 MB RAM/256 MB ROM
- Built-in Ethernet/Support SD card
- 2 sets of COM ports/1 extension COM port
- USB host
- Support FTP/Email/VNC/Web monitor



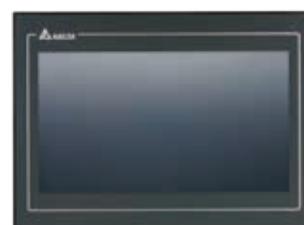
## 7-inch Standard HMI DOP-107CV

- 7" 65,536 colors TFT/Display resolution: 800 x 480
- Cortex-A8 800MHz CPU/256 MB RAM/256 MB ROM
- 2 sets of COM ports/1 extension COM port
- USB host



## 10-inch Standard HMI DOP-110CS

- 10.1" 65,536 colors TFT/Display resolution: 1,024 x 600
- Cortex-A8 800MHz CPU/256 MB RAM/256 MB ROM
- 2 sets of COM ports/1 extension COM port
- USB host



## Basic Type HMI

### 4.3-inch Basic HMI DOP-103BQ

- 4.3" 65,536 colors TFT/Display resolution: 480 x 272
- Cortex-A8 800MHz CPU/256 MB RAM/256 MB ROM
- 1 COM port/1 extension COM port
- USB host



### 7-inch Basic HMI DOP-107BV

- 7" 65,536 colors TFT/Display resolution: 800 x 480
- Cortex-A8 800MHz CPU/256 MB RAM/256 MB ROM
- 1 COM port/1 extension COM port
- USB host



# WinCE Human Machine Interface

## DOP-W

High Color, High Resolution Human Machine Interfaces

### 10-inch WinCE HMI

#### DOP-W105B

- 10.4" 65,536 colors TFT LCD
- Display resolution: 800x600 pixels
- 1GHz high speed processor
- Support audio output (MP3, Wav files)
- USB host for direct connection to USB disk, printer, mouse and keypad
- 2 Ethernet ports
- Support SDHC card
- Support video format: MPEG1, MPEG2, WMV
- Support audio output: MP3, Wav files (built-in front speaker)



### 12-inch WinCE HMI

#### DOP-W127B

- 12" 65,536 colors TFT LCD
- Display resolution: 1,024 x 768 pixels
- 1GHz high speed processor
- Aluminum enclosure with dark gray mold texturing
- 2 sets of COM ports, support RS-232/RS-422/RS-485
- USB host for direct connection to USB disk, printer, mouse and keypad
- 2 Ethernet ports
- Support SDHC card
- Support video format: MPEG1, MPEG2, WMV
- Support audio output: MP3, Wav files (built-in front speaker)



### 15-inch WinCE HMI

#### DOP-W157B

- 15" 65,536 colors TFT LCD
- Display resolution: 1,024 x 768 pixels
- 1GHz high speed processor
- Aluminum enclosure with dark gray mold texturing
- 2 sets of COM ports, support RS-232/RS-422/RS-485
- USB host for direct connection to USB disk, printer, mouse and keypad
- 2 Ethernet ports
- Support SDHC card
- Support video format: MPEG1, MPEG2, WMV
- Support audio output: MP3, Wav files (built-in front speaker)



# Handheld Human Machine Interface DOP-H

## 7-inch Widescreen Handheld HMI DOP-H07

- 7" 16:9 widescreen, 65,536 colors TFT
- Display Resolution: 800x480 pixels
- Support SDHC card
- Built-in emergency stop switch
- Built-in enable switch (rear side)
- Serial communication models support RS-485/RS-422
- Ethernet communication models support one Ethernet port
- Optional MPG (Manual Pulse Generator)
- Compact and lightweight 750g design
- Integrated style cables available (5m/10m)



# Touch / Text Panel Human Machine Interface

## TP

### 4-Line Text Panel HMI TP04G-AL-C / TP04G-AL2

- 4.1" STN-LCD
- User-defined function keys available
- Support RS-232/RS-422/RS-485 ports (TP04G-AL2)
- Password protection function available
- User-defined boot screen available
- Built-in real time clock (RTC)

Dimensions	4.1" (101.8 × 35.24mm)
Resolution	192 × 64
Display Color	Monochrome
Flash Memory	256k bytes
Function Key	10 function keys
Password	Available
Recipe Function	N/A
RTC	Available
Serial COM Port	RS-232 & RS-422/485
Editing Software	TPEditor

### 4-Line Text Panel HMI TP04G-BL-C

- 4.1" STN-LCD
- 0~9 numeric keys and user-defined function available
- Built-in RS-232 and RS-422/RS-485 ports
- Support Modbus ASCII/RTU modes
- Password protection function available
- User-defined boot screen available
- Built-in real-time clock (RTC)

Dimensions	4.1" (101.8 × 35.24mm)
Resolution	192 × 64
Display Color	Monochrome
Flash Memory	256k bytes
Function Key	17 function keys
Password	Available
Recipe Function	N/A
RTC	Available
Serial COM Port	RS-232 & RS-422/485
Editing Software	TPEditor

### 8-Line Text Panel HMI TP08G-BT2

- 3.8" STN-LCD
- Resolution: 240x128 dots
- Built-in 1,024k bytes flash memory
- 24 user-defined function keys
- Built-in RS-232 and RS-422/RS-485 ports
- Support recipes and macro functions

Dimensions	3.8" ( 83x41mm)
Resolution	240 × 128
Display Color	Monochrome
Flash Memory	1M bytes
Function Key	24 function keys
Password	Available
Recipe Function	Available
RTC	Available
Serial COM Port	RS-232 & RS-422/485
Editing Software	TPEditor

## Applications

High-end equipment for the electronics manufacturing, machining, food packaging and other industries

## 7-Inch Touch Panel HMI with Built-in PLC TP70P-RM0

- Adopt the core of DVP-SS2 Series PLC:  
program capacity: 2k steps / D device: 5k words
- 7" TFT-LCD
- Touch screen
- Built-in USB port for program upload/download
- Built-in RS-232 and RS-485 ports
- Support Modbus ASCII/RTU modes
- Built-in real-time clock (RTC)

Dimensions	7" (154 × 85 mm)
Resolution	800 × 480
Display Color	65,535 colors
Flash Memory	64 M bytes
Function Key	N/A
Password	Available
Recipe Function	N/A
RTC	Available
Serial COM Port	RS-232 & RS-485
Editing Software	TPEditor

## 7-Inch Touch Panel HMI with Built-in PLC TP70P

- Adopt the core of DVP-SS2 Series PLC:  
program capacity: 4k steps / D device: 5k words
- Provide 2 sets of 10kHz high-speed pulse input
- 7" TFT-LCD
- Touch screen
- Built-in USB port for program upload/download
- Built-in RS-485 port\*2
- Support Modbus ASCII/RTU modes
- Built-in real-time clock (RTC)
- Digital and analog I/O terminals available

Dimensions	7" (154 × 85 mm)
Resolution	800 × 480
Display Color	65,535 colors
Flash Memory	64 M bytes
Function Key	N/A
Password	Available
Recipe Function	N/A
RTC	Available
Serial COM Port	2 sets of RS-485
Editing Software	TPEditor

## 4-Line Text Panel HMI with Built-in PLC TP04P

- Adopt the core of DVP-SS2 Series PLC:  
program capacity: 8k steps / D device: 5k words
- Provide 2 sets of 10kHz high-speed pulse input
- 4.1" STN-LCD
- Provide 0~9 numeric keys with user-defined function
- Built-in USB port for program upload/download
- Built-in RS-485 port\*2
- Support Modbus ASCII/RTU modes
- User-defined boot screen available
- Built-in real-time clock (RTC)
- Digital and analog I/O terminals available

Dimensions	4.1" (101.8 × 35.24 mm)
Resolution	192 × 64
Display Color	Monochrome
Flash Memory	1 M bytes
Function Key	17 function keys
Password	Available
Recipe Function	N/A
RTC	Available
Serial COM Port	2 sets for RS-485
Editing Software	TPEditor



## Photoelectric Sensor PS-R

- Different sensing range adjustment (Trimmer or TEACH)
- M3 mounting hole, easy to install
- Electrical circuit protection
- IP67 and CE certification



## PS-F / PS-L

- Slim and small, easy to install
- Electrical circuit protection
- IP67 and CE certification



## PS-M

- Standard size (M18) for mounting
- Sensing range adjustment (TEACH)
- M3 mounting hole, easy to install
- Electrical circuit protection
- IP67 and CE certification



## Inductive Proximity Sensor IS

- Nickel-coated brass
- Standard sensors for detecting ferrous metals
- Electrical circuit protection
- IP67 and CE certification

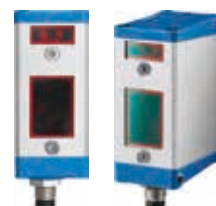






## Laser Displacement **LD** New

- Aluminum case, strong structure
- Slim and small, easy to install
- High precision, sampling time setting available
- IP67 and CE certification



## Area Sensor **AS-B Standard** New

- Aluminum case, strong structure
- No dead zone
- Effective aperture angle: less than 2.5 degrees
- IP67 and CE certification

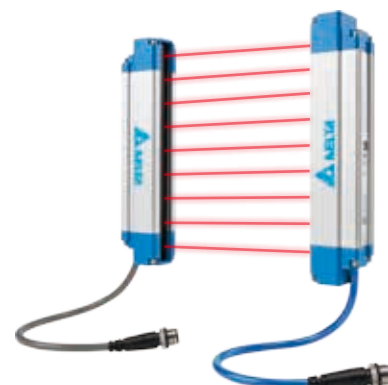
\* Note: TX cable (grey) and CX cable (black)



## AS-B Communication

- Aluminum case, strong structure
- Fixed/floating mask
- Interlock/restart functions
- Measurement function
- Auto-upload

\* Note: TX cable (grey) and CX cable (blue)



## AS-E

- Aluminum case, strong structure
- Compact design: 17 x 15 mm
- Sensing distance: 5 m



## Applications

Electronics, warehousing / logistics, wood and steel processing, textile, food and beverage, machine making, protection and more

# Rotary Encoder

## ES / EH / HS / HH

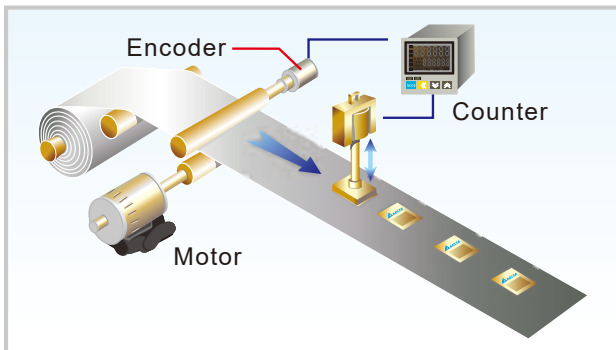
### Incremental

- Configurable resolution (magnetic)
- Wide input voltage: 5~30 V<sub>DC</sub>
- Resolution: 100~4,096 PPR
- Output form: open collector, line driver, push pull
- HS/ES outer diameter of solid shaft : 37 mm, 50 mm
- EH outer diameter of hollow shaft: 37 mm, 50 mm

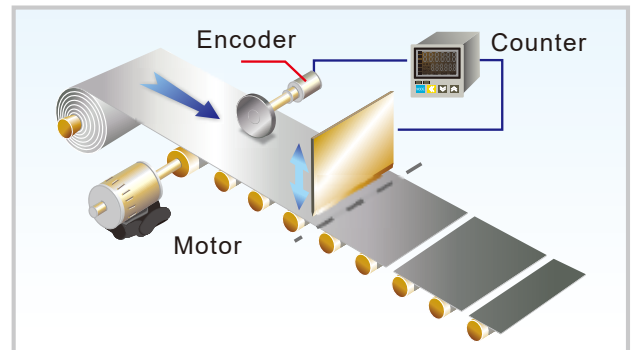


### Applications

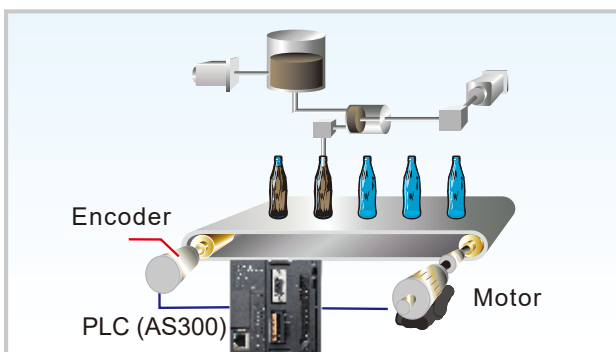
Label printing machines, detecting machines, elevators, bottling machines, cutting machines, elevator doors, testing/inspection machines



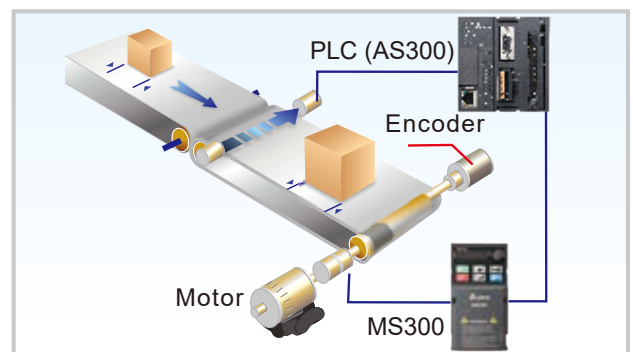
Label Printing Machine



Cutting Machine



Bottling Machine



Testing/Inspection Machine

# Handheld Barcode Scanner New

## DAH1000S/DAH2000

### Wide Target Range, Fast and Reliable Capture

The DAH Series adopts high-end decoding algorithm to read barcodes quickly, and can easily and stably identify 1D and 2D barcodes within 5 to 25 cm size range and caters to various industrial barcode scanning application requirements.

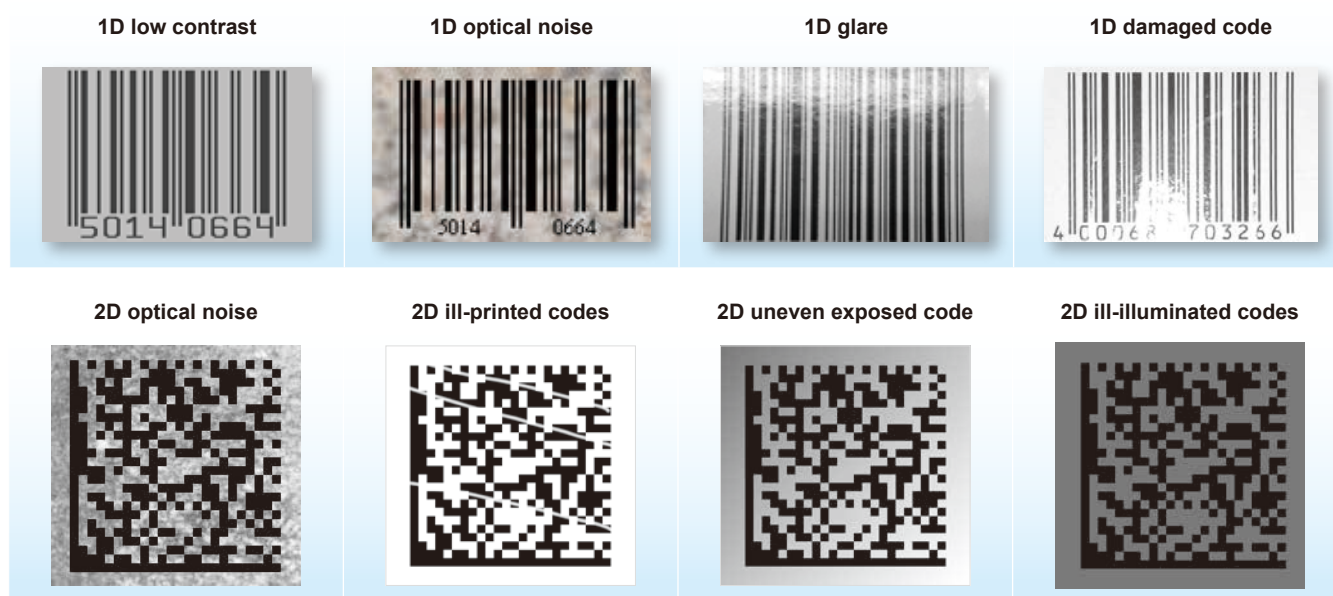
- Fast code capture speed without aiming precisely
- Easy to read barcodes under low contrast, optical noise, uneven exposure or damaged conditions
- Easy commands for users to set up:
  - Manually adjust illumination based on various environment
  - Support single and multiple trigger modes
  - Manually select barcode types based on user's demands
  - Users can self-define the exported data of scanned codes for flexible usage
- Robust design: drop impact resistance at 1m high
- No detachable components save maintenance cost



### Applications

Food and beverage packaging, electrical machines, printing machines, pharmaceutical machinery, automated product line

### Advanced Decode Algorithm for Excellent Reading Performance

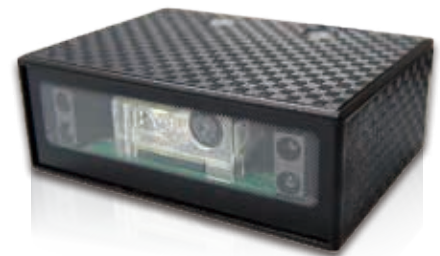


# Fixed-mount Barcode Scanner New

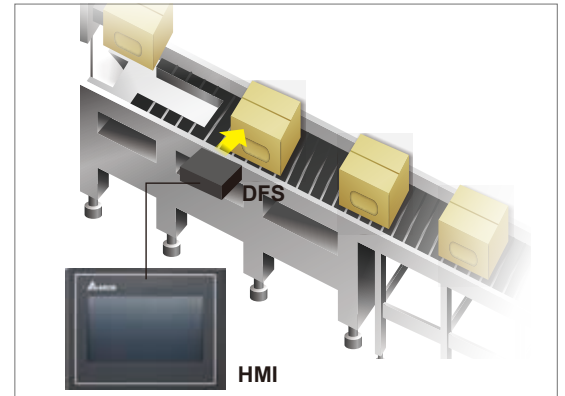
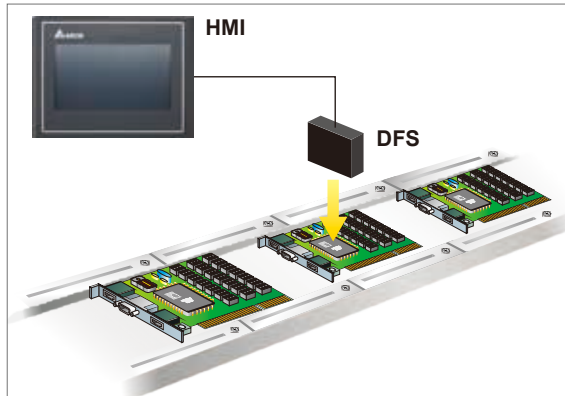
## DFS131

The DFS Series adopts built-in LED indicators and a CMOS sensor to ensure effective barcode detection under any lighting conditions when objects passing through a scanning area without manual adjustment. It is applicable to industrial conveyors and can easily complete scanning through the operating route during manual handling for fully automatic barcode scanning. In addition, the DFS131 Series supports various installations for independent and embedded applications as a flexible and highly efficient barcode scanner.

- Flexible design, suitable for independent, embedded applications and various installations
- Built-in LED indicators and CMOS sensor to ensure valid reading under any lighting conditions
- Barcodes attached to products or components can be effectively detected when passing through a scanning area without manual operation
- Manual-free image trigger function is matched with structures and conveyors to achieve fully automatic barcode reading capabilities



### System Structure



### Applications

Retail, logistics, manufacturing, medical services



Retail



Logistics



Manufacturing



Medical Service

# Vision Sensor New

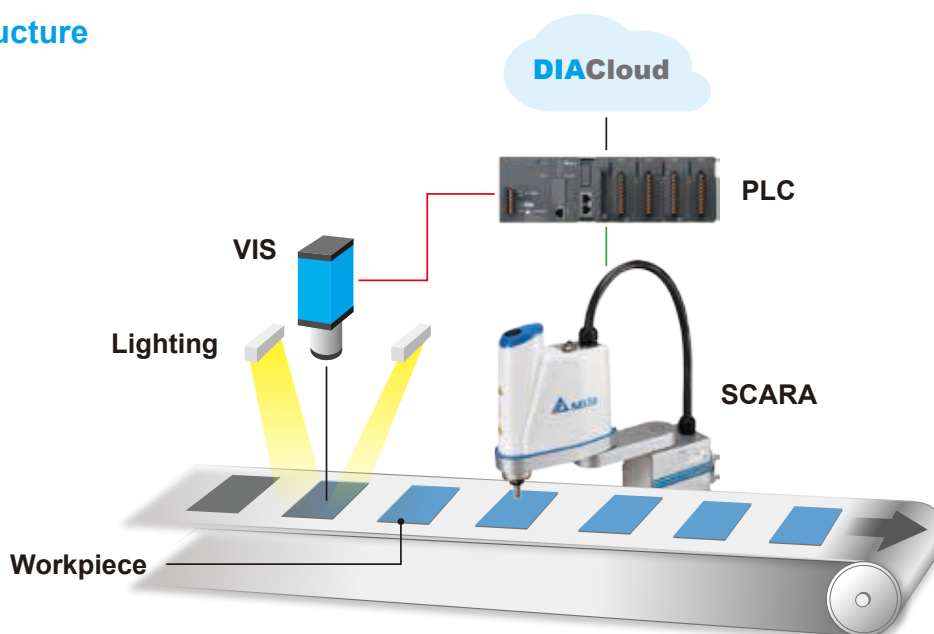
## VIS

The VIS Series adopts built-in LED lighting and CMOS sensor. With assisted LED lighting, it is able to sense under poor illumination. Users can set up programs easily in the full-window interface for object presence/absence inspection and multi-barcode reading applications. The VIS Series can be implemented in the production line for fully automated inspection to enhance production efficiency.

- Advanced embedded system for high-speed inspection capabilities
- Compact in size for flexible installation
- User-friendly interface for easy setup
- Support program setup via browsers for simple and rapid device adjustment
- Built-in LED lighting, no need to purchase additional lighting device



## System Structure



## Applications

Automated quality inspection for packaging, electronics manufacturing and product assembly



Barcode Reading



Quality Assurance



Object Presence/Absence Inspection

# Advanced Intelligent Temperature Controller DT3

High Speed, High Precision, High Performance Multifunction Temperature Controller

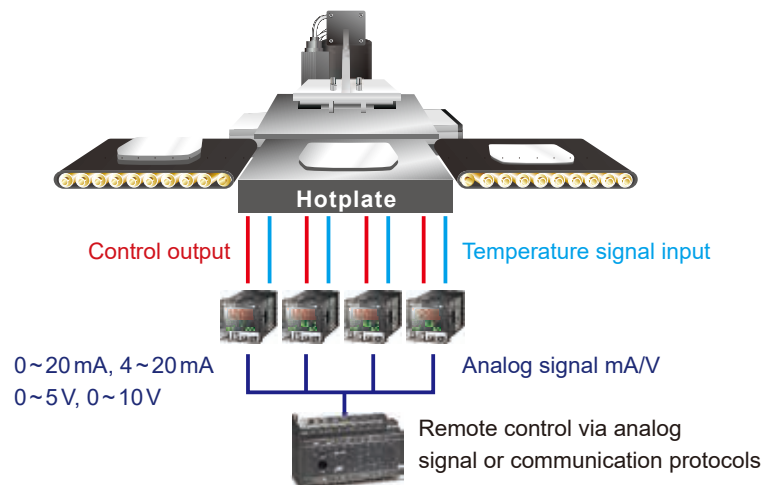


## Applications

Solar panel manufacturing, food and beverage packaging, pharmaceuticals, semiconductors, rubber and plastics, high-tech electronics industries, air-conditioning and heating system

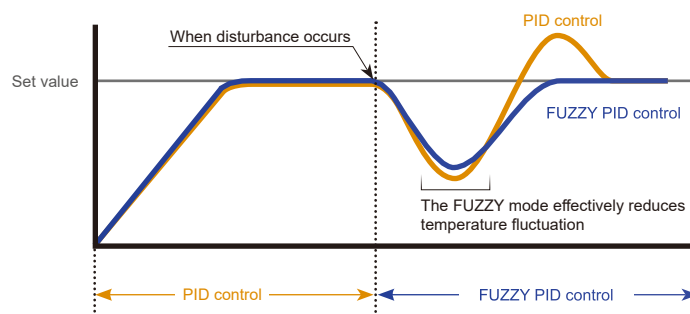
## Remote Control

Sets DT3 temperature via analog output of host controller



## Various Control Modes

- Auto tuning
- FUZZY
- Manual
- ON/OFF
- PID process control
- Self tuning



## User-defined Function Keys

- Control modes selection
- Alarm clearing
- Controller ON/OFF
- Start PID
- Save menu
- Process control ON/OFF



## Large Tri-color LCD Display

The 1<sup>st</sup> tri-color LCD temperature controller in Taiwan



## Heater Disconnection Detection

Measurable up to 100A



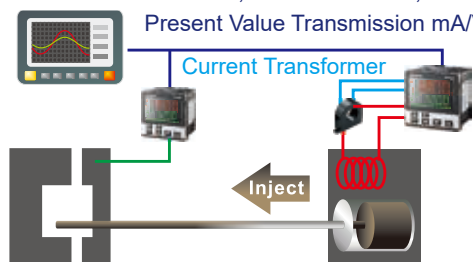
## Point-to-Point Control (Proportional Output mA/V)

Sets the Present Value by point-to-point control



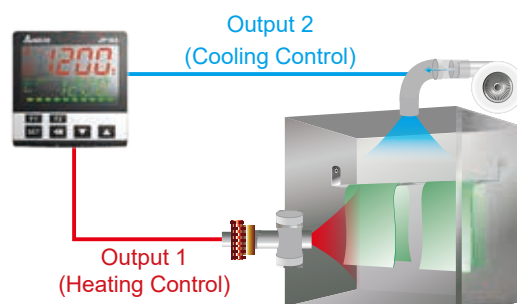
## Retransmission Output

0~20mA, 4~20mA/0~5V, 0~10V  
Present Value Transmission mA/V



## Dual-output Control

- Preset temperature is rapidly attained using two sets of outputs for heating and cooling control
- AT function is used to automatically calculate two sets of PID parameters, one for heating and one for cooling



## Temperature Sensor Input

- Thermocouple: K, J, T, E, N, R, S, B, L, U, TXK
- Platinum Resistance Thermometer: Pt100, JPt100, Cu50, Ni120
- Analog Input: 0~5V, 0~10V, 0~20mA, 4~20mA, 0~50mA

## Power Output

Relay, current 4~20mA, pulse voltage, analog voltage 0~10V

## Power Input

AC 100~240V, 50/60Hz, AC/DC 24V±10%

## Intelligent Temperature Controller DTK

- Power input: AC 100~240V, 50/60 Hz
- Thermocouple: K, J, T, E, N, R, S, B, L, U, TXK (support max. 8 sets of input)
- Platinum resistance: Pt100, JPt100 (support max. 6 sets of input)
- RTD: Cu50, Ni120
- Output: Relay, current 4~20 mA, pulse voltage
- Control mode: ON-OFF, PID, manual
- Modbus communication (optional)
- 1 set of alarm output (2 sets of alarm outputs are optional), 9 alarm modes
- Certification: CE, UL



## Standard Temperature Controller DTA

- Power input: AC 100~240V, 50/60 Hz
- Thermocouple: K, J, T, E, N, R, S, B, L, U, TXK
- Platinum resistance: Pt100, JPt100
- RTD: Cu50
- Analog input: N/A
- Output: Relay, current, pulse voltage
- Control mode: ON-OFF, PID, manual
- Modbus communication (optional)
- 2 sets of alarm outputs, 12 alarm modes
- Dimensions: 48x48, 48x96, 72x72, 96x48, 96x96 (mm)
- IP66 protection
- Certifications: CE, UL



## Advanced Temperature Controller DTB

- Power input: AC 100~240V, 50/60 Hz, DC 24 V $\pm$ 10%
- Thermocouple: K, J, T, E, N, R, S, B, L, U, TXK
- Platinum resistance: Pt100, JPt100
- Analog input: 0~5V, 0~10V, 0~20 mA, 4~20 mA, 0~50 mA
- Output: Relay, current 4~20 mA, pulse voltage, analog voltage 0~10V
- Control mode: ON-OFF, PID, manual, PID process control
- Built-in Modbus communication
- 2 sets of alarm outputs, 18 alarm modes
- Dimensions: 48x24, 48x48, 48x96, 96x96 (mm)
- IP66 protection
- Certifications: CE, UL





## Modular Temperature Controller DTC

- Power input: DC 24V $\pm$ 10%
- Thermocouple: K, J, T, E, N, R, S, B, L, U, TXK
- Platinum resistance: Pt100, JPt100
- Analog input: 0~5V, 0~10V, 0~20mA, 4~20mA, 0~50mA
- Output: Relay, current 4~20mA, pulse voltage, analog voltage 0~10V
- Control mode: ON-OFF, PID, manual, PID process control
- Built-in Modbus communication
- 2 sets of alarm outputs, 18 alarm modes
- Certifications: CE, UL



## Valve Controller DTV

- Power input: AC 100~240V, 50/60Hz, DC 24V $\pm$ 10%
- Thermocouple: K, J, T, E, N, R, S, B, L, U, TXK
- Platinum resistance: Pt100, JPt100
- Analog input: 0~5V, 0~10V, 0~20mA, 4~20mA, 0~50mA
- Output: Relay, current 4~20mA, pulse voltage, analog voltage 0~10V
- Control mode: ON-OFF, PID, manual, PID process control
- Built-in Modbus communication
- 2 sets of alarm outputs, 17 alarm modes
- Dimensions: 48x96, 96x96 (mm)
- IP66 protection
- Certifications: CE, UL



## Multi-Channel Modular Temperature Controller DTE

- Power input: DC 24V $\pm$ 10%
- Thermocouple: K, J, T, E, N, R, S, B, L, U, TXK (Supports max. 8 sets of input)
- Platinum resistance: Pt100, JPt100 (Supports max. 6 sets of input)
- RTD: Cu50, Ni120
- Analog input: N/A
- Output: Relay, current 4~20mA, pulse voltage, analog voltage 0~10V
- Control mode: ON-OFF, PID, manual, PID process control
- Built-in Modbus communication
- 2 sets of alarm outputs, 18 alarm modes
- Certifications: CE, UL



# Standard Multifunction Pressure Sensor DPA

## High-Precision Pressure Sensor with Comprehensive Functions

- Measurement range:
  - DPA01: -100 kPa~ 100 kPa
  - DPA10: -100 kPa~ 1,000 kPa
- 3 sets of color display
- Easy code display
- Various unit conversions
- Various output modes
- Support RS-485 communication and analog output
- 10 sets of output response time setup
- Safety control function
- Energy-saving mode



# Basic Multifunction Pressure Sensor DPB

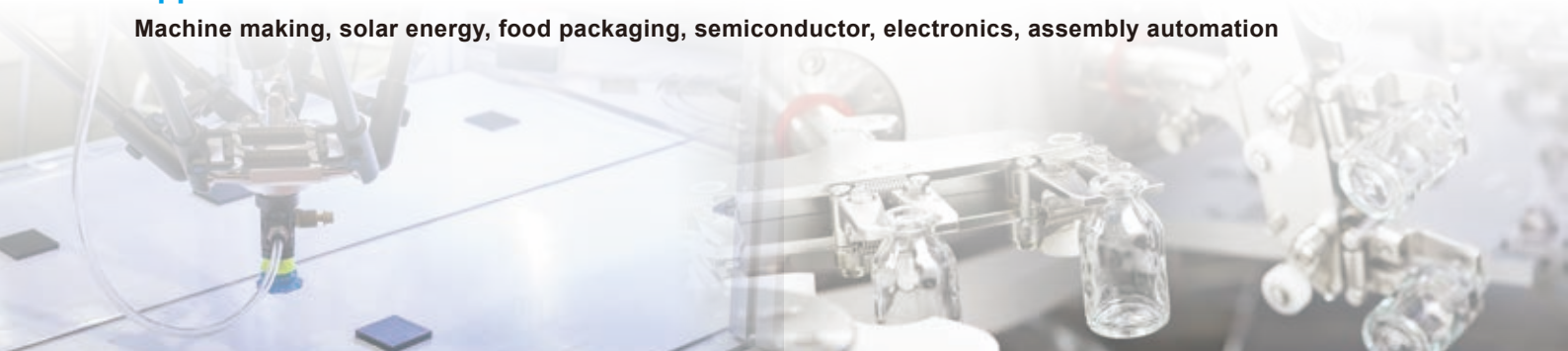
## Miniature Pressure Sensor for Easy Integration and Cost-saving

- Measurement range:
  - DPB01: -100 kPa~ 100 kPa
  - DPB10: -100 kPa~ 1,000 kPa
- Various unit conversions
- 10 sets of output response time setup
- Various output modes
- 3 sets of color display
- Fast zero reset
- Safety control function
- Easy code display



## Applications

Machine making, solar energy, food packaging, semiconductor, electronics, assembly automation



# Flow Switch New

## DFM

### High-precision and Multiple Air Flow Range

- Flow range: 2~200L/min
- Bidirectional flow amount measurement, unaffected by fluid direction
- Embedded Laminar Flow Element (LFE), no extra straight pipes needed for stabilizing air flow
- Easy installation and maintenance
- High quality LCD display
- Support analog output



### Applications

Food and beverage packaging, electronic manufacturing, rubber and plastic welding, Laser Beam Machining (LBM), factory air compressor (for energy saving), nitrogen generator, air compressor flow record and detection

# Timer/Counter/Tachometer

## CTA

### All-in-One

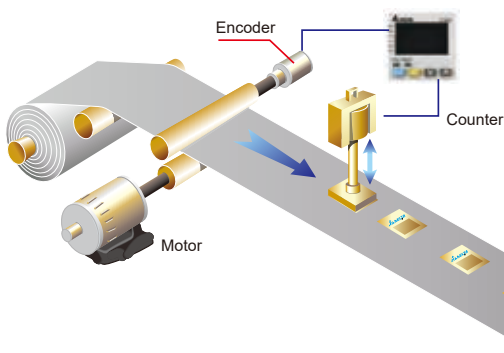
- Power input: AC 100~240V, 50/60Hz, DC 24V ± 10%
- Simultaneous counting and timing in the mixed mode
- 6-digit LCD display
- Max. counting speed: 10Kpps
- NPN or PNP input signals
- Pre-scale function
- Counting modes: 1-stage, 2-stage, batch, total, dual
- Modbus communication (optional)



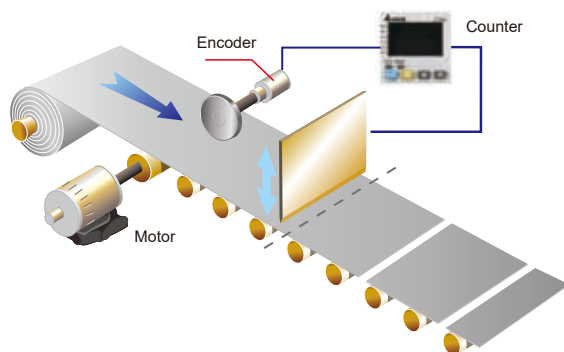
### Applications

Food packaging machines, label printing machines, fixed length cutting machines, logistics, electronics

**Label Printing Machine**



**Fixed Length Cutting Machine**



# Power Meter

## DPM

### High Accuracy Solution for Reliable Power Monitoring

Precisely measures various electrical energy and power quality parameters (power factors, harmonics, and current/voltage unbalance) with functions such as off-limit alarms, history logs, communication quality and monitoring; suitable for power-critical applications

#### Product Introduction

Advanced Models		Standard Model	Wireless Model	Compact Model
DPM-C530	DPM-C530E <b>New</b>	DPM-C520	DPM-C520W	DPM-C310 <b>New</b>
				
<ul style="list-style-type: none"> <li>- Front panel: 96mm x 96mm</li> <li>- History log (62 days)</li> <li>- Demand calculation</li> <li>- Period energy accumulation</li> <li>- BACNet MS/TP</li> </ul>	<ul style="list-style-type: none"> <li>- Front panel: 96mm x 96mm</li> <li>- History log (62 days)</li> <li>- Demand calculation</li> <li>- Period energy accumulation</li> <li>- BACNet MS/TP</li> <li>- RJ-45 x 2</li> <li>- Modbus, EIP</li> </ul>	<ul style="list-style-type: none"> <li>- Front panel: 96mm x 96mm</li> </ul>	<ul style="list-style-type: none"> <li>- Front panel: 96mm x 96mm</li> <li>- Modbus TCP</li> <li>- (Wifi, IEEE801.11 b/g/n)</li> </ul>	<ul style="list-style-type: none"> <li>- Front panel: 72mm x 72mm</li> </ul>
DIN-rail Model		Basic DI/DO Relay Model	Water Treatment Model	
DPM-C520I	DPM-C530I <b>New</b>	DPM-C501L	DPM-C502 <b>New</b>	
				
<ul style="list-style-type: none"> <li>- Current measurement: 63A</li> <li>- Period energy accumulation</li> </ul>	<ul style="list-style-type: none"> <li>- Current measurement: 100A</li> <li>- Period energy accumulation</li> <li>- BACNet MS/TP</li> </ul>	<ul style="list-style-type: none"> <li>- Front panel: 96mm x 96mm</li> <li>- 4DI/2DO</li> </ul>	<ul style="list-style-type: none"> <li>- Front panel: 96mm x 96mm</li> <li>- 4DI/2DO</li> <li>- History log (14 days)</li> <li>- Demand calculation</li> </ul>	

#### Features

- Precise measurement of bidirectional electrical energy and power parameters, Class 0.5S meeting IEC62053 and CNS14607 standards
- Two mounting clips hold the meter in place, no other tools required
- Built-in RS-485 communication port supports Modbus protocol, and all measurement values can be transmitted to the PLCs via communication
- Parameter grouping function allows faster data transmission and reading by PLCs to improve efficiency and performance
- Total Harmonic Distortion (THD) measurement function for power quality analysis
- Built-in alarm function for power anomaly display in real-time

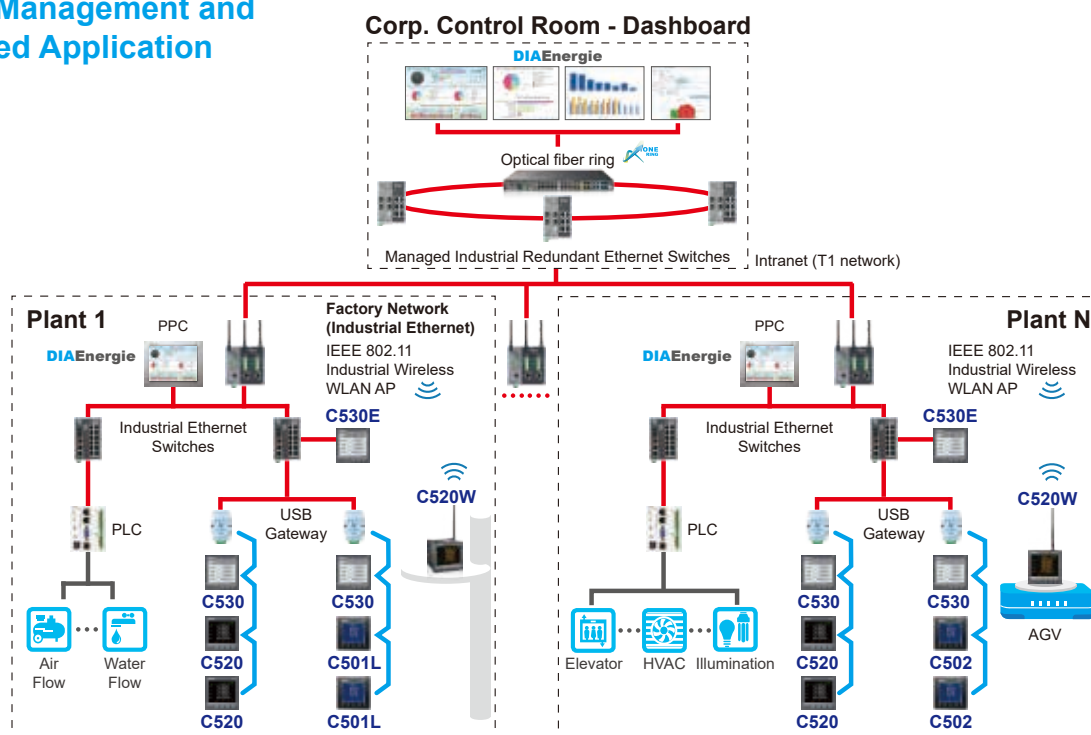
## Applications

**The DPM series are suitable for:** energy management, medium or low voltage distribution system, energy management system, factory automation system, energy storage system, electric grid measurement, and energy quality analysis

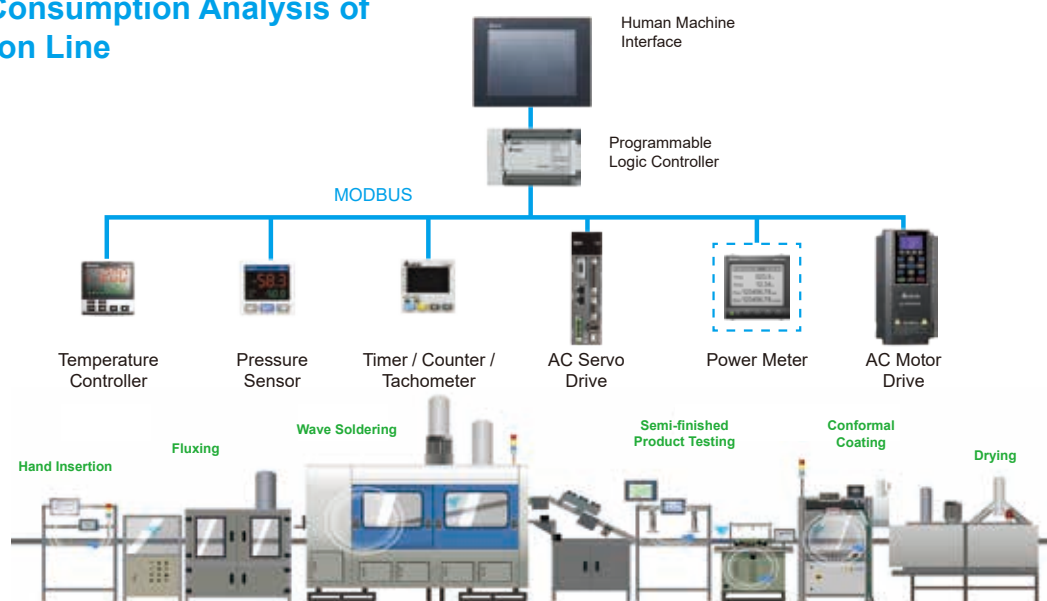
**The DPM-C520W is suitable for:** elevators, semiconductor plants, high-ceiling plants, and equipment with mobility

**The DPM-D520I/D530I are suitable for:** industrial machines, communication base station, IIoT equipment, and areas where CT is difficult to install

## Multi-factories Energy Management and Integrated Application



## Factory Automation - Energy Consumption Analysis of Production Line



# Machine Vision System DMV2000

Speed, Precision and Humanization  
- Smart Visual Inspection



- Multiple cameras work synchronously in parallel processes to enhance efficiency and save development costs
- Image auto correction and lens distortion correction function
- User-friendly operation interface
- Smart operation process and interface for faster programming
- Built-in multi-functional developing tools
- Provides industrial networking module, digital I/O and flash control module for various applications
- Superior hardware specifications compared to same grade products, achieving high-speed processing
- High-speed cameras with CameraLink interface
- Ethernet, RS-232, RS-485 interfaces for data output
- Compliant with high industrial standards; higher stability than PC-based system
- Built-in communication system connected by PLC, no need for extra programming
- Self-defined display and operation interfaces in operation mode

## Product Types

Two types for different applications

- Standard model: 2 or 4 cameras connectable; high performance and big storage
- Basic model: Max. 2 cameras connectable; supports GigE camera

\* Basic model will be released in Q4, 2018

## Applications

Food and beverage packaging, electrical/electronics, printing machines, pharmaceuticals, Vision Guided Robotic System (VGRS), robot/automated production lines

## Advanced Functions

Functions				
2D platform positioning	√	Edge position tracing	√	
Pattern matching	√	Edge width tracing	√	
Shape matching	√	Stain inspection	√	
Edge angle	√	OCV	√	
Edge counting	√	Subtle inspection	√	
Edge pitch	√	Color inspection	√	
Edge position	√	Barcode identification	√	
Edge width	√	QR code identification	√	
Area	√	PC applications	Off-line simulation	√
Blob	√		Program upload/ download	√
Image intensity	√		Software update	√

## High-speed Cameras with CameraLink Interface

Support high-speed CameraLink Full configuration with maximum frame rate up to 690 M bytes/sec.  
Support maximum 12M pixels in gray scale using standard CameraLink cameras

Resolution (Mega Pixels)		0.3M	2M	4M	5M	12M
Level	Mono	√	√	√	√	√
	Color	√	√	√	√	√
Frame Rate		480 fps	295 fps	159 fps	35 fps	50 fps
Pixel Dimensions (Horizontal x Vertical)		642 × 484	2,048 × 1,088	2,048 × 2,048	2,448 × 2,048	4,096 × 3,072
Sensor Size		1/3"	2/3"	1"	2/3"	1.76"
Pixel Size (Horizontal x Vertical)		7.4 × 7.4 μm	5.5 × 5.5 μm	5.5 × 5.5 μm	3.45 × 3.45 μm	5.5 × 5.5 μm
Lens Mount		C Mount	C Mount	C Mount	C Mount	M42



## Machine Vision System DMV1000

Intelligent Human Visual Inspection System  
for a Variety of Applications



- User-friendly operation interface for a quick system setup
- Flowchart programming interface saves development time
- Built-in multi-functional developing tools save users from complex programming
- Offers versatile digital I/O terminals
- Compact and light, saves wiring and space
- Hardware specification meets high-speed processing requirements and offers exceptional performance better than competing products
- Standard FireWire 1,394 Series CCD
- Complete product line-up including lighting and lenses
- Compatible with Ethernet and RS-232/485 communication interfaces for a quick link up with external devices
- Supports SD card
- Compliant with high industrial standards; higher stability than PC-based systems

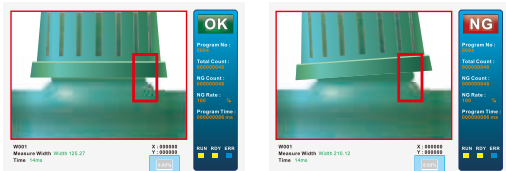


## Applications

Food and beverage packaging, electrical/electronics, printing machines, pharmaceuticals, Vision Guided Robotic System (VGRS), robot/automated production lines

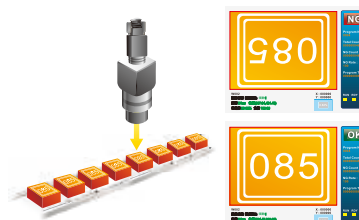
### • Bottle Cap Position Identification

Identifies the bottle capping position



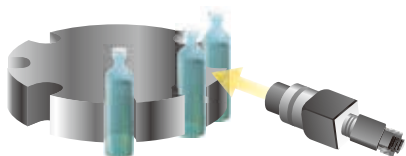
### • Direction Identification

Inspects the direction of workpieces conveyed on a production line



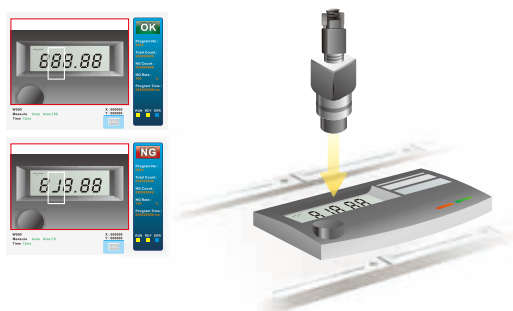
### • Beverage Packing Inspection

Inspects the liquid level of each bottle



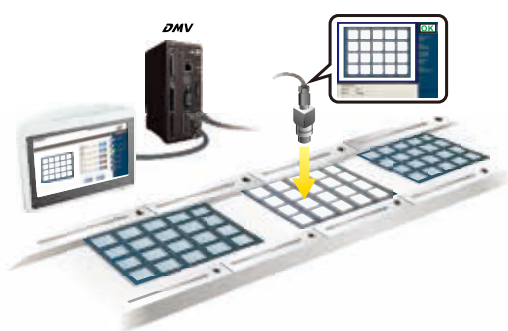
### • Character Inspection

Inspects the characters on electronic devices



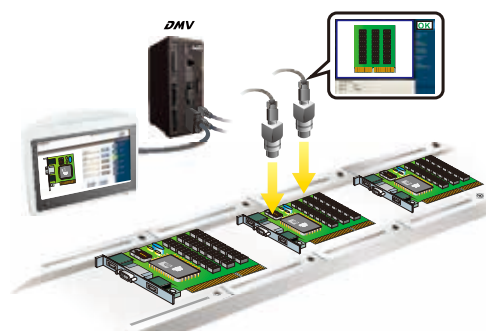
### • Luminance Inspection

Inspects LED luminance automatically



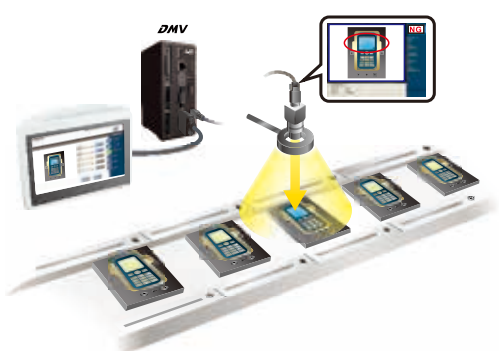
### • Position Identification

Inspects the position of IC components on PCBs



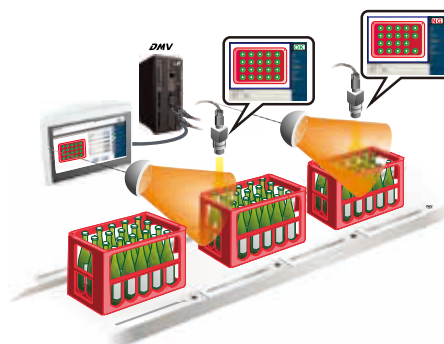
### • Module Inspection

Inspects mobile phone modules such as touch screens and buttons



### • Object Counting

Counts the quantity of objects in a basket or carton





# Industrial Power Supply


The World's Number One in Industrial Power Solutions


## DIN Rail Models


### CliQ, CliQ II, CliQ III, CliQ M, Lyte, Chrome, Sync, DVP


CliQ	Model Name	Output Voltage	Output Power
	DRP012V015W1AZ	12V	15W
	DRP012V030W1AZ		30W
	DRP012V060W1AA		60W
	DRP012V100W1AA		100W
	DRP-24V48W1AZ	24V	48W
	DRP024V060W1AZ		60W
	DRP024V060W1AA		60W
	DRP024V120W1AA		120W
	DRP024V240W1AA		240W
	DRP024V480W1AA		480W

CliQ III	Model Name	Output Voltage	Output Power
	DRP-24V120W1CAN	24V	120W
	DRP-24V240W1CAN		240W
	DRP-24V480W1CAN		480W


CliQ II	Model Name	Output Voltage	Output Power
	DRP024V060W1BN	24V 1-Phase	60W
	DRP024V060W1NZ		60W
	DRP-24V100W1NN		91.2W
	DRP024V120W1BN		120W
	DRP024V240W1BN		240W
	DRP024V480W1BN		480W
	DRP-24V120W2BN	24V 2-Phase	120W
	DRP-24V240W2BN		240W
	DRP024V060W3BN	24V 3-Phase	60W
	DRP024V120W3BN		120W
	DRP024V240W3BN		240W
	DRP024V480W3BN		480W
	DRP024V960W3BN	48V	960W
	DRP048V060W1BN		60W
	DRP048V120W1BN		120W
	DRP048V240W1BN		240W
	DRP048V480W1BN		480W


CliQ M	Model Name	Output Voltage	Output Power
	DRM-24V80W1PN	24V	81.6W
	DRM-24V120W1PN		120W
	DRM-24V240W1PN		240W
	DRM-24V480W1PN		480W
	DRM-24V960W1PN		960W

Lyte	Model Name	Output Voltage	Output Power
	DRL-24V120W1AA	24V	120W
	DRL-24V240W1AA		240W
	DRL-24V480W1AA		480W
	DRL-48V120W1AA	48V	120W

Chrome	Model Name	Output Voltage	Output Power
	DRC-5V10W1AZ	5V	7.5W
	DRC-12V10W1AZ	12V	10W
	DRC-12V30W1AZ		25.2W
	DRC-12V60W1AZ		54W
	DRC-12V100W1AZ		72W
	DRC-24V10W1AZ	24V	10W
	DRC-24V10W1HZ		10W
	DRC-24V30W1AZ		30W
	DRC-24V60W1AZ		60W
	DRC-24V100W1AZ		91.2W


Modules	Model Name	Output Voltage	Output Power
Redundancy Module	DRR-20N	24V	20A
	DRR-40N		40A
DC-UPS Module	DRU-24V40ABN		40A
	DRU-24V10ACZ		10A
Buffer Module	DRB-24V020ABN		20A
	DRB-24V040ABN		40A


Sync	Model Name	Output Voltage	Output Power
	DRS-5V30W1NZ	5V	15W
	DRS-5V50W1AZ		30W
	DRS-5V50W1NZ	25W	
	DRS-12V50W1NZ	12V	48W
	DRS-24V30W1AZ	24V	30W
	DRS-24V30W1NZ		30W
	DRS-24V50W1NZ		50W
	DRS-24V100W1AZ		96W
DRS-24V100W1NZ	91.2W		


DVP	Model Name	Output Voltage	Output Power
	DVP-PS01	24V	24W
	DVP-PS02		48W
	DVP-PS03		120W


## Panel Mount Models


**PMC, PMF, PMH, PMR, PMT, PMU**


PMC	Model Name	Output Voltage	Output Power
	PMC-05V015W1AA	5V	15W
	PMC-05V035W1AA		35W
	PMC-05V050W1AA		50W
	PMC-12V035W1AA	12V	35W
	PMC-12V050W1AA		50W
	PMC-12V060W1NA		60W
	PMC-12V100W1AA	24V	100W
	PMC-12V150W1BA		150W
	PMC-24V035W1AA		35W
	PMC-24V050W1AA		50W
	PMC-24V075W1AA		75W
	PMC-24V100W1AA		100W
	PMC-24V150W1AA	24V	150W
	PMC-24V150W2AA		150W
	PMC-24V150W1BA		150W
	PMC-24V300W1BA		300W
	PMC-24V600W1BA		600W
	PMC-DSPV100W1A		24V/5V
PMC-48V150W1BA	48V	150W	

PMF	Model Name	Output Voltage	Output Power
	PMF-4V320WCGB	4.2V	231W
	PMF-5V320WCGB	5V	275W
	PMF-24V200WCGB	24V	201.6W
	PMF-24V240WCGB		240W
	PMF-24V320WCGB		320W

PMH	Model Name	Output Voltage	Output Power
	PMH-12V100WCLS	12V	100W
	PMH-24V50WCAA	24V	50W
	PMH-24V100WCAA		100W
	PMH-24V100WCCA		100W
	PMH-24V100WCLS		100W
	PMH-24V100WCMS		91.2W
	PMH-24V100WCNS		91.2W
	PMH-24V150WCBA		150W
	PMH-24V150WCDA		150W
	PMH-24V150WCLS		150W
	PMH-24V200WCBA		200W


PMR	Model Name	Output Voltage	Output Power
	PMR-4V320WCAA	4.2V	252W
	PMR-4V320WDAA		252W
	PMR-4V320WDGA		252W
	PMR-4V320WDBA		252W
	PMR-4V320WDCA		252W
	PMR-5V320WCAA	5V	300W
	PMR-5V320WDAA		300W
	PMR-5V320WDGA		300W
	PMR-5V320WDBA		300W
	PMR-5V320WDCA		300W


PMT	Model Name	Output Voltage	Output Power
	PMT-4V350W1AM	4.2V	252W
	PMT-5V35W1AA	5V	35W
	PMT-5V50W1AA		50W
	PMT-5V350W1AM		300W
	PMT-12V35W1AA	12V	35W
	PMT-12V50W1AA		50W
	PMT-12V100W1AA		102W
	PMT-12V150W1AA		150W
	PMT-12V350W1AAR		348W
	PMT-15V50W1AA		15V
	PMT-24V35W1AA	24V	35W
	PMT-24V50W1AA		50W
	PMT-24V100W1AA		108W
	PMT-24V150W1AA		156W
	PMT-24V200W1AM		211.2W
	PMT-24V350W1AG		350.4W
	PMT-36V350W1AR	36V	349.2W
	PMT-48V150W1AA	48V	158.4W
	PMT-48V350W1AR		350W
	PMT-D1V100W1AA	12V/5V	84W/15W
PMT-D2V100W1AA	24V/5V	84W/15W	


PMU	Model Name	Output Voltage	Output Power
	PMU-13V155WCBA	13.8V	151W
	PMU-13V155WCCA		151W
	PMU-27V155WCBA	27.6V	151W
	PMU-27V155WCCA		151W


## Open Frame Models

**PJ, PJB, PJH, PJT, PJU**


PJ	Model Name	Output Voltage	Output Power
	PJ-5V15WBNA	5V	15W
	PJ-12V15WBNA	12V	15.6W
	PJ-12V30WBNA		30W
	PJ-12V50WBNA		51.6W
	PJ-12V100WBNA	24V	102W
	PJ-12V150WBNA		150W
	PJ-24V30WBNA		31.2W
	PJ-24V50WBNA		50.4W
	PJ-24V100WBNA		103.2W
	PJ-24V150WBNA		150W
	PJ-48V50WBNA	48V	52.8W

PJB	Model Name	Output Voltage	Output Power
	PJB-24V100WBNA	24V	103.2W
	PJB-24V150WBNA		151.2W
	PJB-24V240WBNA		240W

PJH	Model Name	Output Voltage	Output Power
	PJH-24V300WBBA	24V	300W
	PJH-24V300WBCA		300W
	PJH-36V300WBBA	36V	300W
	PJH-36V300WBCA		300W

PJT	Model Name	Output Voltage	Output Power
	PJT-12V40WBAA	12V	40W
	PJT-12V65WBAA		60W
	PJT-12V100WBAA		100W
	PJT-12V100WBBA	100W <sup>B)</sup>	80W <sup>A)</sup>
	PJT-15V40WBAA		40W
	PJT-15V65WBAA	15V	63W
	PJT-15V100WBAA		100W
	PJT-15V100WBBA		100W <sup>B)</sup>
	PJT-18V40WBAA	18V	40W
	PJT-18V65WBAA		65W
	PJT-18V100WBAA		100W
	PJT-18V100WBBA	100W <sup>B)</sup>	80W <sup>A)</sup>
	PJT-24V40WBAA		40W
	PJT-24V65WBAA	24V	65W
	PJT-24V100WBAA		100W
	PJT-24V100WBBA		100W <sup>B)</sup>
	PJT-27V150WBNA	V <sub>i</sub> : 27V V <sub>SB</sub> : 12V	150W

 A) Convection  
B) Forced Cooling

PJU	Model Name	Output Voltage	Output Power
	PJU-13V60WCBA	13V	60W
	PJU-27V60WCBA	27V	60W

# Industrial Ethernet Switch DVS

State-of-the-art Industrial Network Communication for Smart Industry

## Layer 3 Managed Switch

### DVS-G928W01 **New**

- 28-Port full GbE (10GbE optional), modular design for flexible configuration
- Layer 3 routing function allows multiple subnets in a large network to exchange data and information across a network address
- Complete L2 network management functions : Q-in-Q VLAN, QoS, LACP, IGMP, SNMP v1/v2c/v3
- IPv6 address suitable for larger network and neighbor discovery
- Support EtherNet/IP and Modbus TCP protocols that facilitates the remote management by SCADA and other industrial devices
- Proprietary redundancy RING and redundancy CHAIN high-end redundancy technology adopts easy-to-build multiple ring topology, with self-healing recovery time <30 ms to ensure reliable network transmission
- Enhanced network security with IEEE 802.1X, TACACS+, SSH, HTTPS and SNMP v3
- IEEE 1588v2 PTP (Precision Time Protocol) for precise time synchronization of network
- Loopback-detection to avoid broadcast storms by automatically shutting down the ports over a switching loop
- Cable diagnostic to auto-detect and report potential cabling issues
- Auto warning by emails, relay, Syslog & SNMP trap
- Compatible with various industrial protocols, including EtherNet/IP, Profinet, CC-LINK IE and DNP 3.0
- 100 ~ 240 VAC and 125 ~ 370 VDC wide range redundant power input
- IP30 metal case: -40°C ~ 85°C operating temperature
- Electrical substation: IEC 61850-3, IEEE 1613
- Rail traffic: EN 50121-4
- Certifications: UL 61010, IEC 60950-1, CE, FCC, CCC and RCM



## Modules

### DVS-G900-8GE

8 10/100/1000Base-T RJ45



### DVS-G900-8GF

8 100/1000Base-SFP



### DVS-G900-6GM12

6 10/100/1000Base-T M12



### DVS-G900-4GF

4 100/1000Base-SFP



## Managed Switch

### DVS-328 **New**

- 24-Port FE + 4-Port GbE Combo SFP, designed for backbone network transmission at control centers
- Complete L2 network management functions: Q-in-Q VLAN, QoS, LACP, IGMP & SNMP v1/v2c/v3
- IPv6 address suitable for larger network and neighbor discovery
- Support Modbus TCP and EtherNet/IP protocols that facilitate remote management by SCADA and other industrial devices
- Proprietary ONE RING and ONE CHAIN high-end redundancy technology adopts easy-to-build multiple ring topology, with self-healing recovery time <20 ms to ensure reliable network transmission
- Enhanced network security with IEEE 802.1X, TACACS+, SSH, HTTPS and SNMP v3
- Loopback-detection to avoid broadcast storms by automatically shutting down the ports over a switching loop
- Cable diagnostic to automatically detect twisted-pair cable quality and periodically report issues
- Auto warning by emails, DI, relay, syslog & SNMP trap
- Compatible with various industrial protocols, including EtherNet/IP, Profinet, CC-LINK IE and DNP 3.0
- 85 ~ 264 V<sub>AC</sub> and 88 ~ 370 V<sub>DC</sub> wide range redundant power input
- IP40 metal case: -40°C ~ 70°C operating temperature
- Certifications: UL 60950-1, IEC 60950-1, CCC, CE, FCC and RCM



### DVS-110

- 7-Port FE + 3-Port GbE Combo SFP, designed for backbone networks
- Complete L2 network management functions: VLAN, QoS, LACP, IGMP & SNMP v1/v2c/v3
- IPv6 address suitable for larger network and neighbor discovery
- Support Modbus TCP and EtherNet/IP protocols that facilitate remote management by SCADA and other industrial devices
- Proprietary ONE RING and ONE CHAIN high-end redundancy technology adopts easy-to-build multiple ring topology, with self-healing recovery time <20 ms to ensure reliable network transmission
- Loopback-detection to avoid broadcast storms by automatically shutting down the ports over a switching loop
- DDM diagnosis function by SFP fiber module
- Auto warning by emails, DI, relay, syslog & SNMP trap
- IP40 metal case: -40°C ~ 75°C operating temperature
- Certifications: UL 508, IEC 61131-2, CE, FCC and RCM



# Managed Switch

## DVS-109

- 8-Port FE + 1-Port GbE, Gigabit uplink port elevating transmission bandwidth
- Complete L2 network management functions: VLAN, QoS, LACP, IGMP & SNMP v1/v2c/v3
- IPv6 address suitable for larger network and neighbor discovery
- Support Modbus TCP and EtherNet/IP protocols that facilitate remote management by SCADA and other industrial devices
- Proprietary ONE RING and ONE CHAIN high-end redundancy technology adopts easy-to-build multiple ring topology, with self-healing recovery time <20 ms to ensure reliable network transmission
- Loopback-detection to avoid broadcast storms by automatically shutting down the ports over a switching loop
- Auto warning by emails, DI, relay, syslog & SNMP trap
- IP40 metal case: -40°C~75°C operating temperature
- Certifications: UL 508, IEC 61131-2, CE, FCC and RCM



## DVS-108

- 6-Port FE + 2-Port GbE Combo SFP, designed for backbone network
- Complete L2 network management functions: VLAN, QoS, LACP, IGMP & SNMP v1/v2c/v3
- IPv6 address suitable for larger network and neighbor discovery
- Support Modbus TCP and EtherNet/IP protocols that facilitate remote management by SCADA and other industrial devices
- Proprietary ONE RING and ONE CHAIN high-end redundancy technology adopts easy-to-build multiple ring topology, with self-healing recovery time <20 ms to ensure reliable network transmission
- Loopback-detection to avoid broadcast storms by automatically shutting down the ports over a switching loop
- DDM diagnosis function by SFP fiber module
- Auto warning by emails, DI, relay, syslog & SNMP trap
- IP40 metal case: -40°C~75°C operating temperature
- Certifications: UL 508, IEC 61131-2, CE, FCC and RCM



# PoE+ Managed Switch

## DVS-G512

- 8-Port GbE + 4-Port 100/1000Base-SFP, full Gigabit
- 8 10/100/1000Base-T PoE (PSE) ports, each provides 30 W power supply to meet IEEE 802.3at and IEEE 802.3af standards
- Complete L2 network management functions: VLAN, QoS, LACP, IGMP & SNMP v1/v2c/v3
- IPv6 address suitable for larger network and neighbor discovery
- Advanced PoE management and intelligent powered device(PD) class detection
- IEC 62439-2 MRP media redundancy protocol; IEEE 1588v2 PTP precision time protocol
- DDM diagnosis function by SFP fiber module
- Auto warning by emails, relay, syslog & SNMP trap
- IP30 metal case: -40°C ~ 70°C operating temperature
- Certifications: CE, FCC and RCM



## Unmanaged Switch DVS-G005I00A

- 5-Port GbE
- Support IEEE 802.1p based QoS for packet forwarding precedence
- Built-in Broadcast Storm Protection
- Transparent transmission of VLAN tagged packets
- Jumbo packet transmission: up to 9,216 Bytes
- IEEE Green Ethernet for power savings
- IP40 metal case: -10°C~60°C operating temperature
- Certifications: UL 508, IEC 61131-2, CE, FCC and RCM



## DVS-005/008/016

- 5/8/16-Port FE; supports long distance transmission via fiber optics
- Support IEEE 802.1p based QoS for packet forwarding precedence
- Built-in Broadcast Storm Protection
- Transparent transmission of VLAN tagged packets
- Auto warning by relay output for link-down and power failure
- 12~48V<sub>DC</sub> redundant terminal block power input
- IP40 metal case: -40°C~75°C operating temperature
- Certifications: UL 508, IEC 61131-2, CE, FCC and RCM



## DVS-G005I00C

- 5-Port GbE
- Jumbo frame size up to 10K Bytes
- 12 ~ 48 VDC redundant terminal block power input
- IP40 PC case: -20°C~70°C operating temperature
- Certifications : UL 61010, IEC 62368-1, CE, FCC and RCM



## PoE+ Unmanaged Switch DVS-G408W01

- 8-Port GbE, full Gigabit
- 8 10/100/1000Base-T PoE (PSE) ports, each provides 30W power supply to meet IEEE 802.3at and IEEE 802.3af standards
- Jumbo packet transmission: up to 9,216 bytes
- Auto warning by relay output for power failure
- IP30 metal case: -40°C~70°C operating temperature
- Certifications: CE, FCC and RCM



## DVS-G406W01-2GF

- 4-Port GbE + 2-Port 100/1000Base-SFP, full Gigabit
- 4 10/100/1000Base-T PoE (PSE) ports, each provides 30W power supply to meet IEEE 802.3at and IEEE 802.3af standards
- Jumbo packet transmission: up to 9,216 Bytes
- Auto warning by relay output for power failure
- IP30 metal case: -40°C~70°C operating temperature
- Certifications: CE, FCC and RCM



## Ethernet-to-Fiber Media Converter DVS-G002I00-TF

- 1-Port 100/1000Base-T to 100/1000Base-SFP
- Jumbo frame size up to 10K bytes
- Supports Link fault Pass-Through(LFP)
- 12 ~ 48 VDC redundant terminal block power input
- IP40 PC case: -20°C~70°C operating temperature
- Certifications : UL 61010, IEC 62368-1, CE, FCC and RCM



## SFP Fiber Transceiver LCP-GbE

- 1-Port GbE, compliant with IEEE 802.3z
- Full duplex operation
- DDM diagnosis function to monitor transmission quality
- Hot-plugging duplex LC connectors for maximum flexibility
- Metal case: -40°C~85°C operating temperature



## LCP-1FE

- 1-Port FE, compliant with IEEE 802.3u
- Full duplex operation
- DDM diagnosis function to monitor transmission quality
- Hot-plugging duplex LC connectors for maximum flexibility
- Metal case: -40°C~85°C operating temperature





## PoE+ Splitter DVS-G401

- 1-Port GbE for PoE+ data / power input and 1-Port GbE for data output
- Provide 30W power supply / per port to meet IEEE 802.3at and IEEE 802.3af standards
- Intelligent PoE input overvoltage protection
- Power output up to 27W
- IP30 metal case: -20°C ~ 70°C operating temperature
- Certifications: CE, FCC and RCM



## PoE+ Injector DVS-G402

- 2-Port GbE for PoE+ data / power output and 2-Port GbE for data input
- Provide 30W power supply / per port to meet IEEE 802.3at and IEEE 802.3af standards
- Intelligent PoE output overvoltage protection
- Built-in 12V<sub>DC</sub> power booster for flexible PoE deployment
- IP30 metal case: -20°C ~ 70°C operating temperature
- Certifications: CE, FCC and RCM



## IEEE 802.11 WLAN DVW-W02W2-E2

- Complete transmission interface: 2-Port GbE + 2-Port RS-232/422/485
- Compliant with IEEE 802.11n wireless technology for up to 450 Mbps data transmission rate
- IEEE 802.11r fast roaming with seamless switch (< 50ms) among APs
- Multiple wireless modes: AP, Client CPE, WDS P-T-P, WDS P-T-MP and repeater
- Support serial device servers and MODBUS gateways
- Wireless QoS (IEEE 802.11e, WMM) for video packet transmission precedence
- Enhanced wireless security: 64/128-bit WEP, WPA/WPA2, WPA-PSK/WPA2-PSK (TKIP/AES) and 802.1X Authentication
- Support Modbus TCP protocol that facilitates the remote management by SCADA and other industrial devices
- Auto warning by emails, DI, relay, Syslog and SNMP trap
- IP40 metal case: -40°C ~ 75°C operating temperature
- Certifications: UL 508, IEC 61131-2, CE, FCC, RCM, BSMI, SRRC and NCC



## High-gain Antenna DVW-ANT

- Support IEEE 802.11 b/g/n or IEEE 802.11 a/b/g/n
- 2.4 & 5GHz dual-band omni-directional 5.5 & 8dBi, or 2.4GHz omni-directional 7dBi
- Powerful magnetic base with 3-meter extension cord and RP-SMA (male) connector
- IP65 waterproof and UV resistant design, suitable for applications under all kinds of weather conditions
- -30°C ~ 60°C operating temperature



## Industrial 3G Cloud Router DX-2100RW

- 1-Port FE + 1-Port RS-232 + 1-Port RS-485
- UMTS/HSPA+: 800/850, 900, AWS1700, 1900, 2100MHz
- GSM/GPRS/EDGE: 850, 900, 1800, 1900MHz
- Support DIACloud Cloud Management Platform, no ISP public IP address required
- Support Modbus TCP and MODBUS ASCII/RTU protocols
- Firewalls: Stateful Packet Inspection (SPI), Denial of Service (DoS) attacks, NAT, Port triggering, Port mapping, IP address filtering, MAC address filtering, URL filtering
- IP30 metal case: -20°C ~ 70°C operating temperature
- Certifications: CE, FCC and UL



## Industrial Ethernet Cloud Router DX-2300LN

- 4-Port FE LAN + 1-Port FE WAN + 1-Port RS-232 + 1-Port RS-485
- Support DIACloud Cloud Management Platform, no ISP public IP address required
- Support Modbus TCP and MODBUS ASCII/RTU protocols
- Firewalls: Stateful Packet Inspection (SPI), Denial of Service (DoS) attacks, NAT, Port triggering, Port mapping, IP address filtering, MAC address filtering, URL filtering
- IP30 metal case: -20°C ~ 70°C operating temperature
- Certifications: CE, FCC and UL



## Industrial 3G/WAN Cloud Router DX-3001H9 **New**

- 4-Port FE LAN + 1-Port FE WAN + 1-Port RS-232 + 1-Port RS-485
- UMTS/HSPA+: 800 / 850, 900, AWS1700, 1900, 2100 MHz
- GSM/GPRS/EDGE: 850, 900, 1800, 1900 MHz
- Support DIACloud Cloud Management Platform, no ISP public IP address required
- Support Modbus TCP, Modbus ASCII/RTU protocols
- Dual SIM redundancy design: seamless switch among ISP systems for continuous network connection
- IP30 metal case: -20°C ~ 70°C operating temperature
- Certifications: CE, FCC and UL



## Industrial 3G/WAN VPN Router DX-3001H9-V

- 4-Port FE LAN + 1-Port FE WAN + 1-Port RS-232 + 1-Port RS-485
- UMTS/HSPA+: 800/850, 900, AWS1700, 1900, 2100 MHz
- Support GSM/GPRS/EDGE: 850, 900, 1800, 1900 MHz
- Support IPSec, OpenVPN, PPTP, L2TP and GRE VPN protocols; IPSec with CA certificate supports L2TP over IPSec
- Dual SIM redundancy design: seamless switch among ISP systems for continuous network connection
- Built-in RTC
- Flexible connection method over WAN port, e.g. static IP, DHCP client and more
- Firewalls: Stateful Packet Inspection (SPI), Denial of Service (DoS) attacks, NAT, port triggering, port mapping, IP address filtering, MAC address filtering, URL filtering
- IP30 metal case: -20°C ~ 70°C operating temperature
- Certifications: CE, FCC and UL



# Communication Module

High Speed and Stable Industrial Network Solutions

## BACnet MS/TP Slave Module DVPSCM52-SL

- BACnet MS/TP slave, standard Modbus and user-defined RS-422/485 communication protocols
- Compatible with software and DDC of major brands on the market; remote I/O and converter function available when connected with a PLC with I/O point extension
- Isolated power and communication provide strong noise immunity. Built-in 120 ohm terminal resistor switch and feed-through terminals with spring plugs
- Data transmission settings via software, no complex programming required



## RS-422 / 485 Master Module DVPSCM12-SL

- Standard Modbus communication and user-defined RS-422/485 communication protocols
- Two sets of independent RS-422/485 communication interfaces
- Isolated power and communication provide strong noise immunity; built-in 120 ohm terminal resistor switch and feed-through terminals with spring plugs
- Data transmission settings via software, no complex programming required
- Applied as PLC communication ports for program uploading/downloading and monitoring



## Ethernet Master Module DVPEN01-SL

- Modbus TCP protocol
- Modbus TCP connections:  
Client: 32  
Server: 16
- Smart data exchange
- RTU mapping
- Simple firewall
- Email alarm



## CANopen Master Module DVPCOPM-SL

- CANopen protocol
- Able to connect max. 110 slaves
- Various PDO and high-speed SDO transmission
- Supports NMT slave, Heartbeat, Emergency and more protocols



## PROFIBUS DP Slave Module DVPPF02-SL

- PROFIBUS DP slave protocol
- Supports GSD files identification and cyclic data transmission
- Data transmission: up to 100 words IN/OUT data mapping



## DeviceNet Master Module DVPDNET-SL

- DeviceNet protocol
- Able to connect max. 63 slaves
- Supports EDS files identification and cyclic data transmission
- Max. network connection distance: 500m
- RTU mapping



## Ethernet Remote I/O Communication Module RTU-EN01

- Modbus TCP slave protocol
- Able to connect 8 DVP-S Series analog I/O modules
- Able to connect digital I/O (256 points) modules
- RS-485 port supports max. 32 MODBUS slaves
- Smart PLC if-then function
- Smart monitor function
- Supports webpage setup and on-line monitoring
- Serial virtual COM available



## PROFIBUS DP Remote I/O Communication Module RTU-PD01

- PROFIBUS DP slave protocol
- Auto-detects baudrate, max. baudrate: 12 Mbps
- Supports GSD files for identification and cyclic data transmission
- Able to connect 8 DVP-S Series analog I/O modules
- Able to connect digital I/O (256 points)
- RS-485 port supports max. 16 Modbus slaves



## DeviceNet Remote I/O Communication Module RTU-DNET

- DeviceNet protocol
- Supports EDS files for identification and cyclic data transmission
- Able to connect 8 DVP-S Series analog I/O modules
- Able to connect digital I/O (256 points)
- RS-485 port supports max. 8 Modbus slaves








## RS-485 Remote I/O Communication Module RTU-485

- Modbus protocol
- Able to connect 8 DVP-S Series analog I/O modules
- Able to connect digital I/O (256 points) modules
- Max. baud rate: 115.2Kbps



## DVP Series Slave Module (Right-side)

DVPCP02-H2	DVPPF01-S	DVPPF02-H2	DVPDT01-S	DVPDT02-H2
				
CANopen slave module Supports DVP-EH2/3 Series	PROFIBUS slave module Supports DVP-S Series	PROFIBUS slave module Supports DVP-EH2/3 Series	DeviceNet slave module Supports DVP-S Series	DeviceNet slave module Supports DVP-EH2/3 Series

# Converter

## Impedance to Noise with a Range of Fieldbus Converters




### Applications

Intelligent transportation systems, water treatment, building automation, factory automation, monitoring and control systems

## USB Converter

	<p><b>UC-PRG020-12A</b> USB » RS-232</p>	<ul style="list-style-type: none"> <li>• Delta programming cables</li> <li>• RS-232 port provides mini-DIN and DB9 connectors</li> <li>• A portable hot-plugging USB device, no power supply required</li> </ul>
	<p><b>IFD6500</b> USB » RS-485</p>	<ul style="list-style-type: none"> <li>• Lightweight design for easy portability</li> <li>• Auto-detection of data flow direction</li> <li>• A portable USB device</li> <li>• Supports Win XP, Win7 32/64-bit</li> </ul>
	<p><b>IFD6503</b> USB » CAN</p>	<ul style="list-style-type: none"> <li>• Extracts CAN messages (incl. standard and extended frames), decodes and displays following DeviceNet and CANopen protocols</li> <li>• Filters by set conditions</li> <li>• Sends CAN messages (1 message by manual mode, 8 messages by auto mode)</li> <li>• Max. 1 Mbps</li> <li>• A portable USB device</li> </ul>
	<p><b>IFD6530</b> USB » RS-485</p>	<ul style="list-style-type: none"> <li>• Lightweight design for easy portability</li> <li>• Auto-detection of data flow direction</li> <li>• Supports KPC-CC01 keypad in conducting parameters and page editing</li> <li>• Supports Win XP, Win7 32/64-bit</li> <li>• A portable USB device</li> </ul>

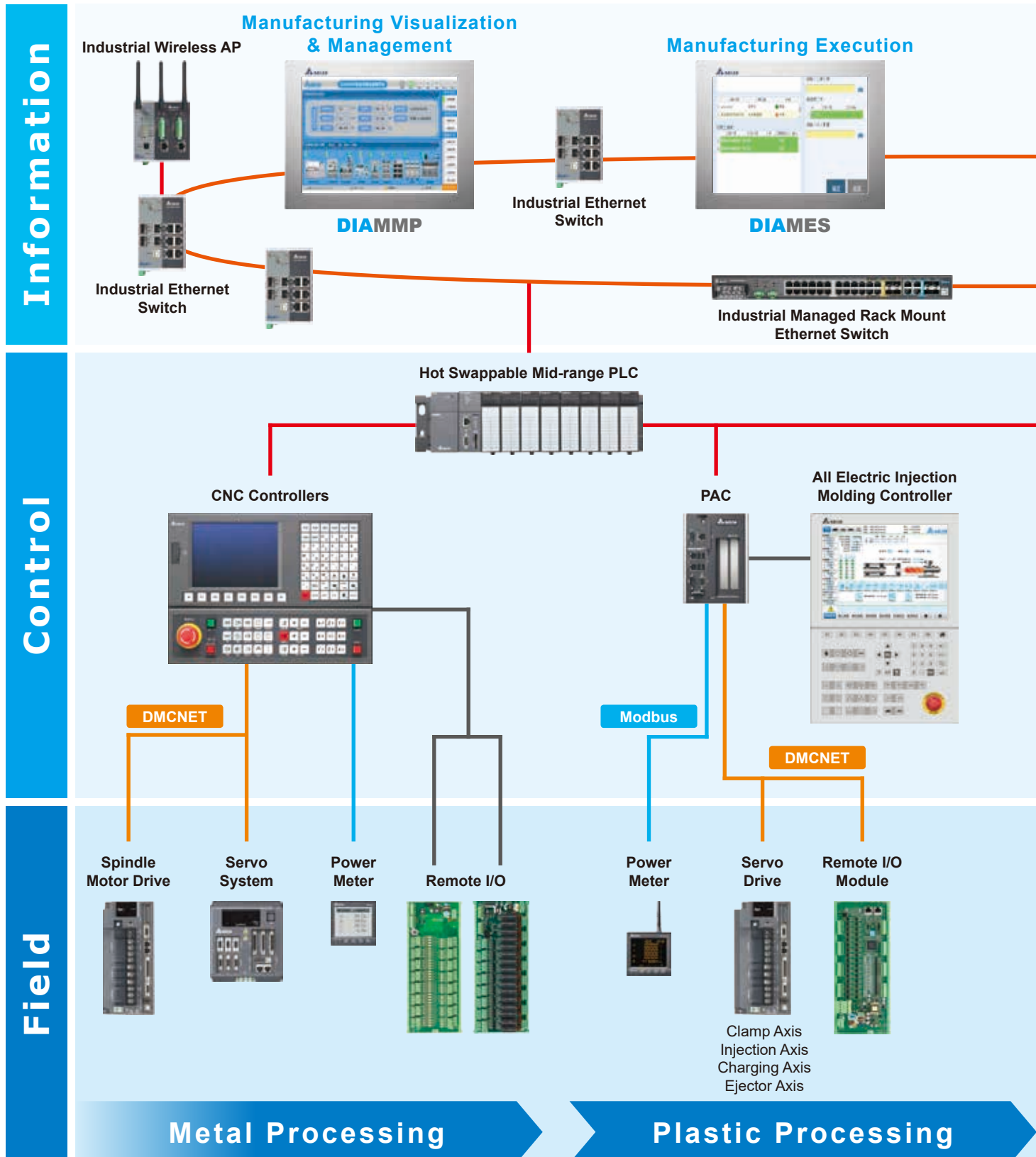
## Modbus Serial Converter

	<p><b>IFD8500A</b> RS-232 « » RS-485</p>	<ul style="list-style-type: none"> <li>• RS-232 to RS-422 / 485 isolated converter</li> <li>• Auto transmission speed adjustment</li> </ul>
	<p><b>IFD8510A</b> RS-422/485</p>	<ul style="list-style-type: none"> <li>• RS-422 / 485 isolated regenerator</li> <li>• RS-422 / 485 transmission distance extended to 1.2 km</li> <li>• Able to connect to 32 RS-485 devices</li> <li>• Auto transmission speed adjustment and data flow direction control</li> </ul>
	<p><b>IFD8520</b> RS-232 « » RS-485</p>	<ul style="list-style-type: none"> <li>• RS-232 to RS-422/485 addressable isolated converter</li> <li>• Connects RS-232 to RS-422/485 by setting up Modbus address</li> </ul>

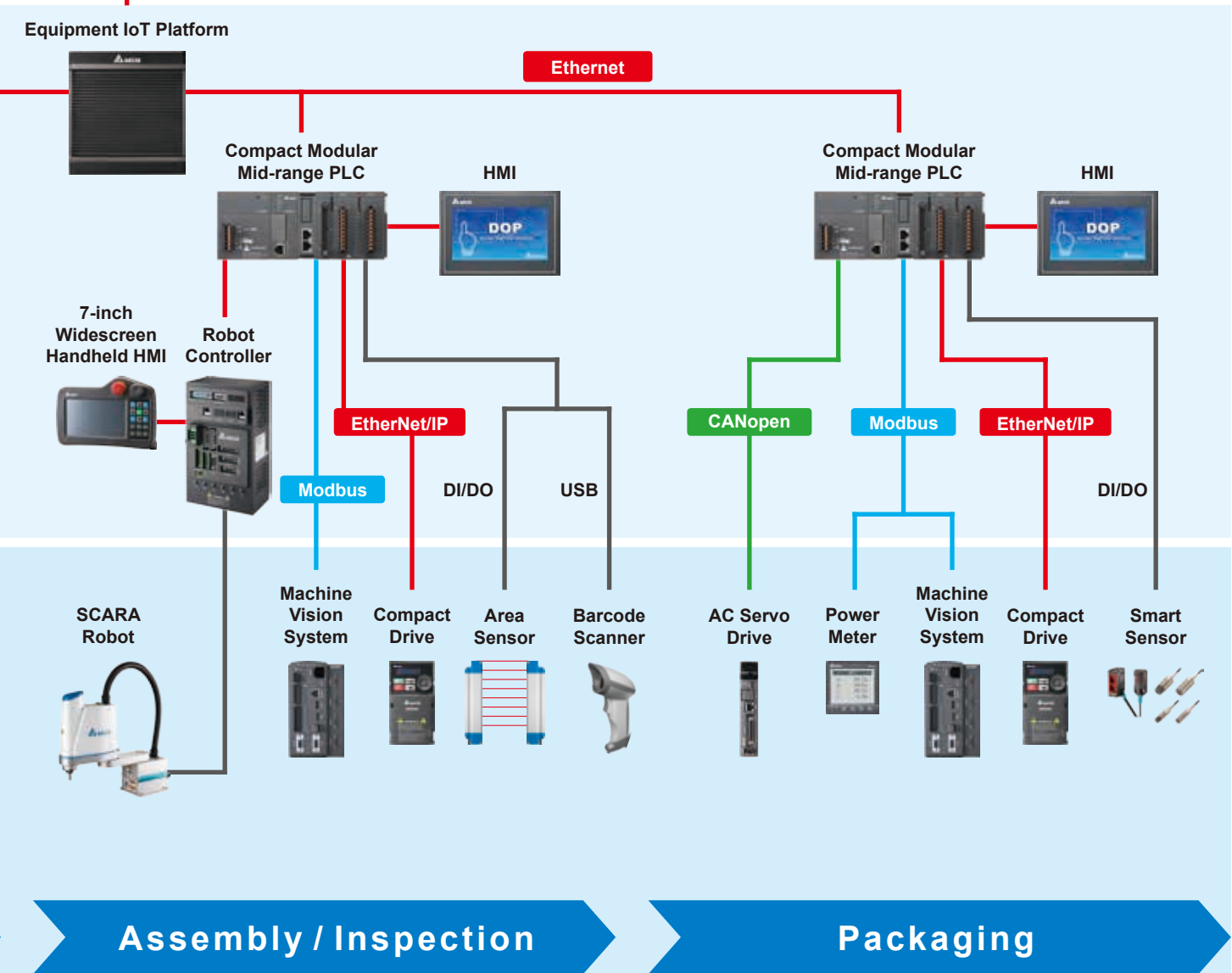
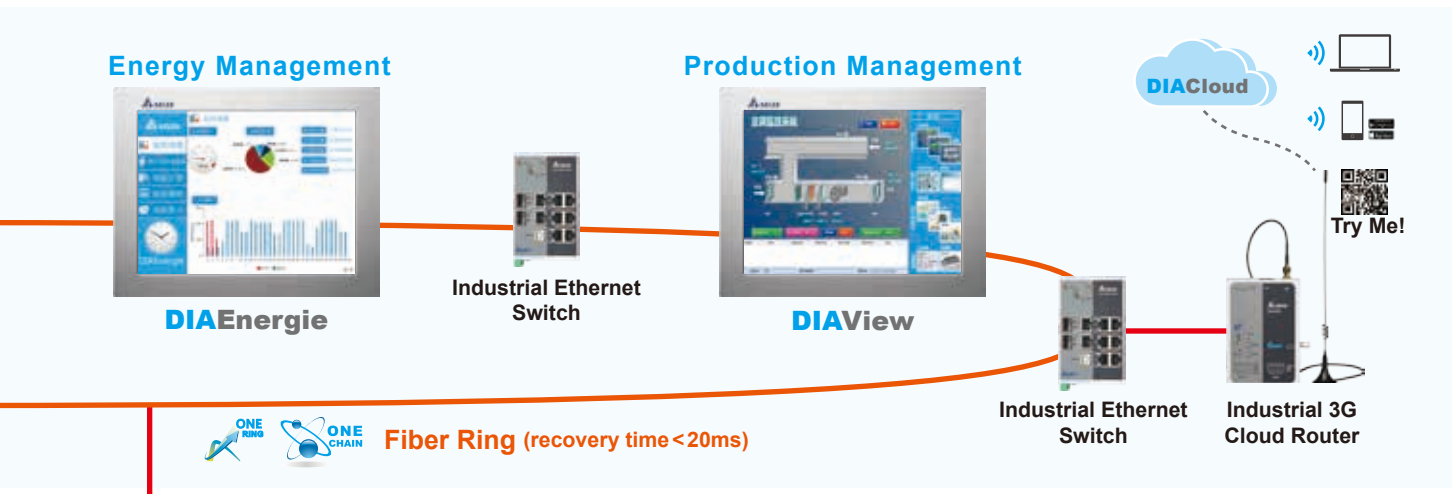
## Industrial Network Converter

	<p><b>IFD9502</b> DeviceNet » MODBUS</p>	<ul style="list-style-type: none"> <li>• DeviceNet protocol</li> <li>• Able to connect Delta industrial automation products</li> <li>• Isolation in RS-485 channel (incl. power supply)</li> <li>• Full compatibility test passed</li> </ul>
	<p><b>IFD9503</b> CANopen » MODBUS</p>	<ul style="list-style-type: none"> <li>• CANopen protocol</li> <li>• Able to connect all Delta industrial automation products</li> <li>• Isolation in RS-485 channel (incl. power supply)</li> <li>• Full compatibility test passed</li> </ul>
	<p><b>IFD9506</b> MODBUS TCP « » MODBUS</p>	<ul style="list-style-type: none"> <li>• Isolation in RS-485 channel (incl. power supply)</li> <li>• Modbus TCP protocol</li> <li>• Smart monitor function</li> <li>• Supports webpage setup and on-line monitoring</li> <li>• Serial virtual COM available</li> <li>• Alarm notification through email</li> </ul>
	<p><b>IFD9507</b> EtherNet/IP « » MODBUS</p>	<ul style="list-style-type: none"> <li>• Isolation in RS-485 channel (incl. power supply)</li> <li>• EtherNet/IP and Modbus TCP protocols</li> <li>• Smart monitor function</li> <li>• Supports webpage setup and on-line monitoring</li> <li>• Serial virtual COM available</li> <li>• Alarm notification through email</li> </ul>

# Industrial Automation Solutions







# Industrial PC

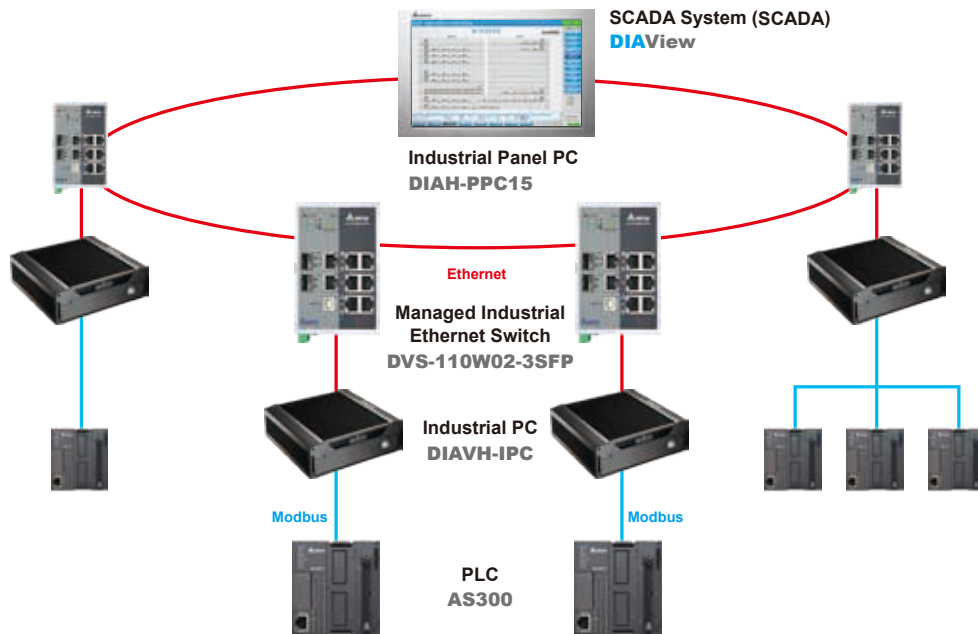
## DIAV

### Stable and High-performance Integration Platform

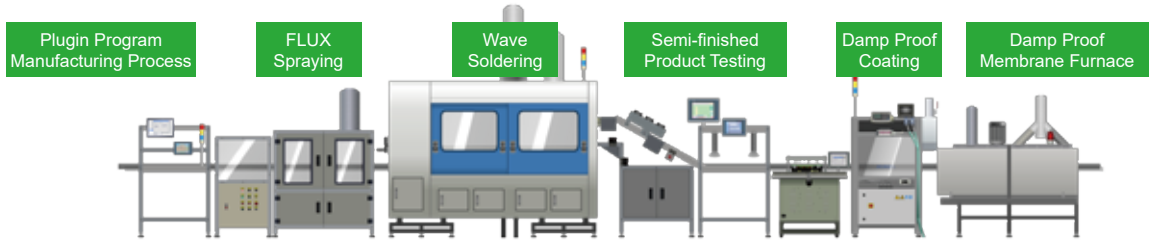
- IPC with 10"/12"/15"/17"/19" TFT LCD touch screen
- Wide operating temperature range, suitable for applications in harsh industrial environments
- Fanless and low power Intel Core i3/i5 and Celeron J1900 processor with high efficiency and excellent performance
- One-click start up click (power-on)
- Embedded Windows 7 operating system with 128G/256G/512G SSD
- Full compatibility with SCADA and IEMS software platform



DIAVH-IPC    DIAVH-PPC15    DIAVH-PPC19



Facility Management Control System	Equipment Management System	Production Process Control System	Production Quality Management System
------------------------------------	-----------------------------	-----------------------------------	--------------------------------------

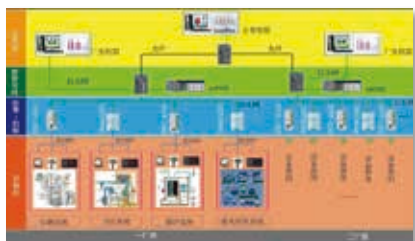


## Applications

Equipment for electronics manufacturing, machinery equipment, HVAC, water treatment, facility management and monitoring control

## Factory Digitalization

- Factory data acquisition, process control and management
- Distributed system calculation for data and information storage and analytics



Factory Digitalization



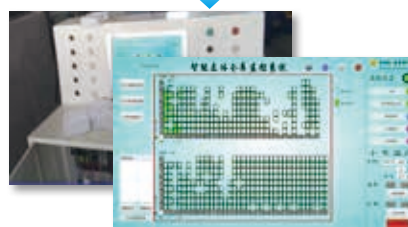
Factory Equipment Monitoring

## Logistic Application: Transportation and Stereoscopic Warehouse

- The database saves the location of materials; barcode scanning enhances load/unload and sorting efficiency to save space and labor costs



Warehousing System



Warehouse Monitoring

## Inspection & Monitoring of Electronic Equipment

- DIAView interacts with the programming processes of PLCs and inspection equipment, realizing powerful group control
- With DIAView, the system can record daily production, identify qualified and unqualified products, and provide inquiry functions



Electronic Inspection Equipment



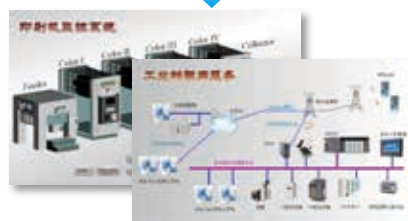
Inspection and Monitoring of Electronic Equipment

## Equipment Monitoring System

- Achieves real-time remote monitoring of machine operating status
- Allows device suppliers to remotely lock/unlock devices for flexible management



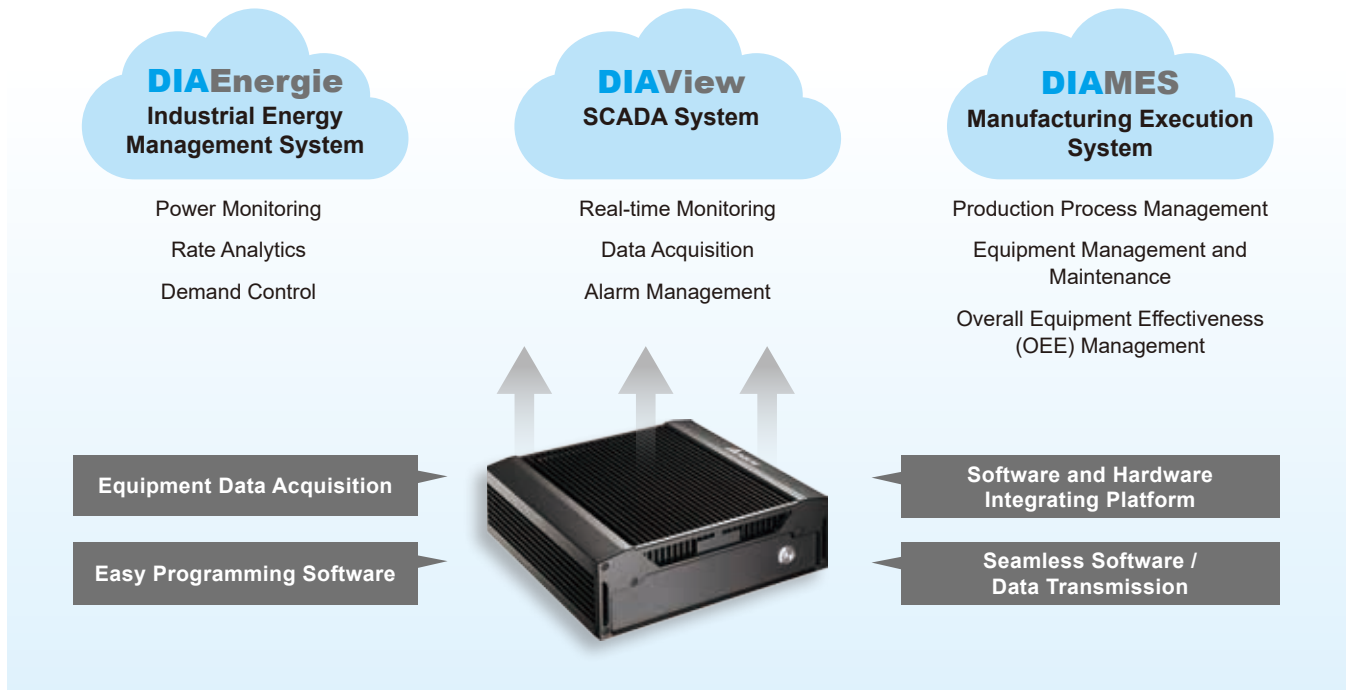
Total Configuration of Equipment Monitoring



Equipment Remote Monitoring

# Equipment IoT Platform

## DIALink



## Equipment Monitoring and Data Acquisition

### Features

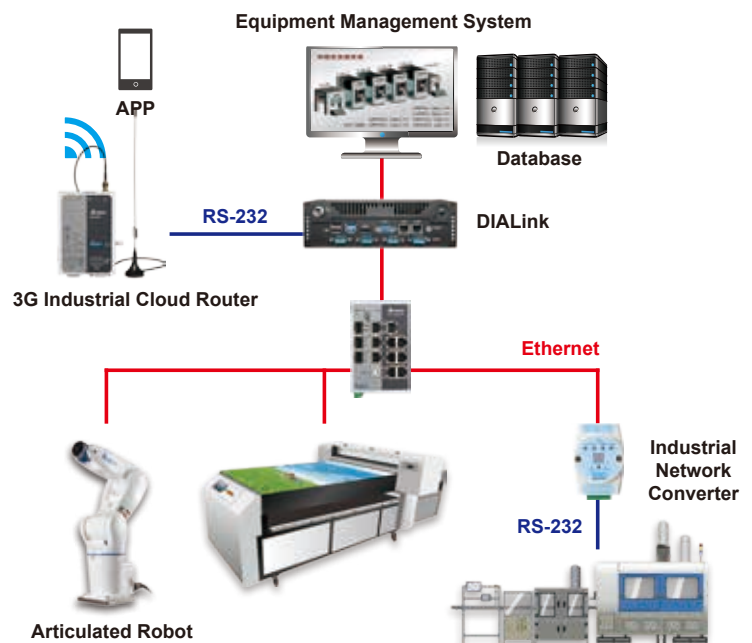
- Supports all major CNC and PLC drivers
- Equipment monitoring and data acquisition
- Data temporary storage function

### Benefits

- Equipment data digitalization and management
- Customized (user-defined) real-time information visualization
- Machine abnormality and idle time monitoring
- Enhanced efficiency by improving control of Overall Equipment Effectiveness (OEE)

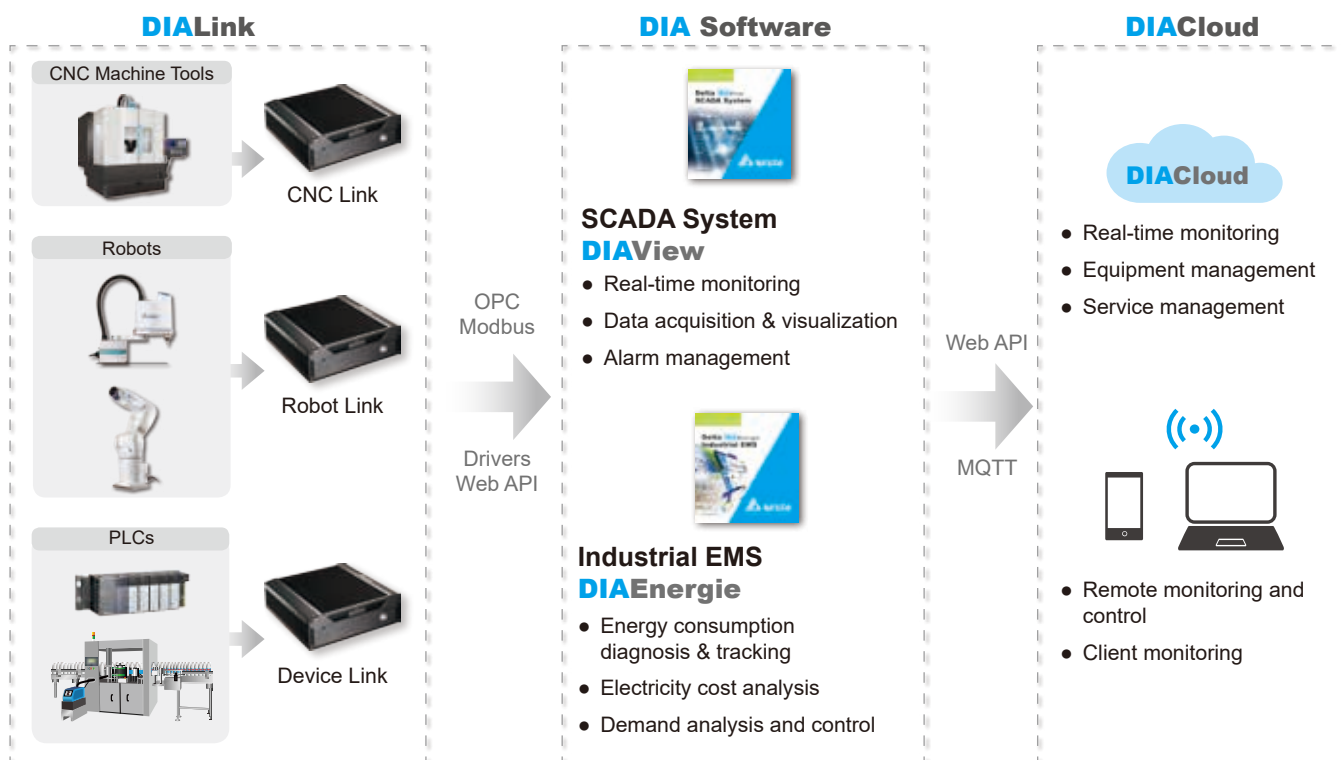
### Applications

- Real-time equipment data collection
- Equipment analysis and management
- Remote monitoring and control

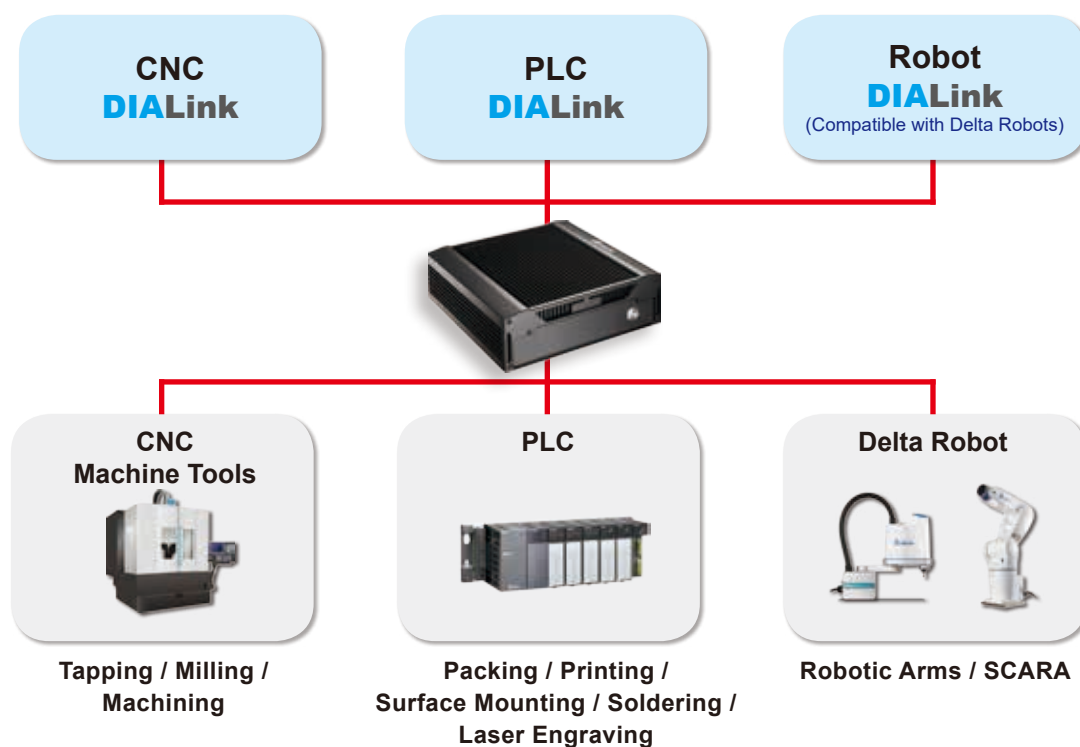


## Rapid, Seamless and Secure Data Transfer

- Supports OPC Server
- Supports Modbus slaves, XML, JSON data formats
- Open Web API



### DIALink Models - PLC/CNC/Robot



# SCADA System

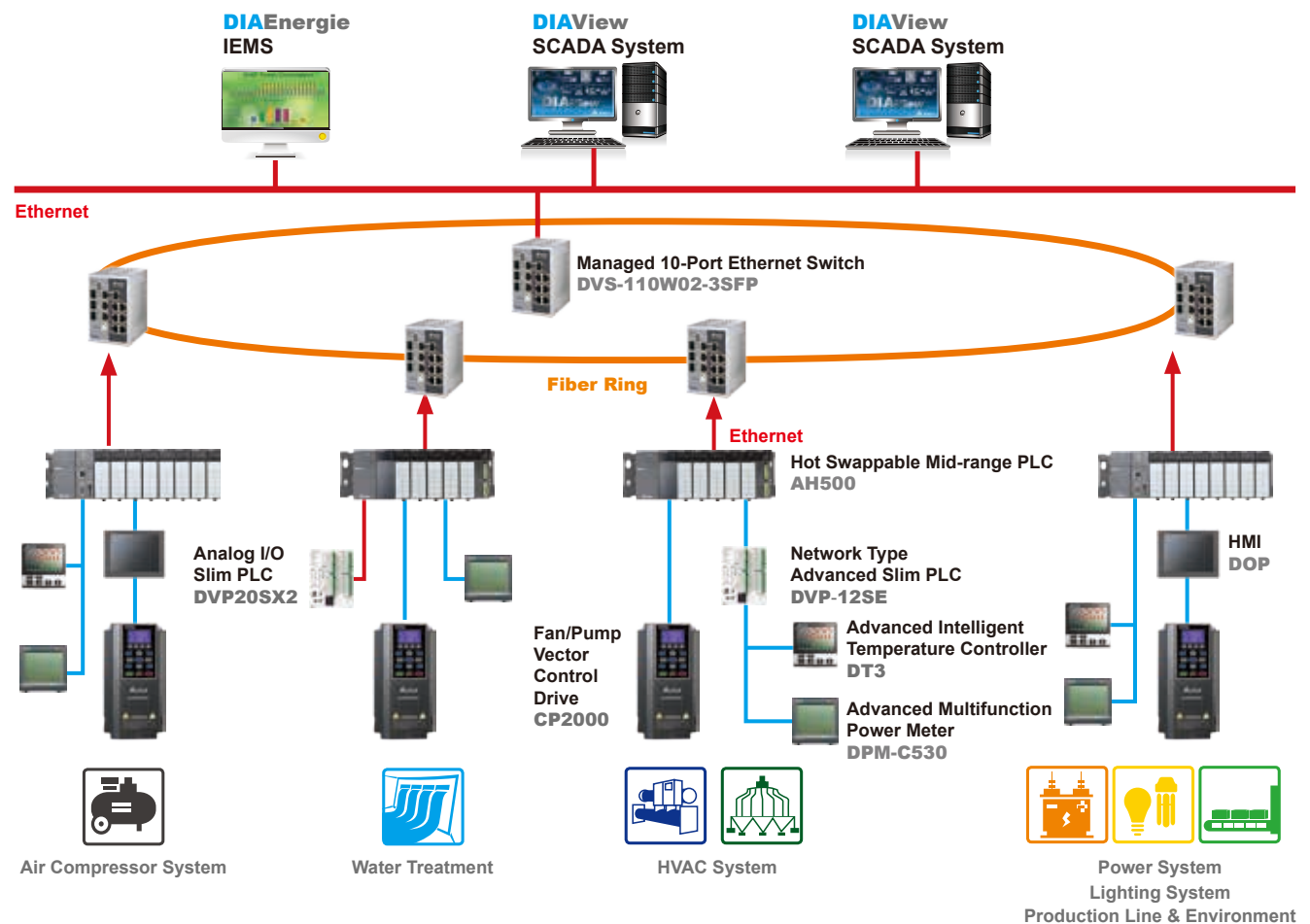
## DIView

### Evolution of Factory Visualization and Analysis Management



- Seamless integration with Delta's PLC products and I/O modules, supporting various industrial communication protocols and equipment drivers
- WPF technology for intuitive and vivid displays, and easy-to-navigate interfaces
- Flexible variables dictionary and batch editing parameters
- A variety of data visualization tools: reports, alarms, charts and trend graphs
- Diversified real-time and historical data analysis tools
- Strong and efficient alarm management
- Easy-to-learn VBScript language
- Reliable user authority management for different user levels

### System Structure and Applications



### Applications

HVAC, water treatment, central heating, electronics manufacturing

# Industrial Energy Management System

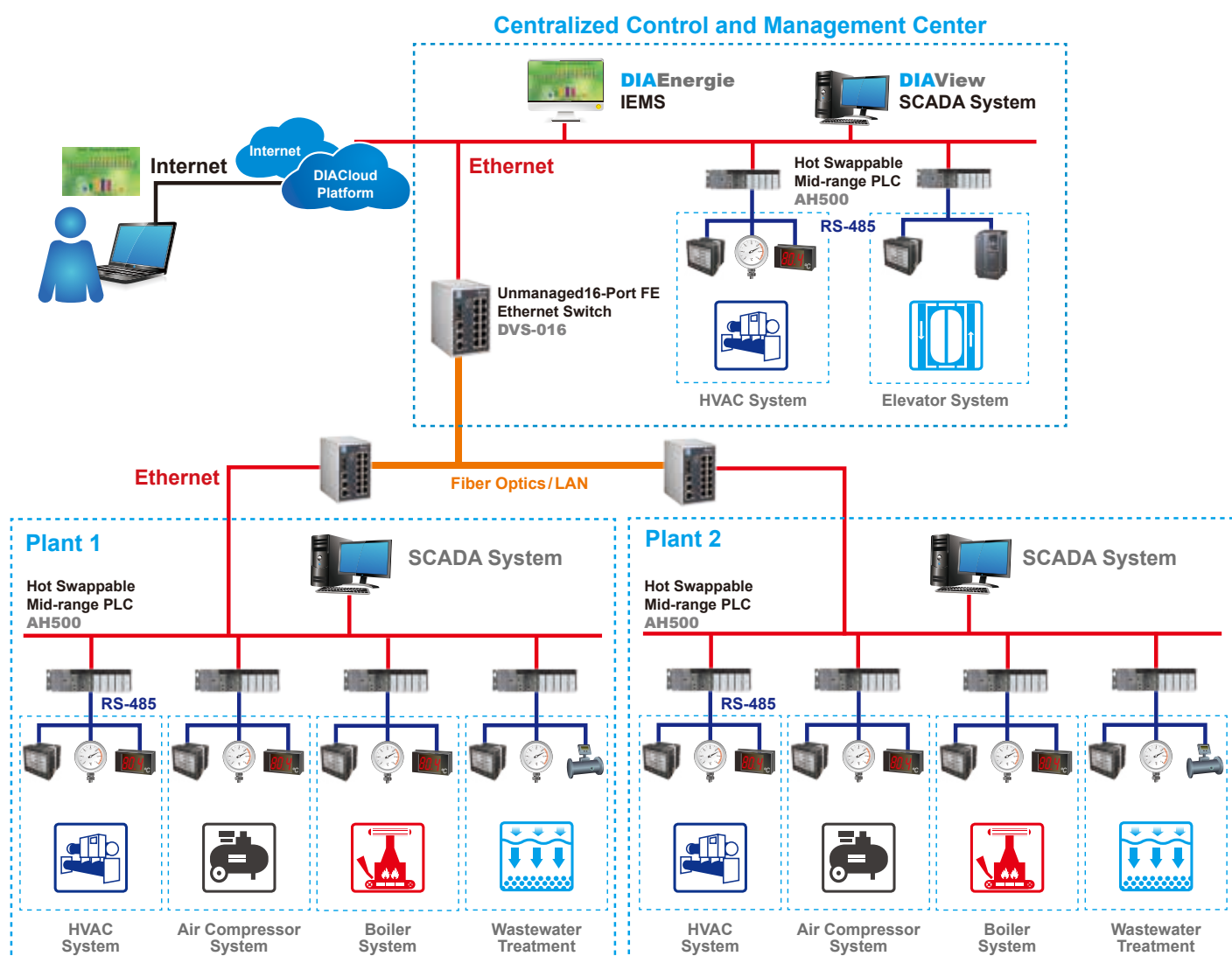
## DIAEnergie

### Innovative Solution for Smart Energy Saving

- Visualization and remote monitoring of critical power consumption
- Data analysis by areas and user levels
- Monitoring and analysis to meet energy performance strategy
- Instant record and alarm delivery for abnormal machine actions
- Power consumption measurement and analysis to achieve more efficient electricity usage and electricity cost savings
- Demand management and forecast to avoid over-limit demand penalties
- Customized user-defined reporting tools for displaying a variety of data analysis



## System Structure and Applications



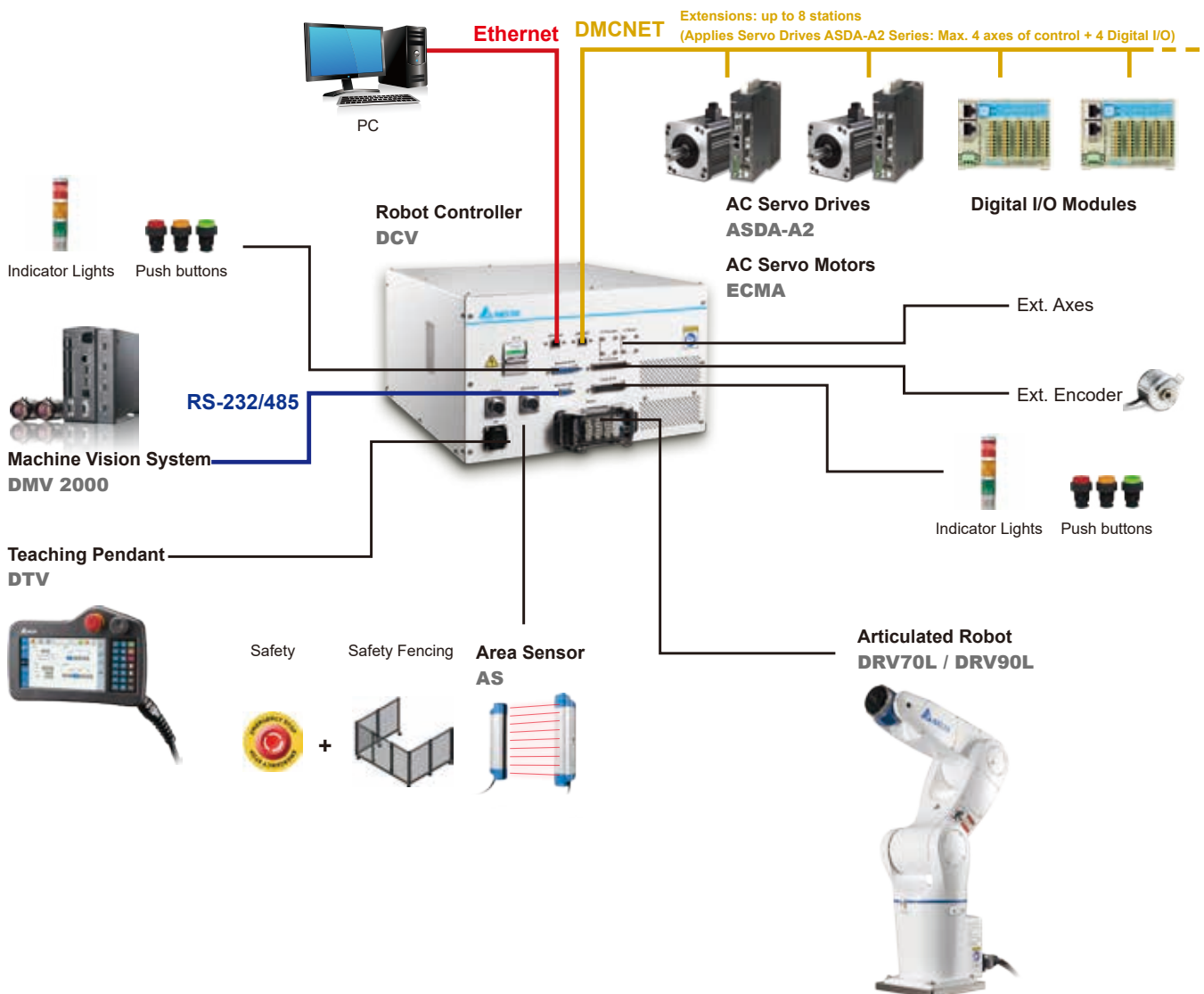
# Delta Articulated Robot DRV70L / DRV90L

## New Intelligent Industrial Automation Trend

- High precision, high speed
- Built-in 3 solenoid valves for quick integration and application
- Hollow design of the robot wrist (the 6<sup>th</sup> axis) for wiring and tool placement
- Slim and compact body design
  - Overall width: Max. 235 mm
  - Footprint: 190 x 190 mm
- High integration and efficiency
  - Match with key devices for production automation
  - Quick integration with peripheral components for workstation applications



**DRV70L      DRV90L**





Product Specifications			
Model		DRV70L	DRV90L
Number of Axes		6	
Max. Working Range		710 mm	900 mm
Max. Payload		7kg	
Motion Range (Max. Speed)	J1	±170° (450° sec)	±170° (370° sec)
	J2	+133° / -105° (340° sec)	+135° / -105° (260° sec)
	J3	+65° / -205° (510° sec)	+65° / -205° (410° sec)
	J4	±190° (550° sec)	
	J5	±120° (550° sec)	
	J6	±360° (820° sec)	
Repeatability		±0.02 mm	±0.03 mm
Standard Cycle Time <sup>*1</sup>		0.32 sec	0.35 sec
Installation		Desk-mount / Wall-mount / Ceiling-mount	
Built-in Wires		One 12Pos. connector for sensor connections and two ø6 pneumatic tubings (one is for three built-in solenoids, the other is for extension purpose)	
IP rating <sup>*2</sup>		IP40 (Standard) / IP65 (Optional)	
Environment	Temperature	0°C ~ 40°C	
	Humidity	20 ~ 85%RH	
	Vibration	0.5 G	
Weight		37kg	39kg
Controller Series		Robot Controller DCV Series	

\*1. When carrying a payload of 1 kg and reciprocating 25 mm in vertical and 300 mm in horizontal directions under an operating temperature of 25°C and within a humidity of 45% ~ 65% RH (non-condensing)

\*2. Please contact regional sales when environment situations are not within the above specifications

### • High Flexibility/Multiple Installations

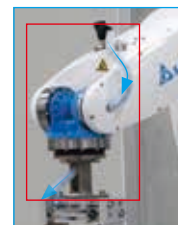
- Max. working range: 710mm - 900mm enhances manufacturing flexibility
- Desk-mount / wall-mount / ceiling-mount installation fulfills various application needs



### • Hollow-wrist Design

**No Hollow Design**  
Tangled wire / cords lead to equipment interference

**Hollow Design**  
Enhance reliability of extension wire / cords



### • Simple and User-Friendly Operation Interface



**DRASudio Robotic Automation Studio software system**



#### Intuitive user interface

- Real-time equipment data
- Dynamic-link library
- Self-defined user IO
- Optimized parameters
- Complete tuning function
- Easy backup with one click



**Simple and graphic programming**

### Applications



Load / Unload



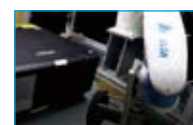
Machine Tending



Assembly



Insertion



Inspection

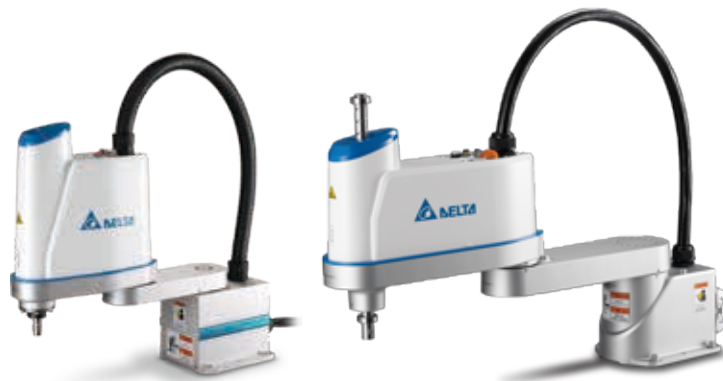


Screw-driving

# SCARA Robot

## DRS40L / DRS50L / DRS60L / DRS60H <sup>New</sup> / DRS70L

High Repeatability, High Precision, Excellent Linearity and Verticality



**DRS40L**

**DRS60L**



**Teaching Pendant  
DTS**



**Robot Controller  
DCS**

Product Specifications									
Model	DRS30L3	DRS40L3	DRS50L6	DRS60L6	DRS70L6	DRS60L3 (5-Axis)	DRS60L3	DRS60H6	
Installation	Desk-mount	Desk-mount	Desk-mount	Desk-mount	Desk-mount	Desk-mount	Desk-mount	Desk-mount	
Arm Length ( X+Y )	300 mm	400 mm	500mm	600 mm	700mm	600 mm	600 mm	600 mm	
Max. Payload	3 Kg	3 Kg	6 Kg	6 Kg	6 Kg	3 Kg	3 Kg	6 Kg	
Motion Range	J1	±130°	±130°	±133°	±133°	±133°	±133°	±114°	±130°
	J2	±146.6°	±146.6°	±153°	±153°	±153°	±153°	±148°	±150°
	J3	150 mm	150 mm	200 mm	200 mm	200 mm	200 mm	150 mm	200 mm
	J4	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°
	J5	N.A.	N.A.	N.A.	N.A.	N.A.	±360°	N.A.	N.A.
Standard Cycle Time*	-	0.42 sec	0.39 sec	0.39 sec	0.40 sec	0.45 sec	0.72 sec	0.39 sec	
Repeatability	J1+J2	±0.01 mm	±0.01 mm	±0.015 mm	±0.015 mm	±0.015 mm	±0.015 mm	±0.015 mm	±0.015 mm
	J3	±0.01 mm	±0.01 mm	±0.01 mm	±0.01 mm	±0.01 mm	±0.01 mm	±0.01 mm	±0.01 mm
	J4	±0.01°	±0.01°	±0.01°	±0.01°	±0.01°	±0.01°	±0.01°	±0.01°
	J5			N.A.	N.A.	N.A.	±0.01°	N.A.	N.A.

\* When carrying a payload of 1 kg and reciprocating 25mm in vertical and 300mm in horizontal directions under an operating temperature of 25°C and within a humidity of 45% ~ 65% RH (non-condensing)

## Applications

**Industries:** Electrical / electronics, consumer electronics, rubber and plastic, metal fabrication, food and beverages

**Processes:** Loading/unloading, pick-and-place, assembly, packaging, insertion, dispensing, soldering, labelling, inspection and screw driving

### SCARA Robot Applications



Loading/Unloading



Insertion



Glue Dispensing



Product Inspection



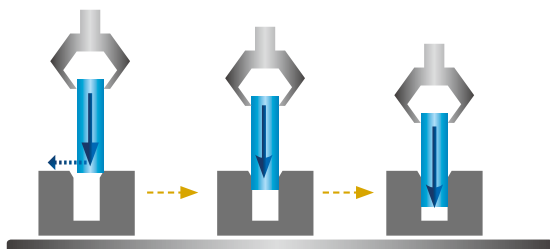
Screw Driving



Soldering

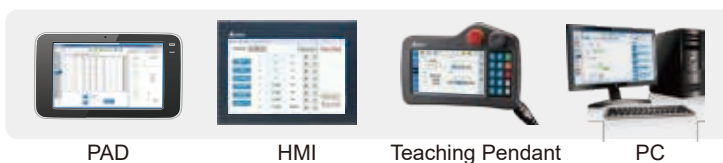
**• Sensor-less Compliance Control Function**

- Compensates for the deviation between workpieces and insertion holes
- Fast and precise smooth insertion
- Improves assembly and production performance



- Insertion performance may differ depending on workpiece hardness

**• Intuitive Teaching Methods with Versatile Control Approaches**



PAD

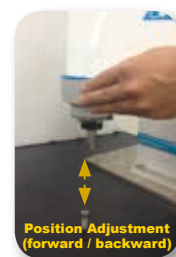
HMI

Teaching Pendant

PC



Positions are directly taught and controlled by hand, and recorded by SCARA.



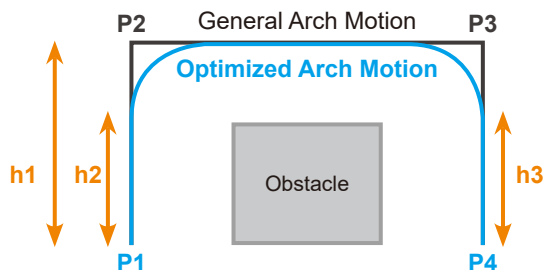
**• Off-line Simulation Function**

- Robotic integration software with simulation modules
- Shortens development time
- Pre-evaluation, saves cost
- Fast programming
- Simple and easy-to-operate



**• Arch Motion Control**

- Route optimization
- Saves motion time
- Quick and easy setting
- Optimizes arch route setting, fast operational speed
- Prevents crash when near the top or edge of robot route planning



**• Real-time Information Monitoring and Gathering**

- Robot machine data monitoring and analysis
- Oversees real-time machine operation data
- On-site production information acquisition



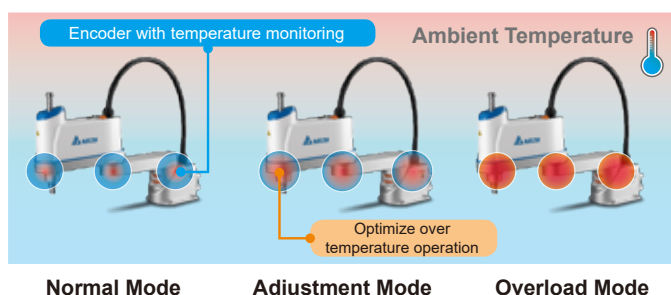
Equipment Data Acquisition Platform  
**DIALink**



Overall Equipment Effectiveness Platform  
**DIAOEE**

**• Optimizes Operational Efficiency**

- Safe operation, improves operational stability
- Excellent dynamic display for operational efficiency and intelligent control
- Smart temperature control, real-time control of working environment



Normal Mode

Adjustment Mode

Overload Mode

# Global Operations

## ASIA (Taiwan)



Taoyuan Technology Center (Green Building)



Taoyuan Plant 1



Tainan Plant (Diamond-rated Green Building)

## ASIA (China)



Wujiang Plant 3



Delta Electronics



ASIA (Japan)



Tokyo Office



ASIA (India)



Rudrapur Plant (Green Building)

EUROPE



Amsterdam, Netherlands

AMERICA



Research Triangle Park

▲ Factories 5 ■ Branch Offices 102 ● R&D Centers 6 ■ Distributors 824

urope

Russia  
Moscow

Kyrgyzstan  
Uzbekistan  
Azerbaijan  
Armenia

Iraq  
Qatar  
Saudi Arabia  
UAE  
Dubai  
Oman

India  
Chandigarh  
Gurgaon  
Kolkata  
Ahmedabad  
Mumbai  
Pune  
Hyderabad  
Bangalore  
Chennai  
Coimbatore  
Visakhapatnam  
Jamshedpur

Bangladesh  
Myanmar  
Sri Lanka

Thailand  
Vietnam  
Malaysia  
Singapore  
Indonesia

Australia  
Melbourne

Korea  
Seoul  
Daegu

Japan  
Tokyo  
Osaka  
Japan

Shanghai  
Wujiang

Taoyuan  
(Technology Center & Plant 1)

Zhong Li  
Taichung  
Tainan

1 Heilongjiang  
Harbin

2 Jilin  
Changchun

3 Liaoning  
Shenyang  
Dalian

4 Shanxi  
Taiyuan

5 Beijing

6 Tianjin

7 Hebei  
Shijiazhuang

8 Shandong  
Weifang  
Qingdao  
Jinan  
Linyi  
112

9 Jiangsu  
Yangzhou  
Nanjing  
Nantong  
Changzhou  
Wuxi  
Suzhou  
Zhangjiagang

10 Shanghai

11 Anhui  
Hefei

12 Zhejiang  
Hangzhou  
Ningbo  
Taizhou  
Wenzhou  
Jiaxing  
Shaoxing

13 Fujian  
Xiamen

14 Jiangxi  
Nanchang

15 Guangdong  
Shantou  
Dongguan  
Shenzhen  
Guangzhou  
Foshan

16 Guangxi  
Nanning

17 Yunnan  
Kunming

18 Sichuan  
Chengdu

19 Shaanxi  
Xian

20 Henan  
Zhengzhou

21 Hubei  
Wuhan

22 Hunan  
Changsha

23 Chongqing

■ New Zealand









Smarter. Greener. Together.

## Industrial Automation Headquarters

### Delta Electronics, Inc.

Taoyuan Technology Center  
No.18, Xinglong Rd., Taoyuan District,  
Taoyuan City 33068, Taiwan  
TEL: 886-3-362-6301 / FAX: 886-3-371-6301

## Asia

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No.182 Minyu Rd., Pudong Shanghai, P.R.C.  
Post code : 201209  
TEL: 86-21-6872-3988 / FAX: 86-21-6872-3996  
Customer Service: 400-820-9595

### Delta Electronics (Japan), Inc.

Tokyo Office  
Industrial Automation Sales Department  
2-1-14 Shibadaimon, Minato-ku  
Tokyo, Japan 105-0012  
TEL: 81-3-5733-1155 / FAX: 81-3-5733-1255

### Delta Electronics (Korea), Inc.

Seoul Office  
1511, 219, Gasan Digital 1-Ro., Geumcheon-gu,  
Seoul, 08501 South Korea  
TEL: 82-2-515-5305 / FAX: 82-2-515-5302

### Delta Energy Systems (Singapore) Pte Ltd.

4 Kaki Bukit Avenue 1, #05-04, Singapore 417939  
TEL: 65-6747-5155 / FAX: 65-6744-9228

### Delta Electronics (India) Pvt. Ltd.

Plot No.43, Sector 35, HSIIDC Gurgaon,  
PIN 122001, Haryana, India  
TEL: 91-124-4874900 / FAX : 91-124-4874945

### Delta Electronics (Thailand) PCL.

909 Soi 9, Moo 4, Bangpoo Industrial Estate (E.P.Z),  
Pattana 1 Rd., T.Phraksa, A.Muang,  
Samutprakarn 10280, Thailand  
TEL: 66-2709-2800 / FAX : 662-709-2827

### Delta Energy Systems (Australia) Pty Ltd.

Unit 20-21/45 Normanby Rd., Notting Hill Vic 3168, Australia  
TEL: 61-3-9543-3720

## Americas

### Delta Electronics (Americas) Ltd.

Raleigh Office  
P.O. Box 12173, 5101 Davis Drive,  
Research Triangle Park, NC 27709, U.S.A.  
TEL: 1-919-767-3813 / FAX: 1-919-767-3969

### Delta Greentech (Brasil) S/A

São Paulo Office  
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