Automation for a Changing World

Delta Industrial Automation

2019 Full Range Catalogue

www.deltaww.com

DELTA
Smarter. Greener. Together.

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

1995

AC Motor Drive
(A Series)

1999

Small PLC
(DVP-ES Series)

2003

AC Servo Drive and Motor
(ASDA-A Series)

Temperature Controller
(DTA Series)

Optical Incremental Encoder
(ES/EH Series)

2010

Motion Control Card
(PCI Series)

2011

CNC Controller
(NC300 Series)

Hybrid Energy Saving System
(HES)

Integrated Elevator Drive
(IED Series)

Unmanaged Industrial Ethernet Switch
(DVS Series)

2015

Photoelectric Sensor
(PS-F/PS-R Series)

Inductive Proximity Sensor
(M12/M18 Series)

Linear Shaft Motor
(ECML-S Series)

Linear Stage
(LU/LA-S Series)

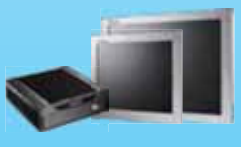
Robot Controller with Servo Drive Integrated
(ASDA-MS Series)

2016

IIoT Cloud-based Platform
(DIACloud)

IIoT Industrial Cloud Routers
(DX-2100/2300 Series)

Industrial PCs
(DIAV Series)



Planetary Gearboxes
(PS Series)

Flow Switch
(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)

2004

Human Machine Interface
(DOP-A Series)

2006

Time / Counter / Tachometer
(CTA Series)

2008

Industrial Power Supply
(PMC / CliQ Series)

2009

Pressure Sensor
(DPA Series)

2010

Active Front End Unit
(AFE2000 Series)

2012

High Performance Mid-range PLC
(AH500 Series)

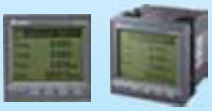
Controller with Human Machine Interface
(HMC Series)

Machine Vision System
(DMV Series)

2014

Programmable Automation Controller
(MH1 Series)

Power Meter
(DPM Series)



2016

SCARA Robot
(DRS40L Series)

Industrial Energy Management System
(DIAEnergie)

SCADA System
(DIAView)

Articulated Robots
(DRV70L / DRV90L Series)

Compact Modular Mid-range PLC
(AS Series)

2017

Laser Displacement
(LD Series)

Barcode Scanner
(DAH Series)

Area Sensor
(AS Series)

2018~2019

Motion Controller Based on CODESYS
(MH2 Series)

Electric Servo Press
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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 Moldel MH300 & MS300 0~599 Hz	150V/1-phase											
	230V/1-phase											
	230V/3-phase											
		460V/3-phase										
High Speed Model MH300: 0~2000 Hz MS300: 0~1500 Hz				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 230 V single-phase and 460 V 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	230 V / 1-phase							
	230 V / 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

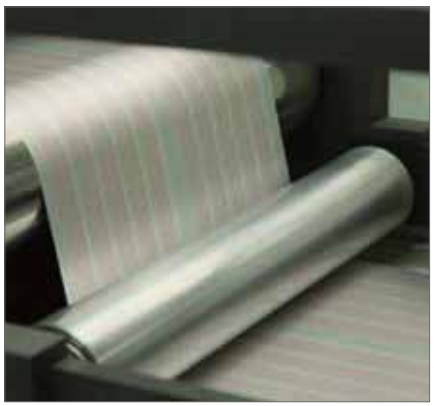
For General Drive Controls

- 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 10 k 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: EtherCAT (New)、PROFINET (New)、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

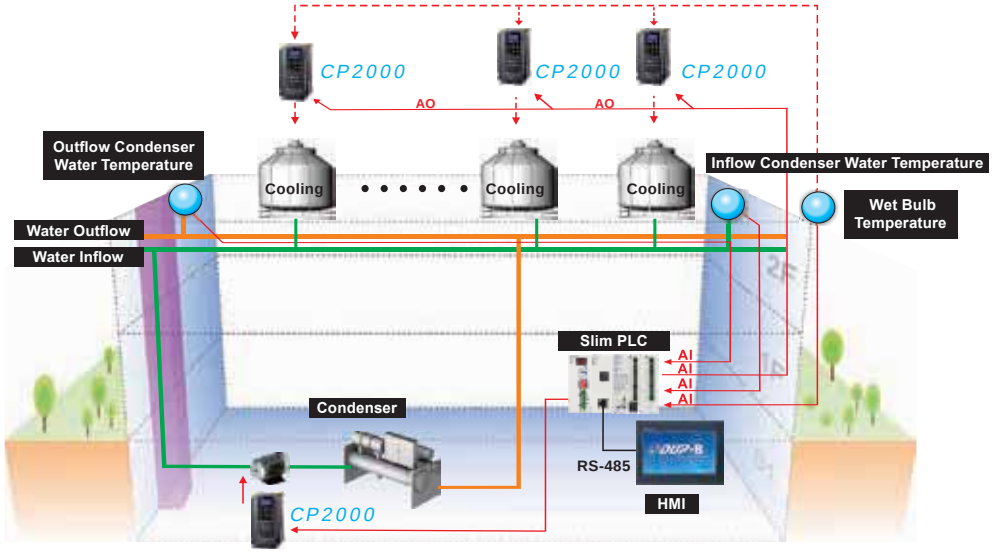


Fan / Pump Vector Control Drive

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
CFP2000	380 to 480V / 3-phase				

Applications

Fans

Chiller

Water Supply & Water Treatment

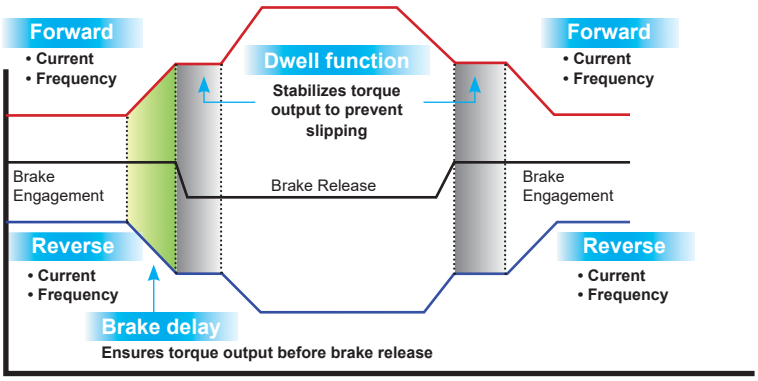
Heavy Duty Vector Control Drive

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

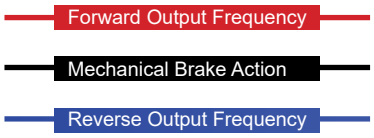


▲ Mechanical Brake Control

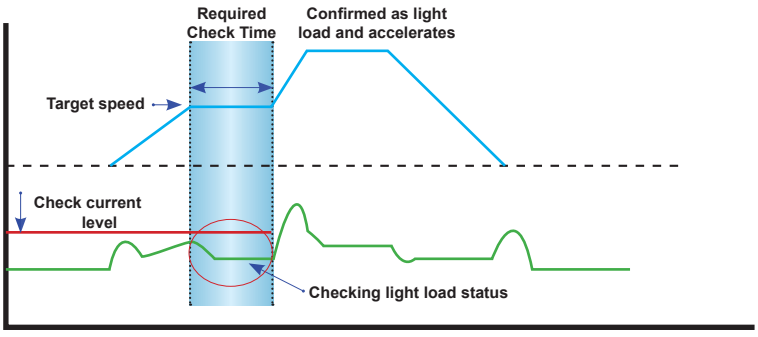
8 independent brake control settings for different criteria; high flexibility to meet complex application needs and to ensure operation safety

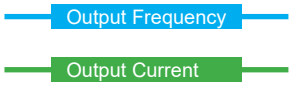
▲ Advanced Crane Time Sequence

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	230 V / 3-phase					
	460 V / 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(*1)
- Flange-mount installation to enhance system safety and stability, providing excellent heat dissipation performance(*1)
- Support external fan connection (optional)(*1)
- Wall-mount installation model with an enlarged fan (*2)
- 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

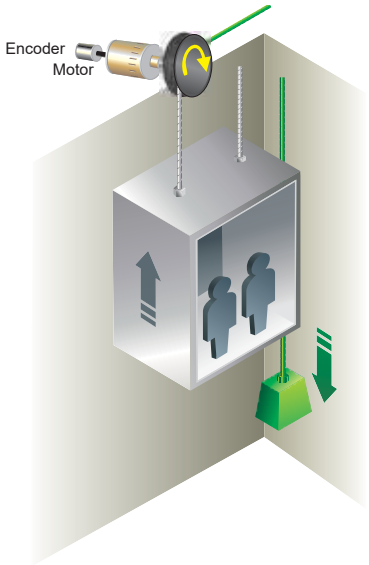
VFD-ED

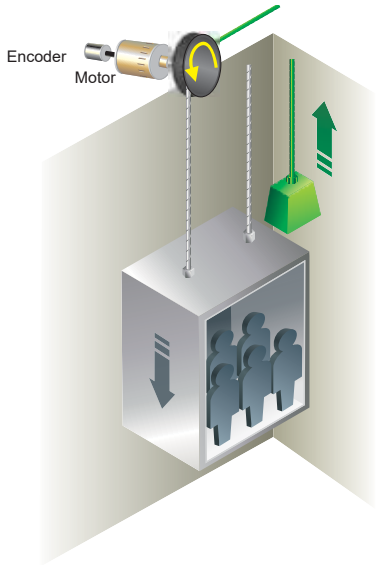
Excellent Time Sequence Control for Smooth Rides

- 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





(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											

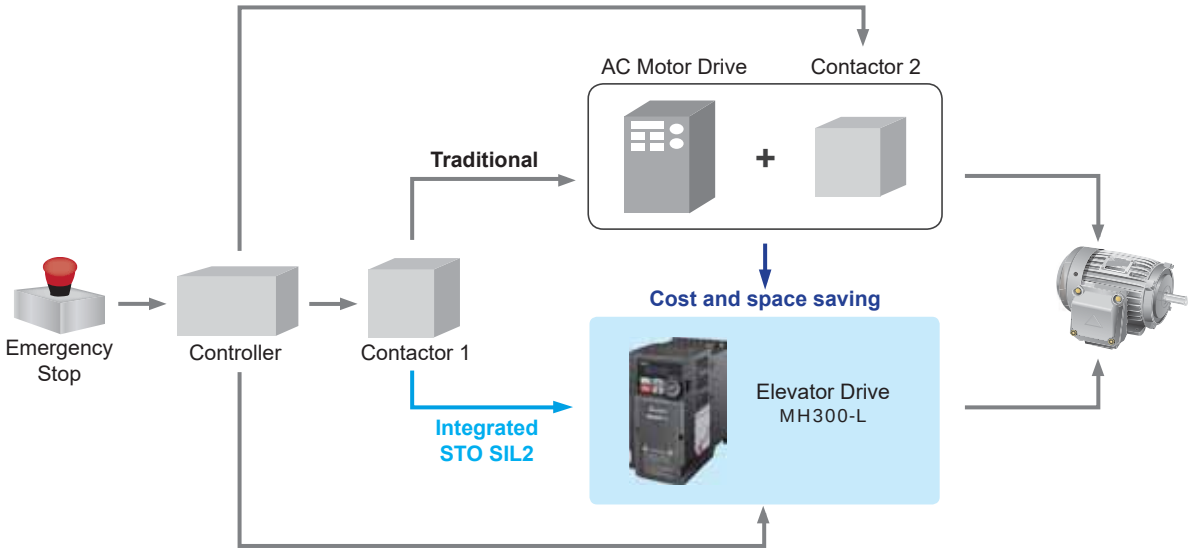
*Min. power range of the 460V model: 4kW

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

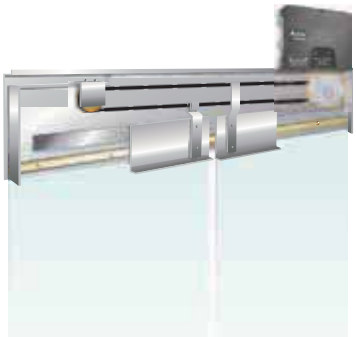
- Simplified elevator door control system
- Support induction and permanent magnet motors
- Easy to install with I/O input/output design
- Various protection functions ensure passenger safety
- Auto-tuning of door width
- Auto-positioning when power is applied
- Smooth door re-open / re-close curve
-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

Floor Display Board

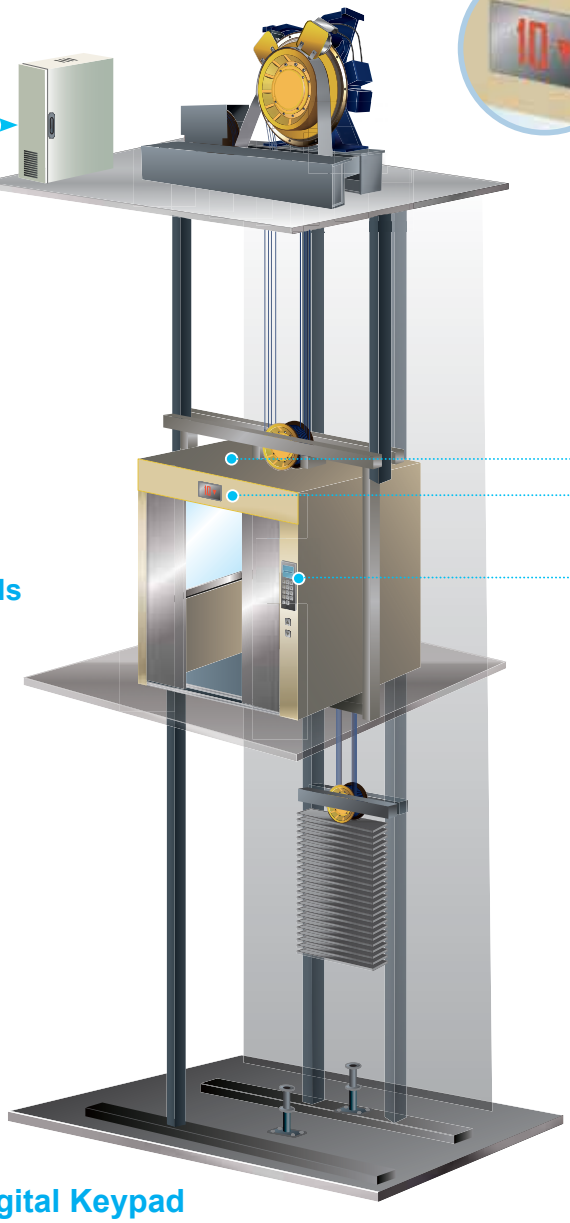
- Vertical matrix display board - Standard Type

- Vertical/Horizontal matrix display board - Standard Type

Integrated Cartop and Button Board

- Integrated cartop and button board

- Button extension board



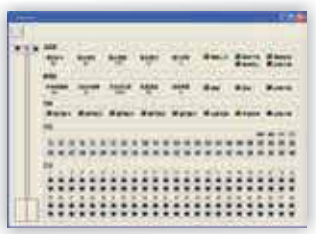
Optional

External Digital Keypad

- Controller setting
- Drive setting
- Parameter copy

PC Software

USB port facilitates program upload/download and tuning process



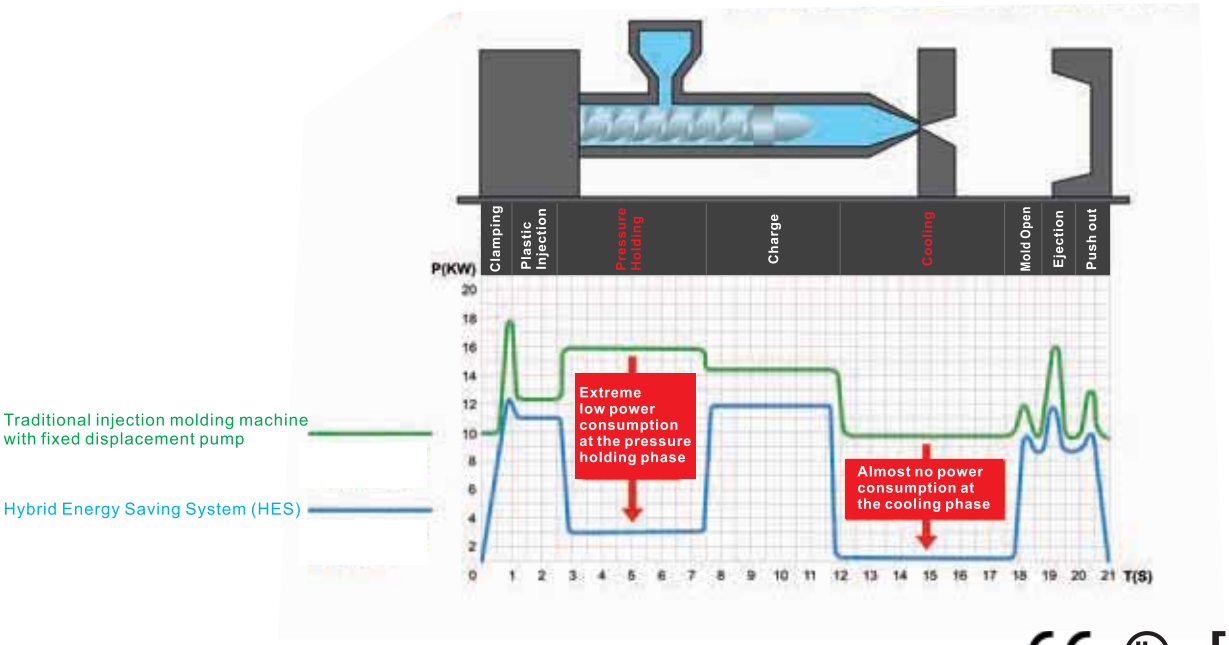
Hybrid Energy Saving System

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 5ºC to 10ºC, 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 ~ 10 V 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	230 V / 3-phase								
	460 V / 3-phase								

Applications

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

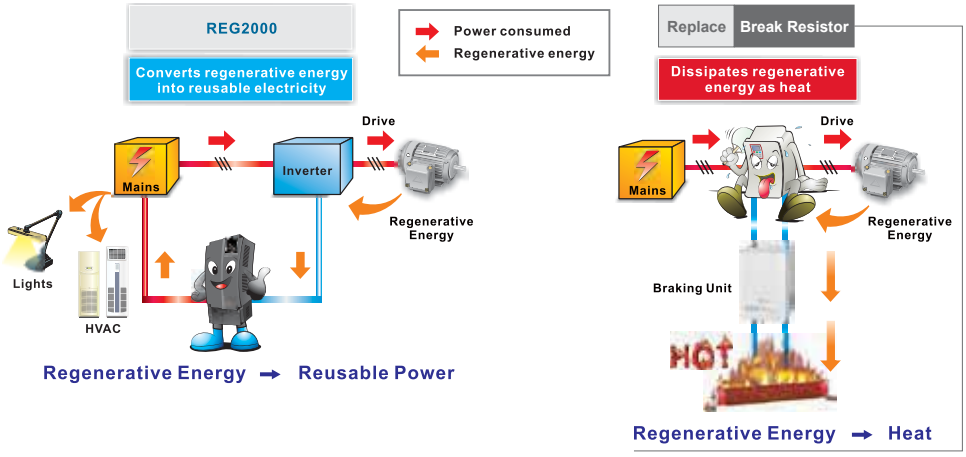
Power Regenerative Unit

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: (*) Modbus TCP, EtherNet/IP, CANopen, PROFIBUS DP and DeviceNet

  * Please contact Delta Industrial Automation



SEMI F47

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 ≤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*

PROFIBUS CANopen DeviceNet MODBUS TCP EtherNet/IP

*Available from Delta upon request

EAC

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

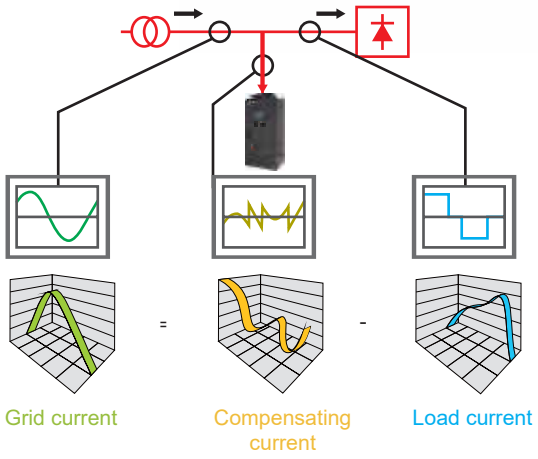
For Power Quality Improvement

- Filter the 2nd to 50th 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 300 A model only measured 600W x 800D x 2200H (mm)
- Parallel connection of multiple units to expand total capacity
- Built-in RS-485 communication and provides various communication and fieldbus card options

PROFIBUS CANopen **(DS301)**

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	200 V ~ 480 V / 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

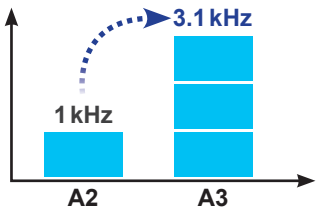
AC Servo Drive & Motor New

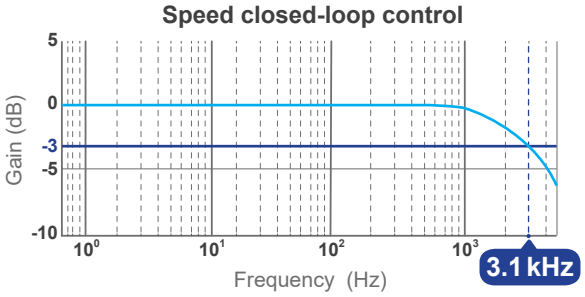
ASDA-A3

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

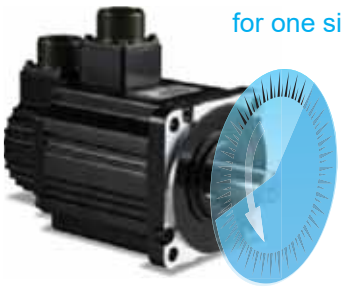




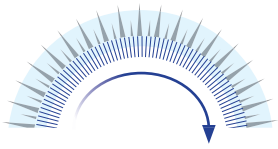
24-bit Absolute Type Encoder

- 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

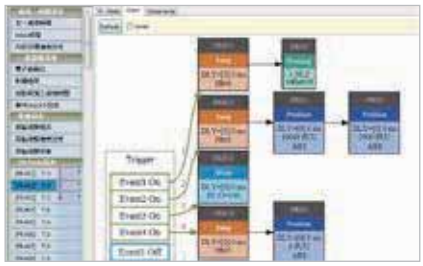


46,603 pulses for one degree



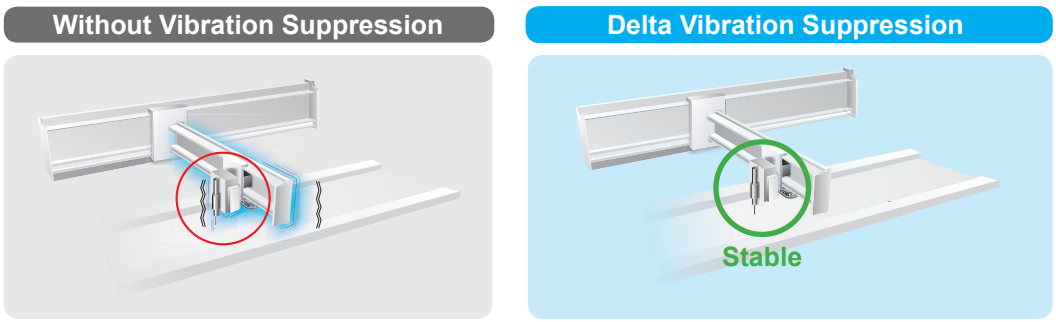
Advanced Motion Control Functions

- 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

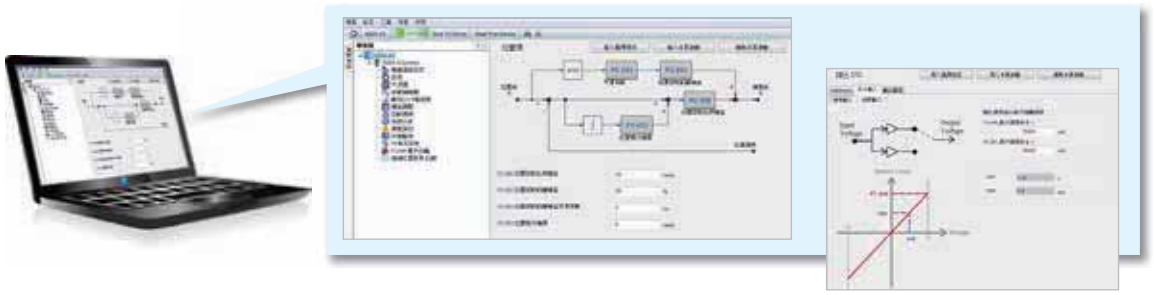


Auto-Tuning Function

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

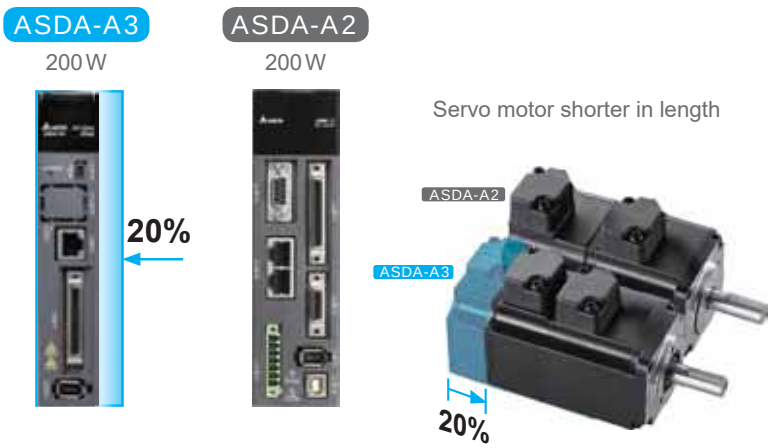
Smart and Intuitive Software Interface

- 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



Applications

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

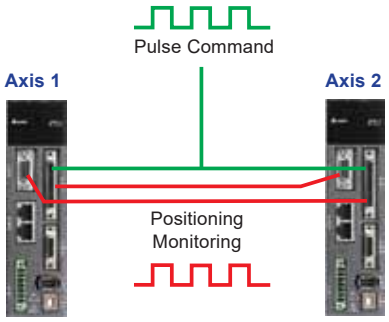
AC Servo Drive & Motor

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 ooutline
- High-speed Capture and Compare function for position latch and detection; max. 800 records stored in the memory
- Built-in gantry control algorithm

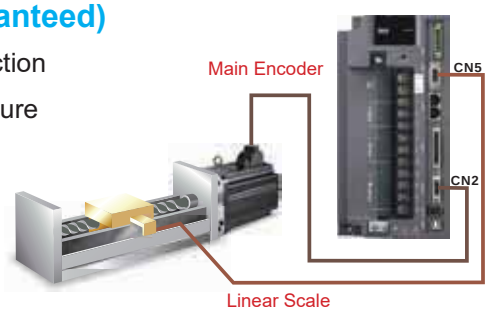


High Precision, High Performance Servo Motors

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

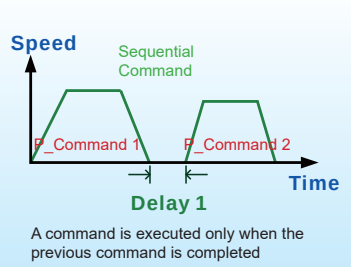
Full-Closed Loop Control (Accuracy of Positioning Guaranteed)

- 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

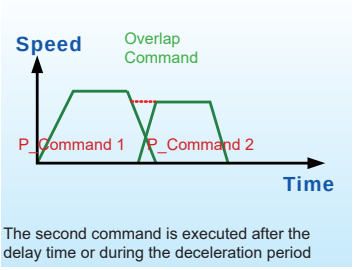


Versatile PR mode

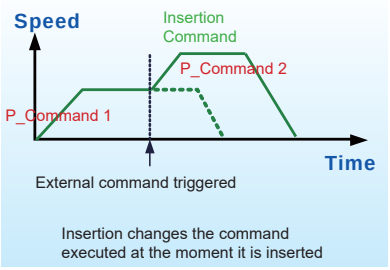
- 64 procedures can be applied for various and multiple points continuous motion movements
- 35 homing modes / jump mode / parameter editing mode / speed mode / position mode



A command is executed only when the previous command is completed



The second command is executed after the delay time or during the deceleration period



Insertion changes the command executed at the moment it is inserted

Basic Features

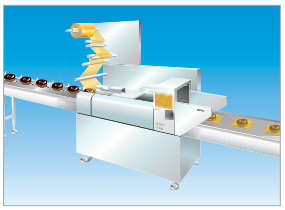
- Input voltage: 200 V_{AC} ~ 230 V_{AC}, 0.1 kW ~ 15 kW, 1-phase / 3-phase, or 3-phase
- Input voltage: 400 V_{AC}, 0.4 kW ~ 15 kW, 3-phase
- Up to 1 kHz bandwidth for high speed and high precision applications
- CANopen, DMCNET, EtherCAT communication protocols
- ASDA-A2-E model is equipped with Safe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

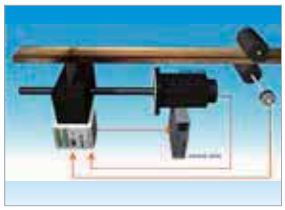
	Type	RS-485 (CN3)	Full Closed-loop Control (CN5)*1	Extension Port for Digital Input (CN7)	PR Parameters*2	E-CAM*3	EtherCAT*4	CANpen	DMCNET	Analog Voltage Control	Pulse Input Port
Standard Model	L	O	O	X	O	X	X	X	X	O	O
	U	O	O	O	O	O	X	X	X	O	O
Network Model	E	X	X	O	O	X	O	X	X	X	X
	F	O	O	X	O	X	X	X	O	X	X
	M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

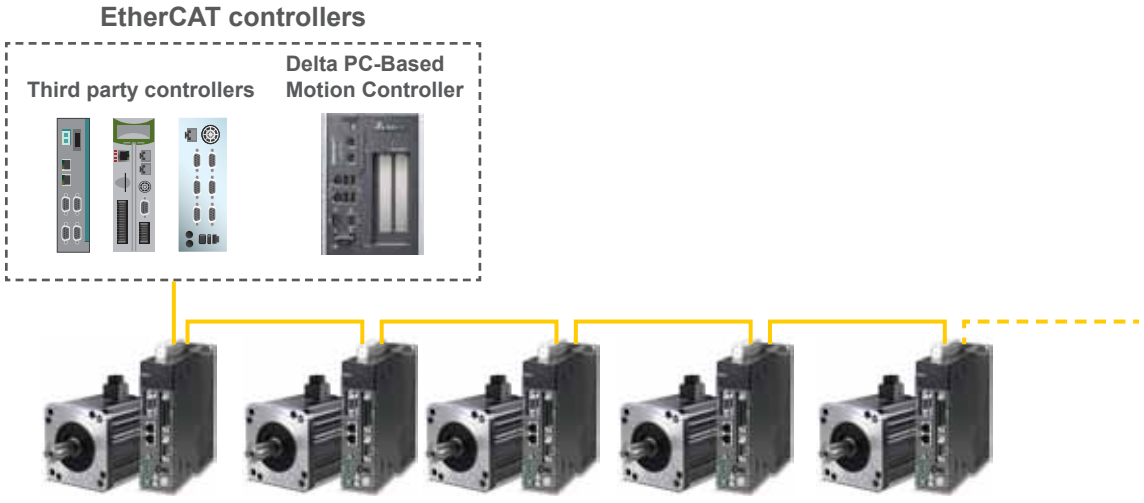
ASDA-A2-E

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: 400 V 400 W ~ 7.5 kW, 220 V 100 W ~ 3 kW
- 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



Applications

Metal Working Machine

Woodworking Machine

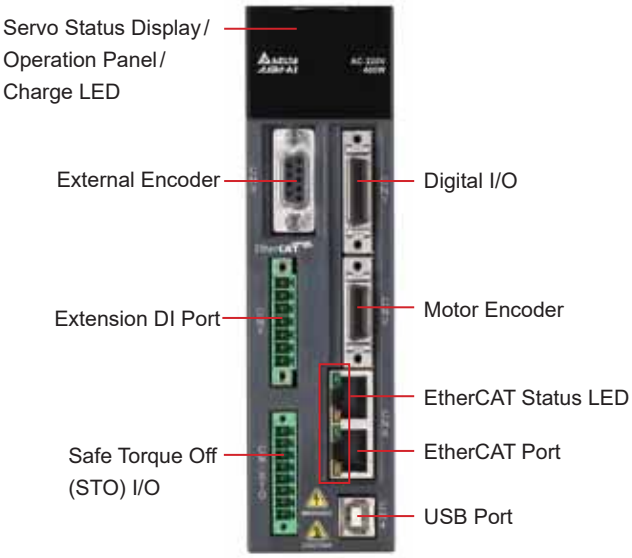
Food Processing

Printing Machine

Communication Specifications

Physical Layer	IEEE802.3u (100 BASE-TX)
EtherCAT Commands (Data Link Layer)	APRD, FPRD, BRD, LRD, APWR, FPWR, BWR, LWR, ARMW, FRMW, APRW, FPRW, BRW, LRW
Device Profile (CiA402)	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
Process Data Size	Tx: 8 Object (max. 32 bytes) Rx: 8 Object (max. 32 bytes), supports Dynamic Mapping
Bus Clock	DC cycle with min. 250 μs
LED Indicator	EtherCAT Link/Activity Indicator (L/A) x 2 EtherCAT RUN Indicator (RUN) x 1 EtherCAT ERROR Indicator (ERR) x 1

Part Names and Functions



Accessories for ASDA A2-E

Part Number	ASD-CNSC0026
Description	CN1 connector

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

AC Servo Drive & Motor

ASDA-B2

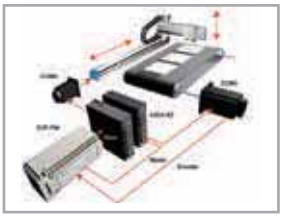
Implements 17-bit (160,000 p/rev) high resolution encoder as a standard

Power Range: 0.1 kW ~ 3 kW

- Input voltage: 200 V_{AC} ~ 230 V_{AC}, 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



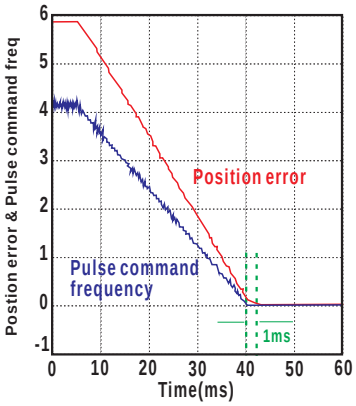
Transporting and Conveying Equipment

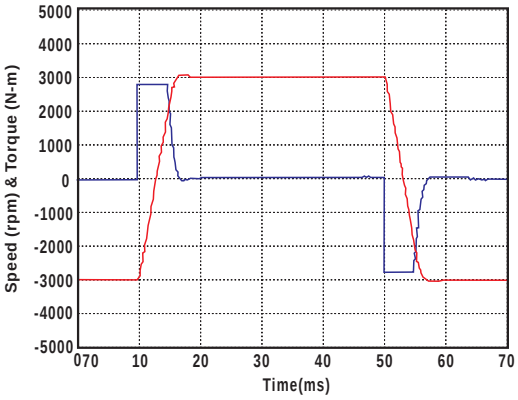
Electric Discharge Machines (EDM)

Cutting Machine

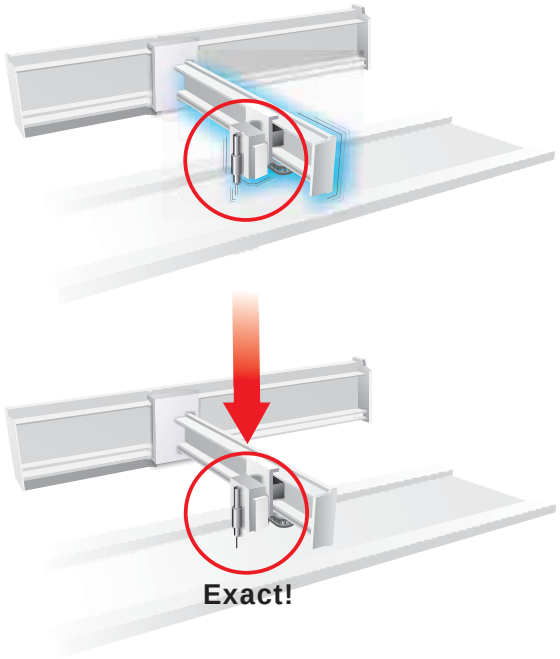
High Accuracy for Positioning

- 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



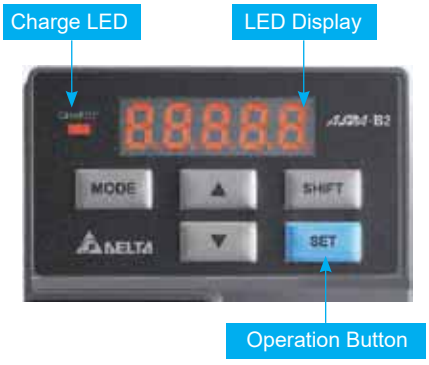


- Three auto notch filters to suppress mechanical resonance efficiently

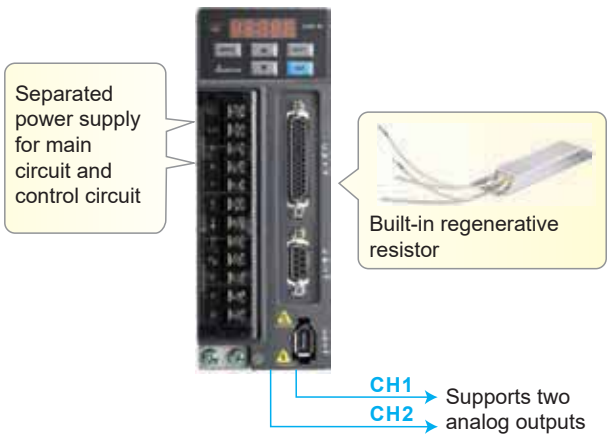


Easy-to-Use and Cost-Saving

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



- Built-in regenerative resistor (400 W 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

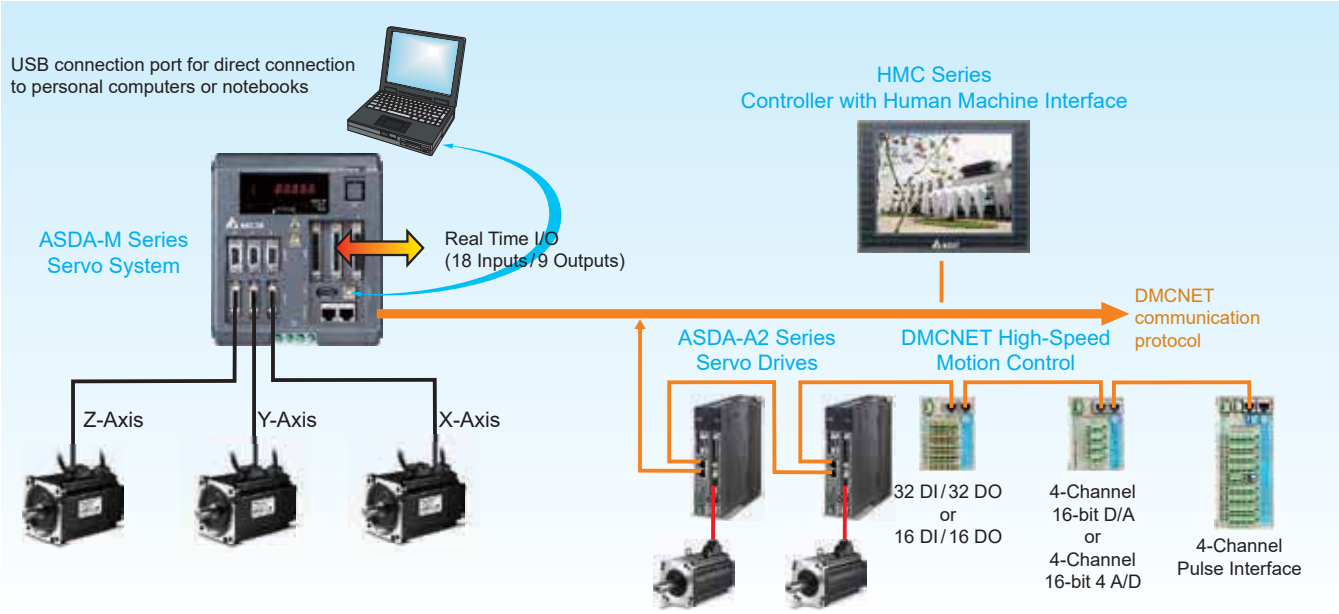
New PC Software Functions

- 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

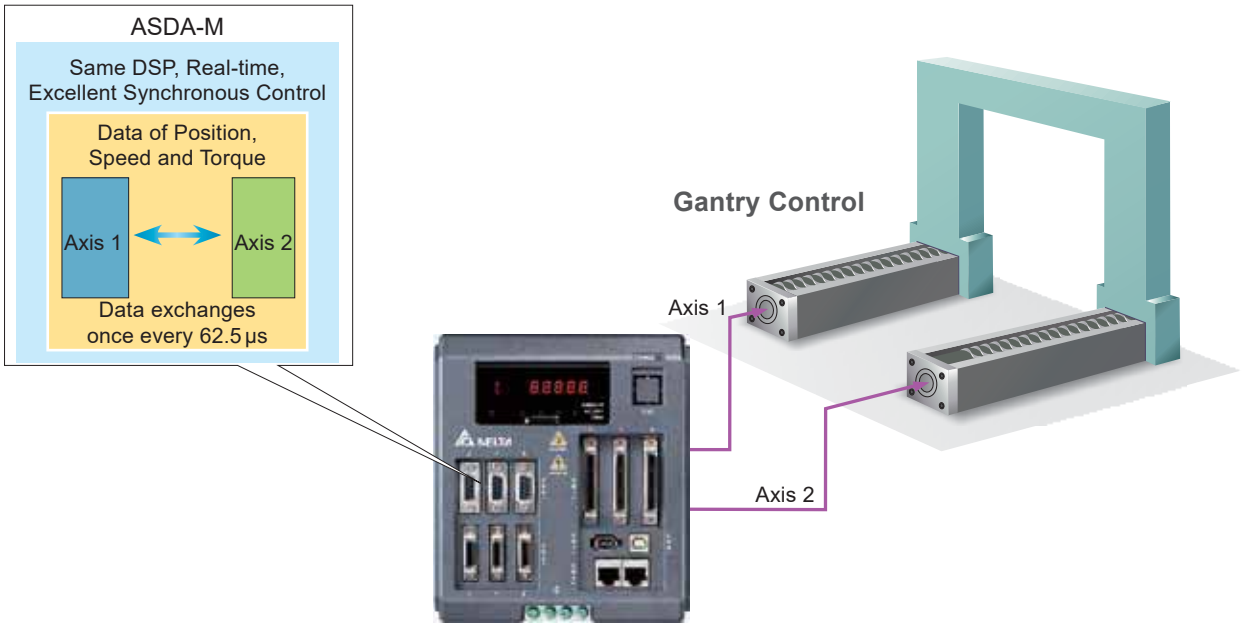


Real Time, Reliable and High-Speed Motion Control Network

- 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



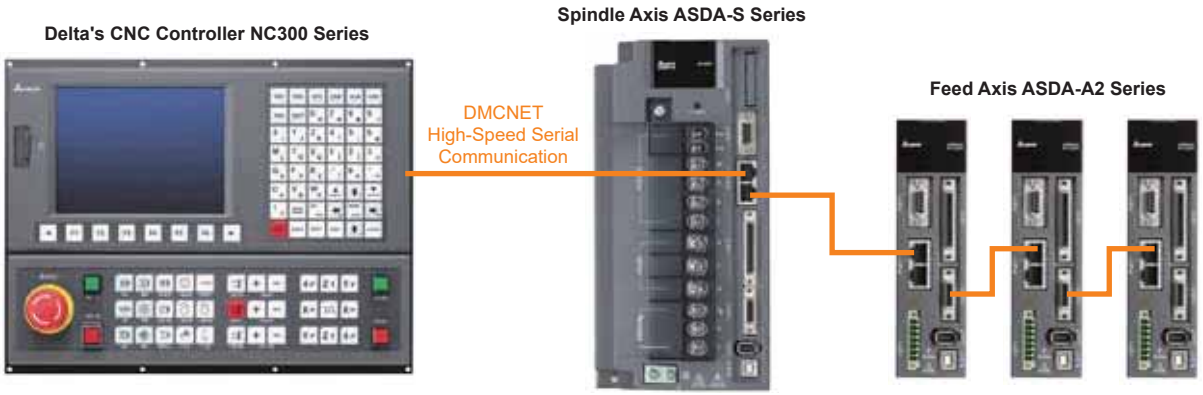
Spindle Motor Drive

ASDA-S

Ensuring Premium Surface Finish Quality for the CNC Industry

Power range: 3 kW ~ 15 kW

- 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
- 200 V models and 400 V models are available for selection
- Capable of connecting to CNC controllers via DMCNET high-speed serial communiction



IPM Spindle Motor

ECMS

Power range: 3.7 kW / 6.7 kW

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

Linear Motion Drive

ASDA-A2R

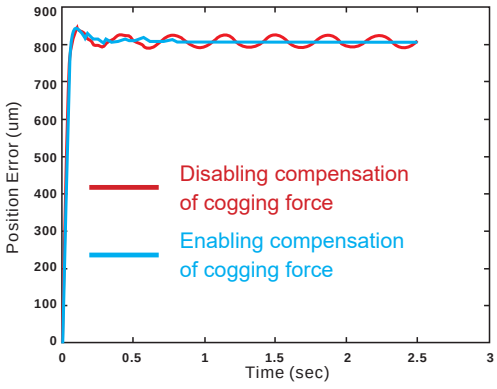
Delivering a Superior Linear Motor

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 contol 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: 100 W ~ 3 kW

- 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: 100 W ~ 750 W

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

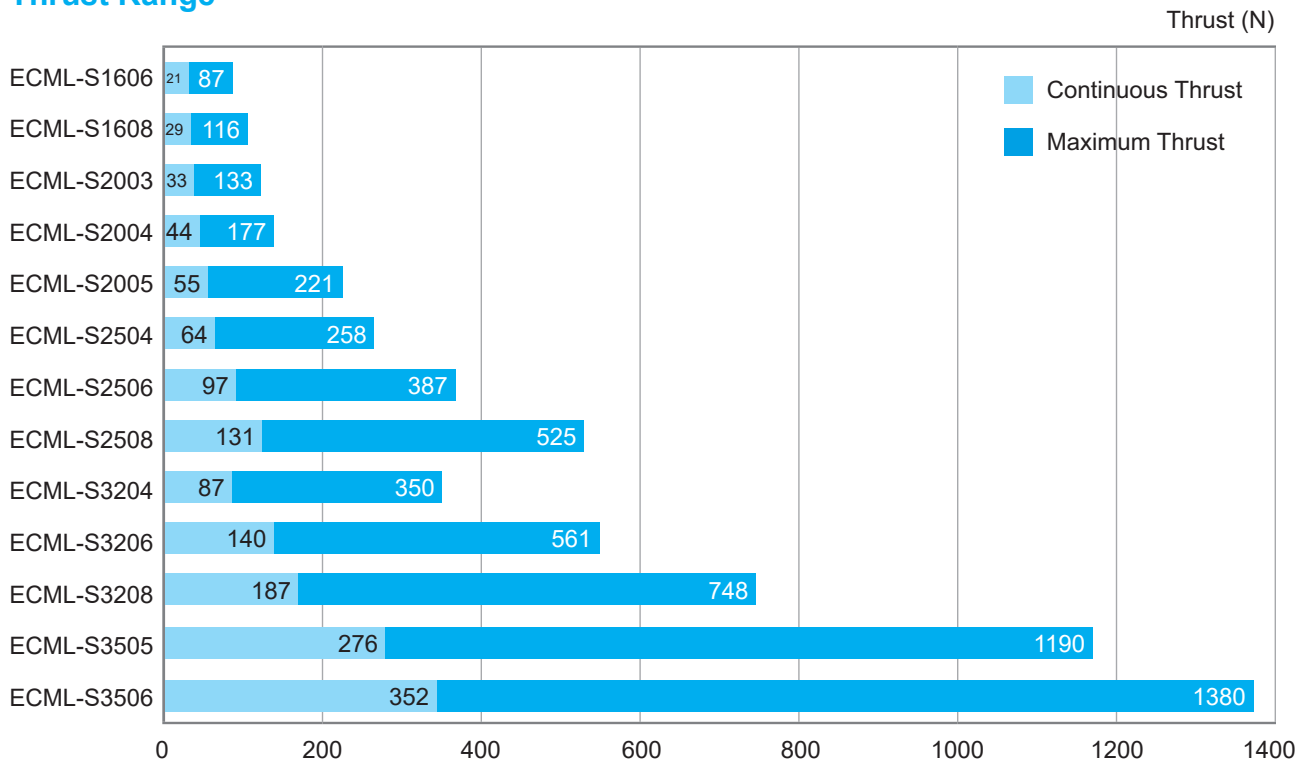
Linear Shaft Motor

ECML-S

High-speed, High-precision Linear Motor
Position Repeatability within ±1um

- 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 ±3um

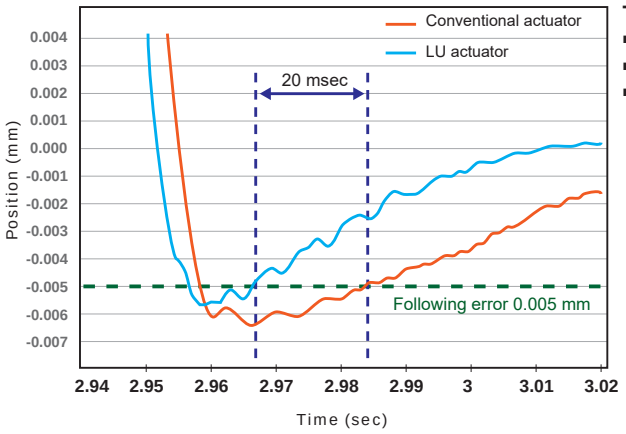
- Non-coupling mechanism design
- Compact size for space saving
- High rigidity and high accuracy
- Fast response
- Low inertia ratio

Characteristic Analysis

Delta LU Series
(without coupling)

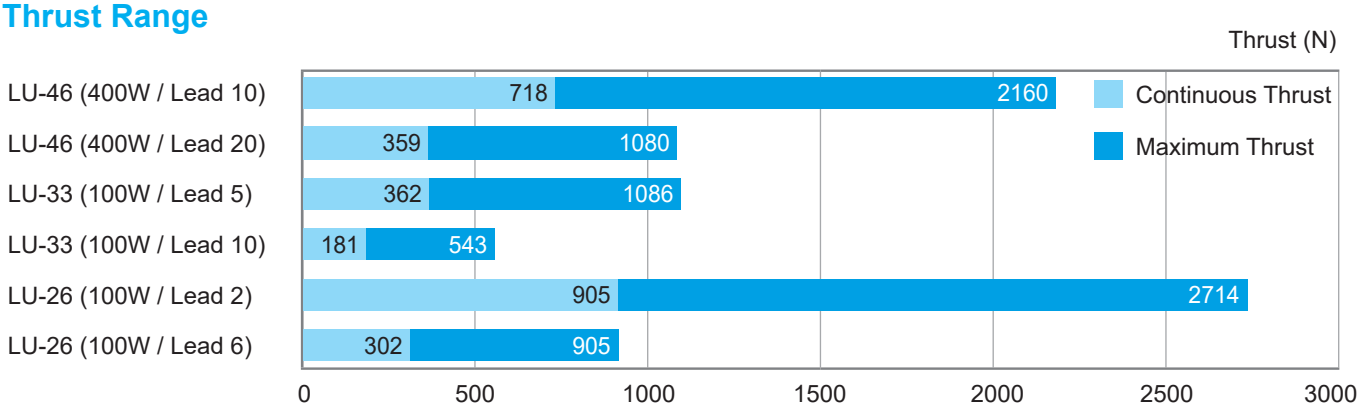
Conventional Linear Stage
(with coupling)

Measured Data by Laser Interferometer



Test condition
- Without load
- Motor speed: 3,000 rpm
- Acceleration time: 50 ms

Thrust Range



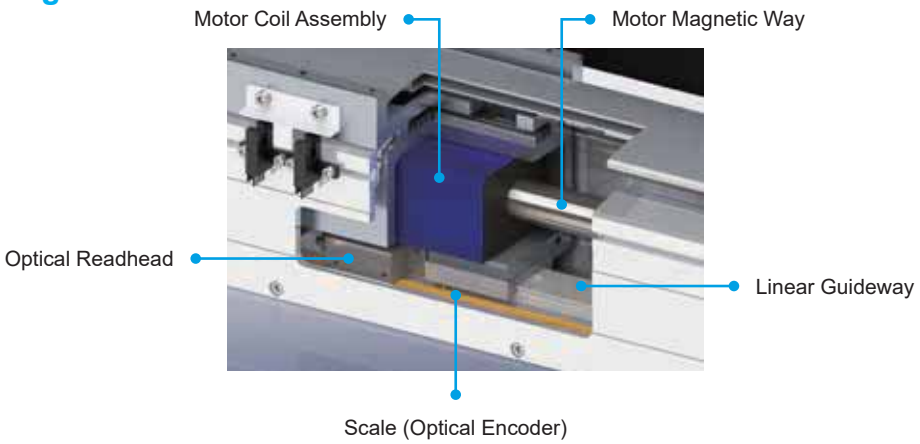
Linear Stage

LA-S

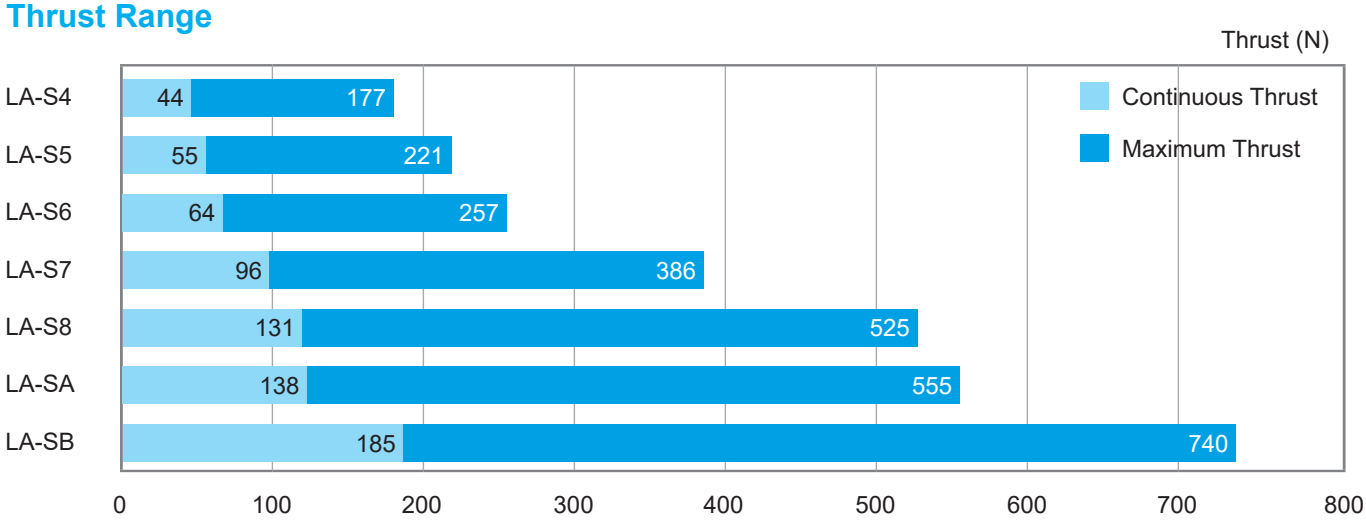
High Speed, High Precision Linear Motor Driven Stage
Position Repeatability of ±1um

- **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 1.5m) 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)

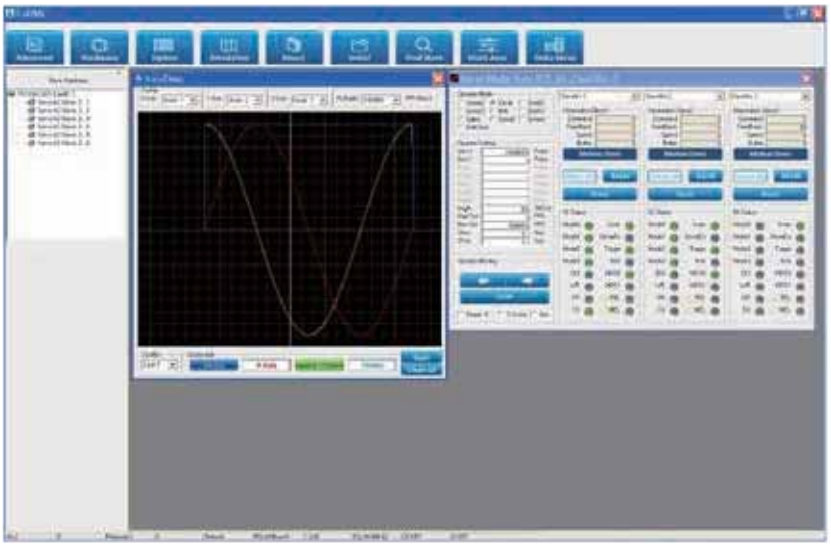
MH1 / MH2 New / MP1

Support DMCNET / EtherCAT fieldbus for various motion control applications

Host PAC MH1 | Host PAC MH2 | Panel PAC MP1

- **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 Ehternet 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-tme 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)

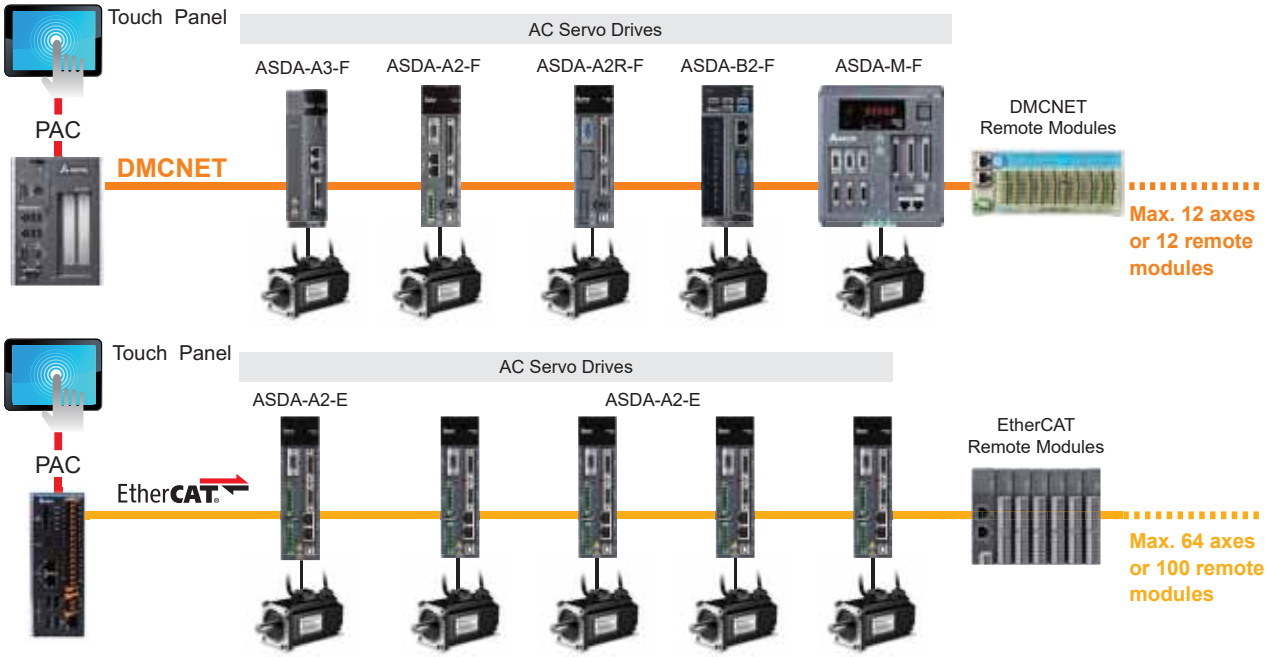
- **Speed Curve Tracing**
  Speed curve tracing function to trace current motion speed and adjust commands
- **Simulation Scope**
  Captures figures of motion commands or real motion tracks with X / Y-axis monitor to simulate motion commands or monitor motion tracks
- **DMCNET / EtherCAT Automation Software**
  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.

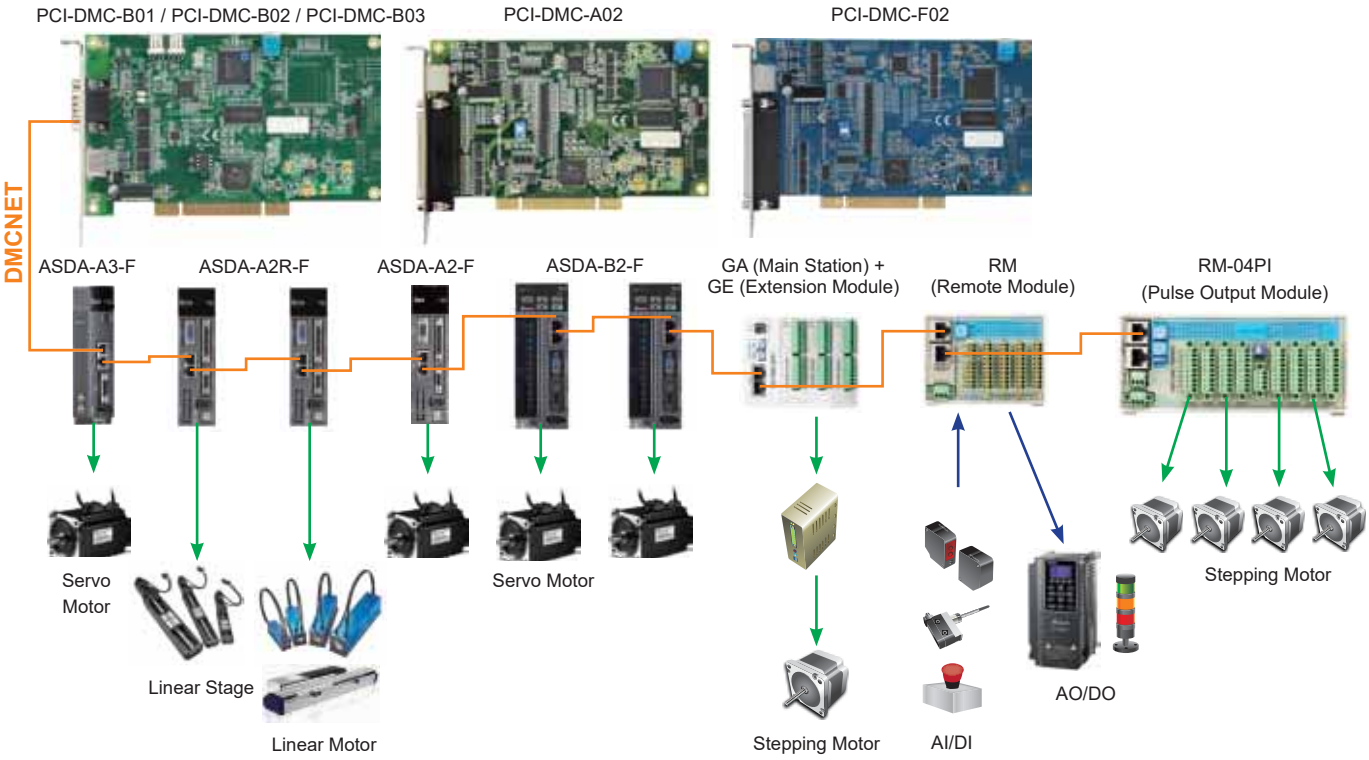
- Up to 12 axes servo control with-in 1ms simultaneously; with 3-axis helical and linear interpolation divided into 4 groups, or 2-axis linear and arc interpolation divided into 6 groups
- Support 64-bit dual-precision floating point, allowing high-precision system calculations and flexible operation
- 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

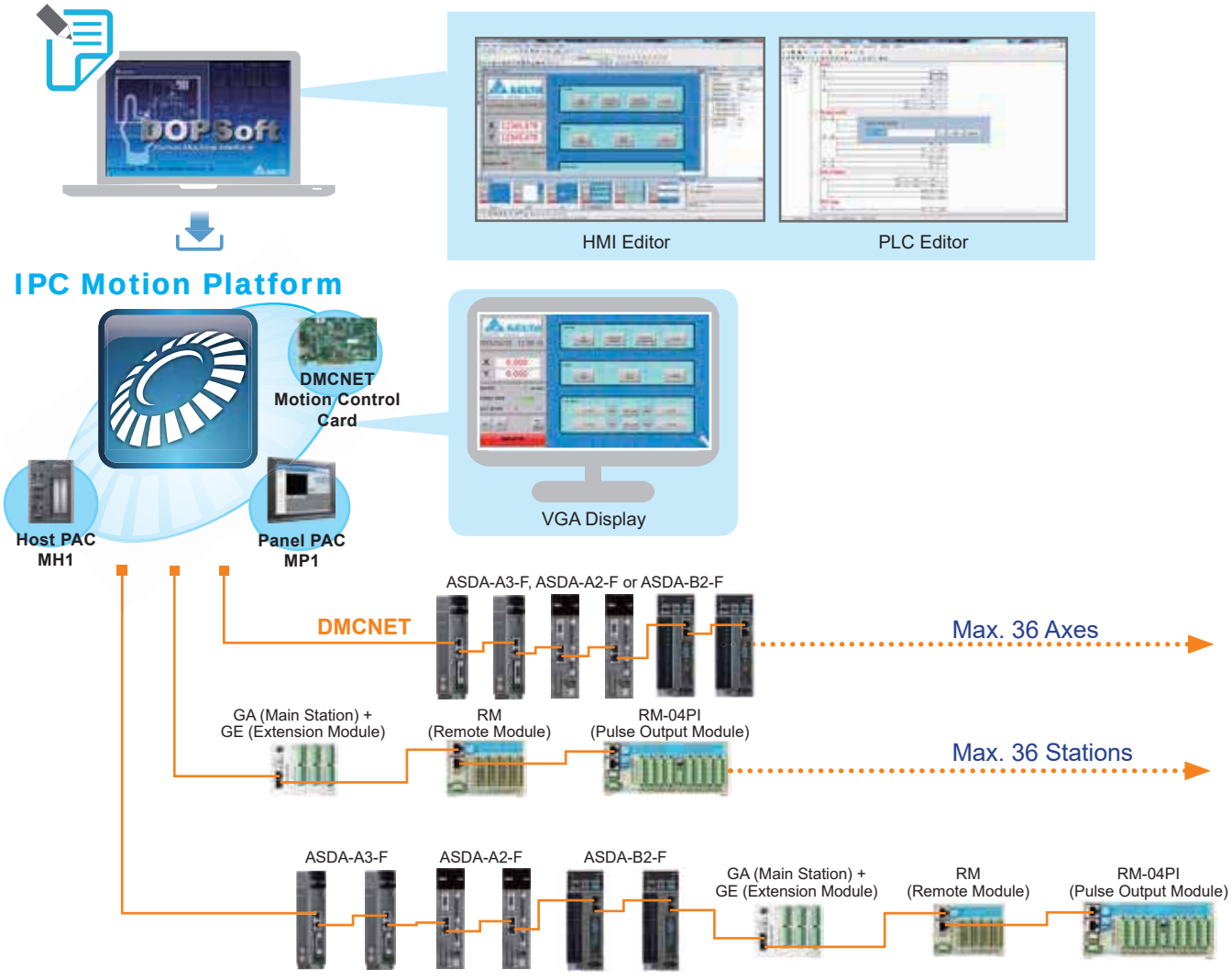
Integrated electronics applications, glue dispensing machines, woodworking machines, pipe bending machines

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

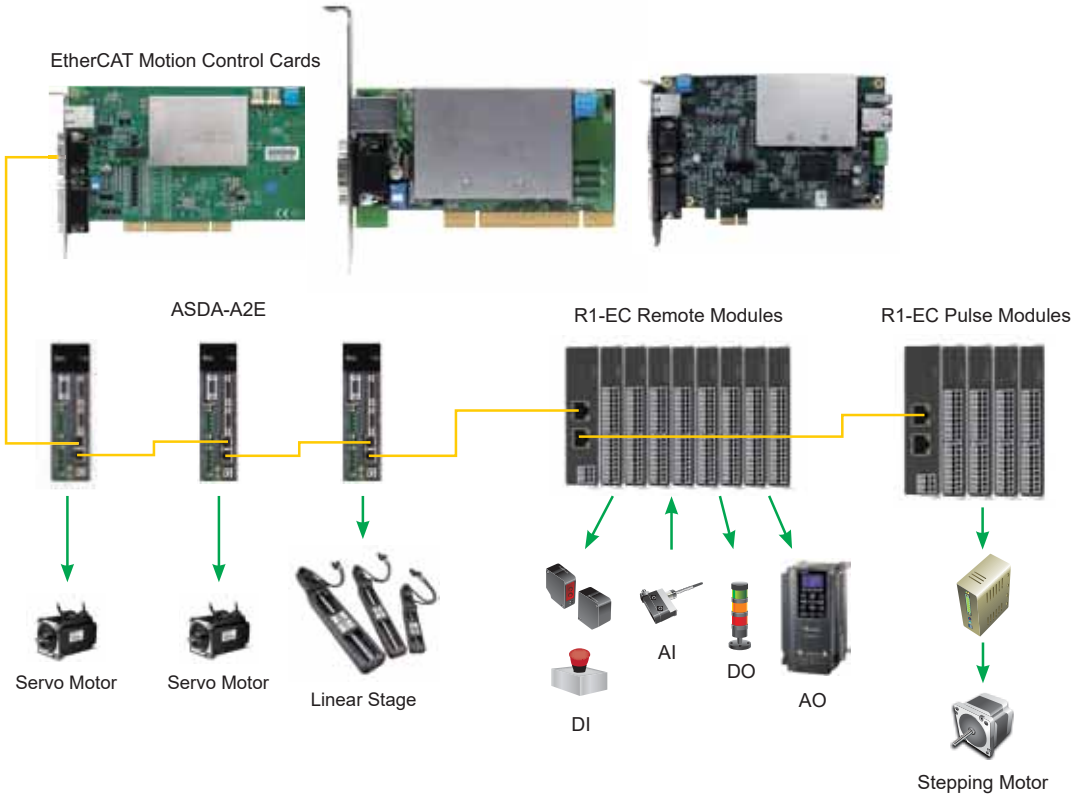


EtherCAT High-Speed Motion Control System

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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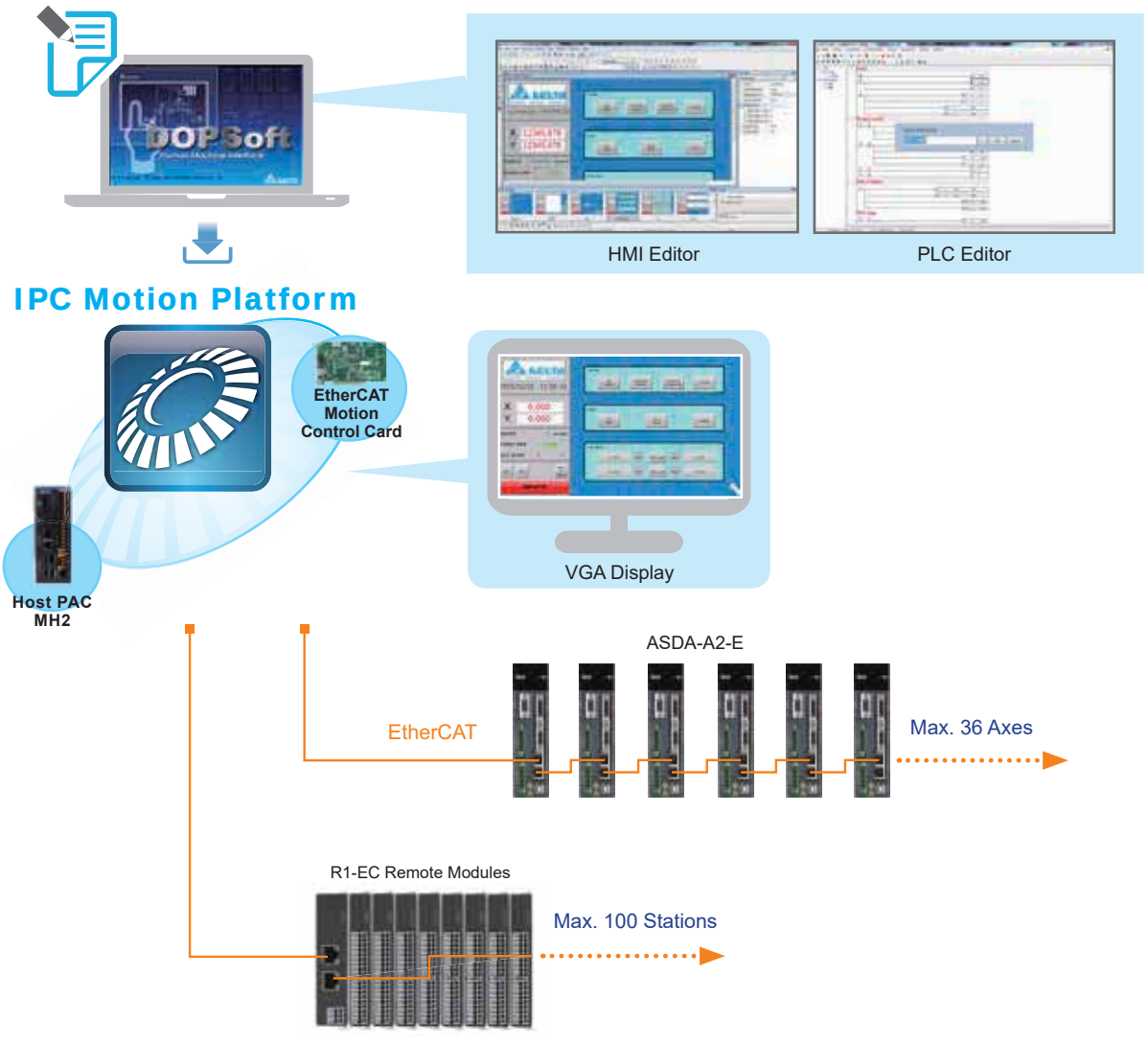
- **Motion Control Core:** Upgrades Delta's PAC or PC with a motion control card to become a high-speed communication motion controller with HMI and PLC functions
- **Simple Secondary Development Platform:** Combines with Delta's standard HMI editor DOPSoft and PLC editor WPLSoft in one platform to simplify 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

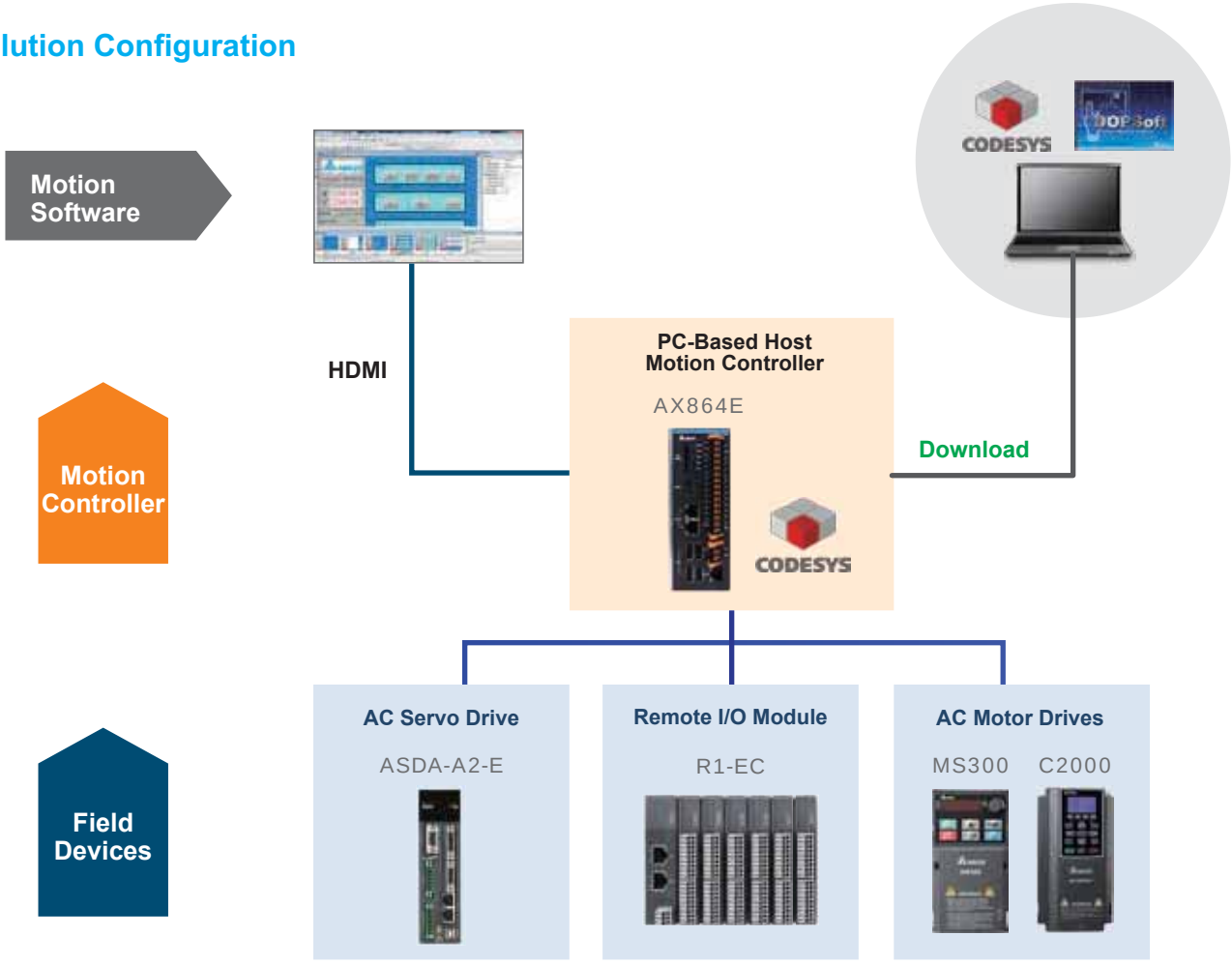


CODESYS SoftPLC Platform

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 POUs
- **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

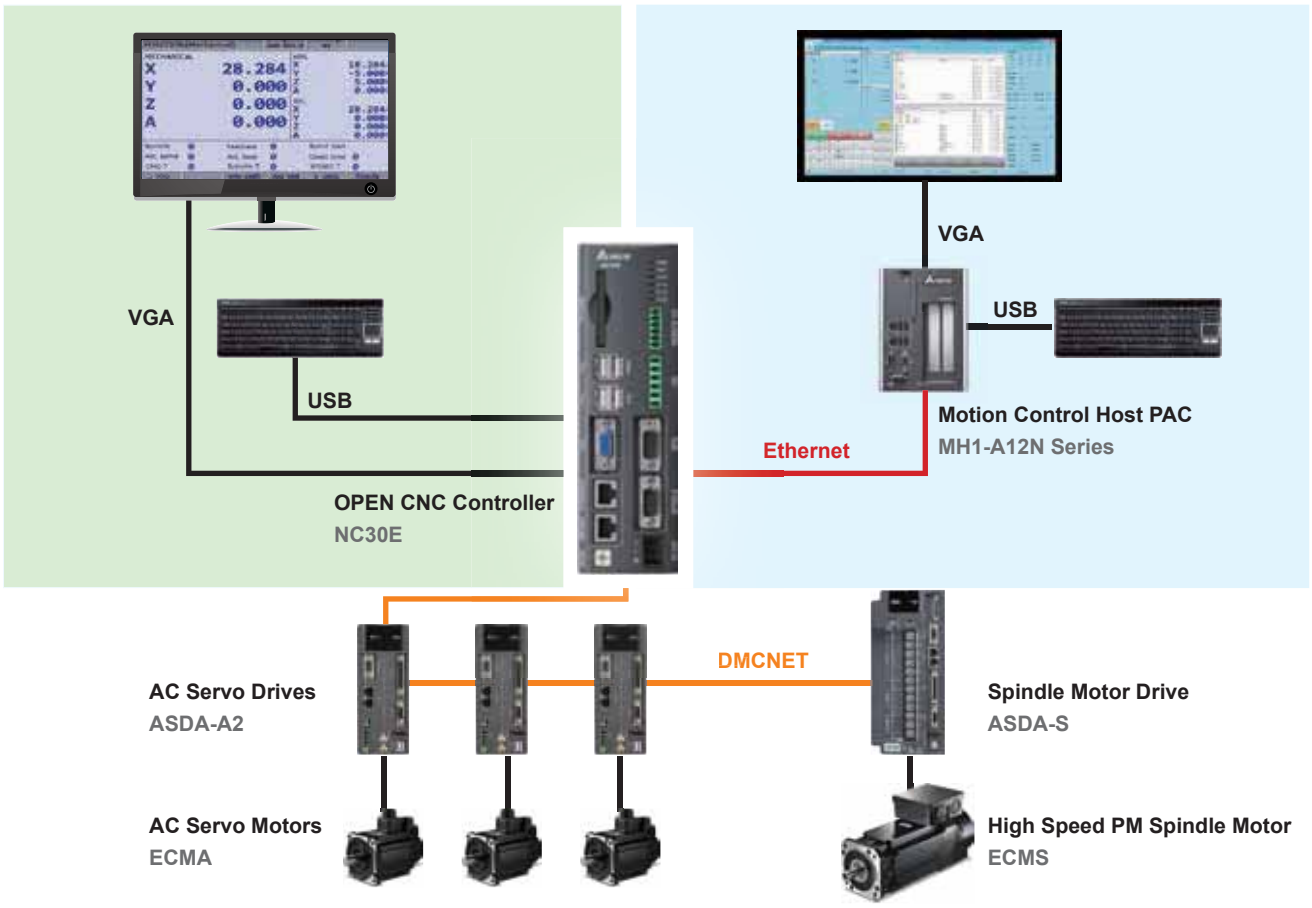
VGA output for external display with Delta's standard interface

- 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

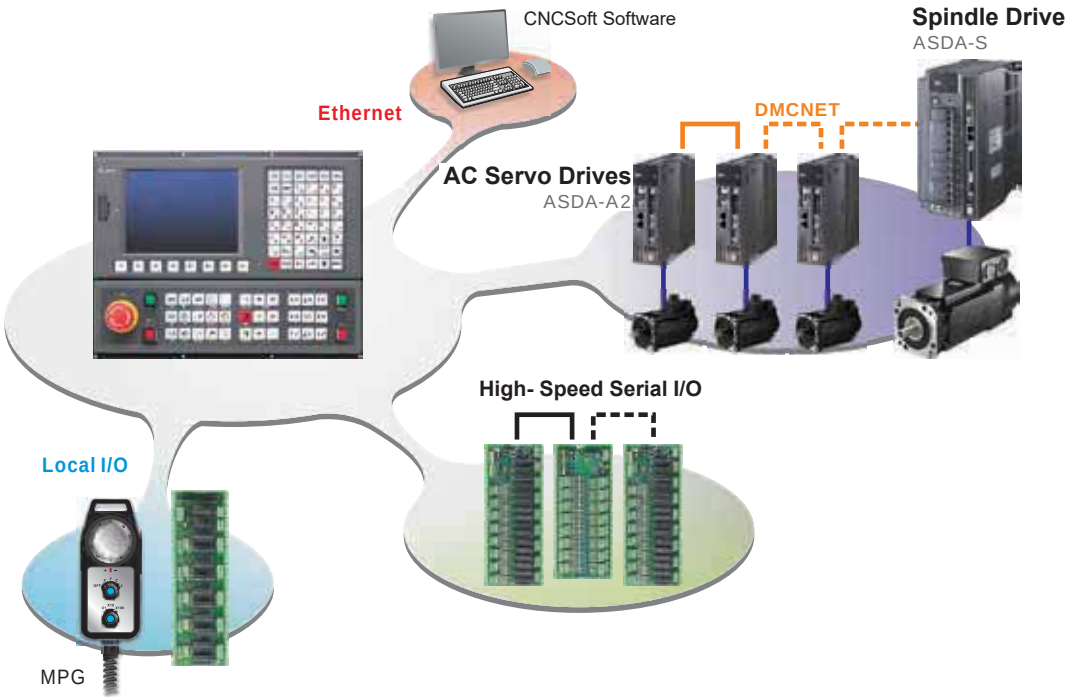
Customized CNC systems, woodworking machines, lathes, grinding machings, glass cutting machines, soldering machines, rim engraving, milling machines, industrial robots

CNC Solution

Integrated Total Solution for the CNC Machine Tools Industry

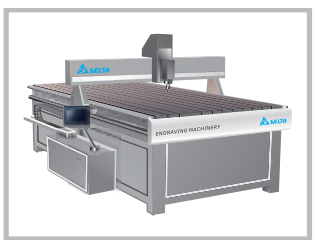
- Built-in 32-bit high speed and high processing dual CPU to construct a real-time and multi-functional control center
- High-quality digital data transmission when matched with Delta's high-speed servo and spindle systems
- Auto-gain tuning allows automatic servo system parameter settings to achieve 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

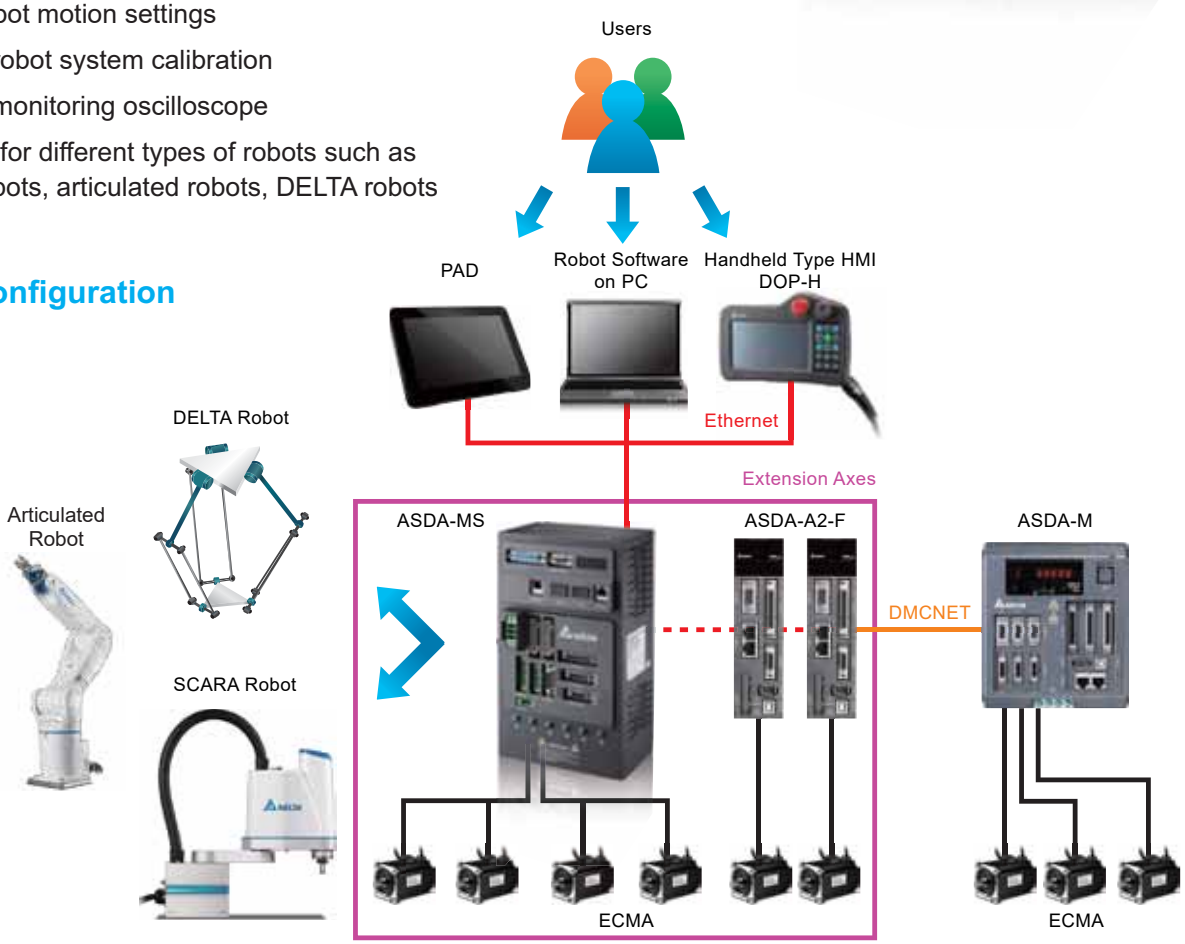
Complete Robot Solution

- 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

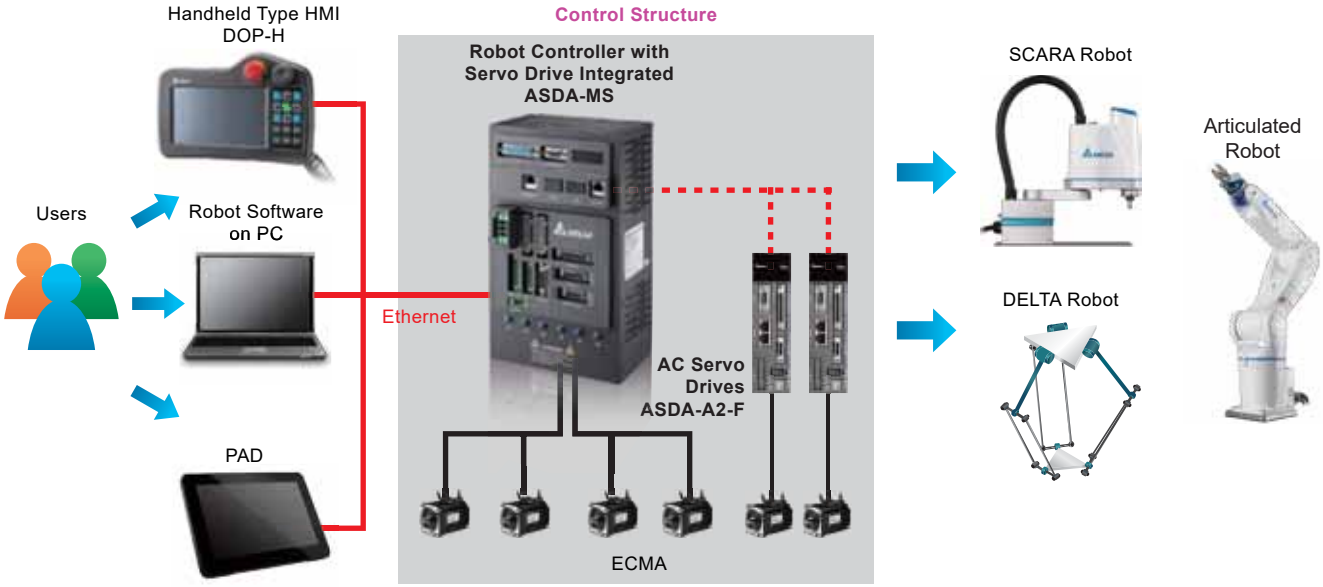
- IEC61131-3 PLC programming
- DRL programming
- Multiple robot motion settings
- Intelligent robot system calibration
- Real-time monitoring oscilloscope
- Applicable for different types of robots such as SCARA robots, articulated robots, DELTA robots and more

System Configuration



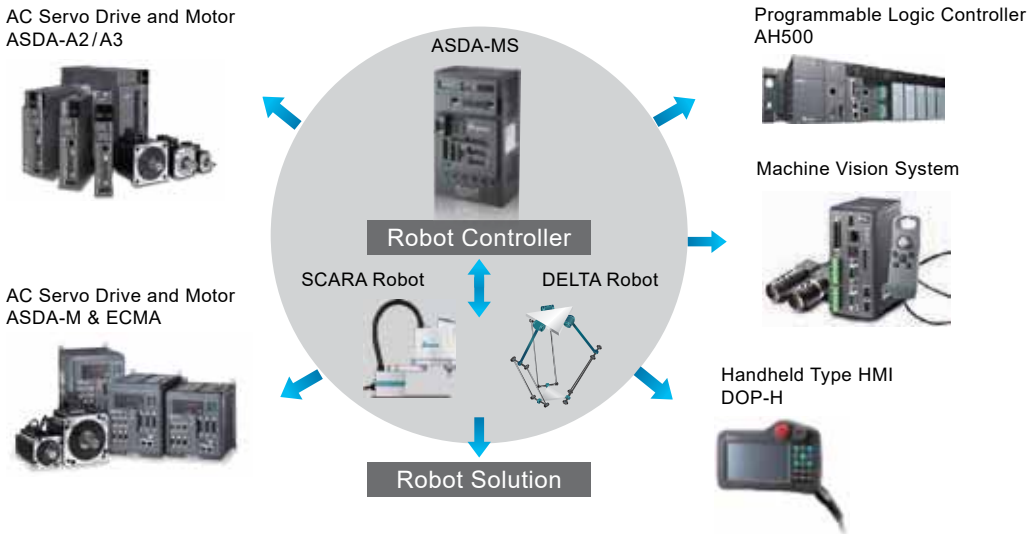
All-in-One Robot Controller

- 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: 800 x 480 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

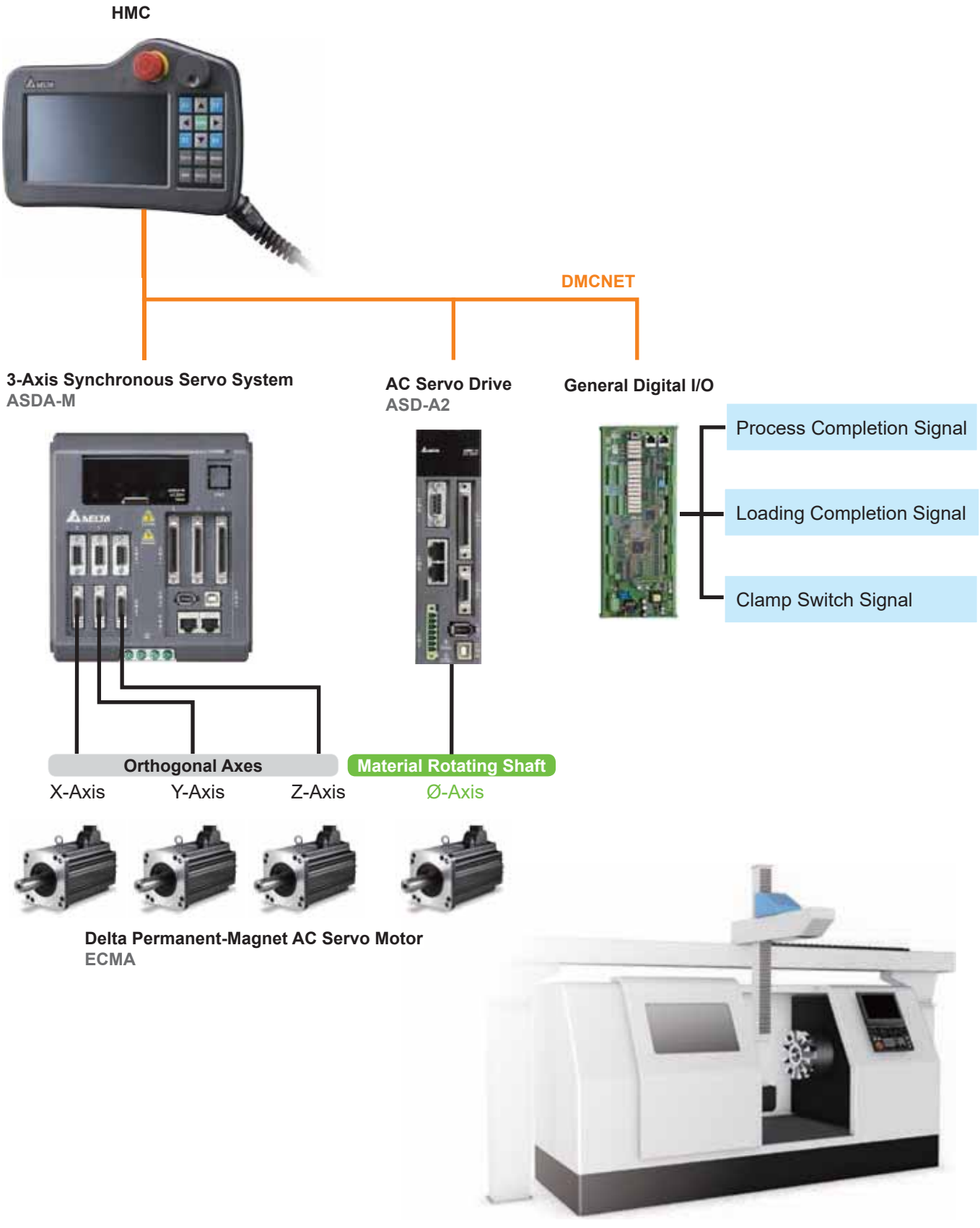
- 7" 65,536 colors TFT
- Display Resolution: 800 x 600 pixels
- Built-in PLC functions
- RS-422 high-speed remote I/O connection
- Supports Ethernet
- Supports DMCNET
- Supports SDHC card
- Supports audio output: MP3, Wav files
- USB Host for direct connection to USB disk, printer, mouse and keypad

8-inch Controller with HMI

HMC08-N500S52

- 8" 65,536 colors TFT
- Display Resolution: 800 x 600 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



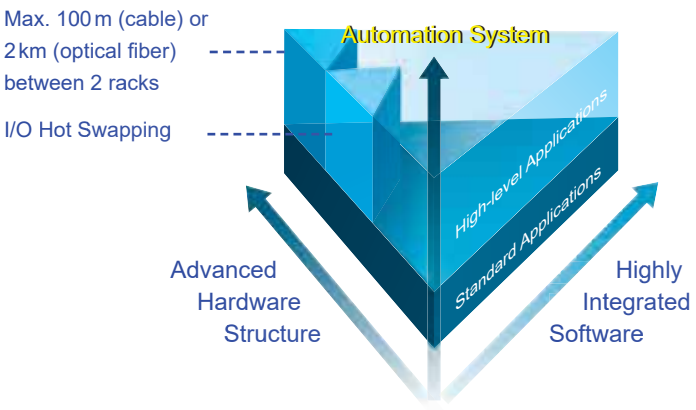
Hot Swappable Mid-range PLC

AH

The Smart Solution for High-end Machinery and System Integration

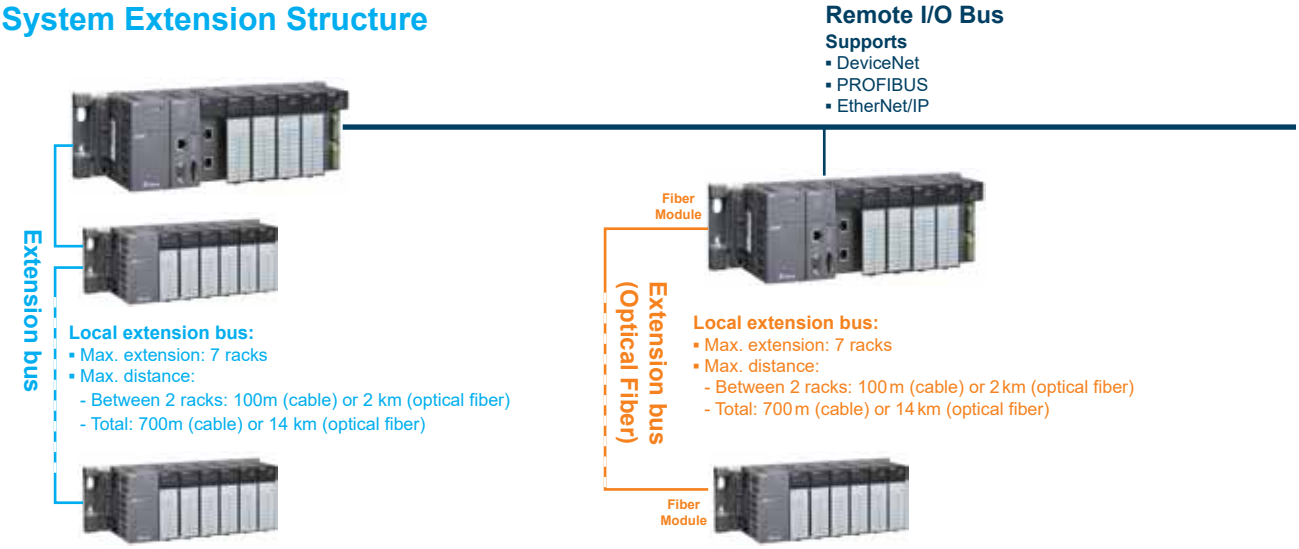
- 32-bit dual-core multitasking processor
- Excellent program execution speed: LD: 20ns
- Max. I/O:
  - DIO: Max. 4,352 points
  - AIO: Max. 544 channels
  - RIO: Max. 125,440 digital points / 3,920 analog channels
- Program capacity: Max. 1M steps (4 MB)
- Data register (D+L): 512k words
- CPU with 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



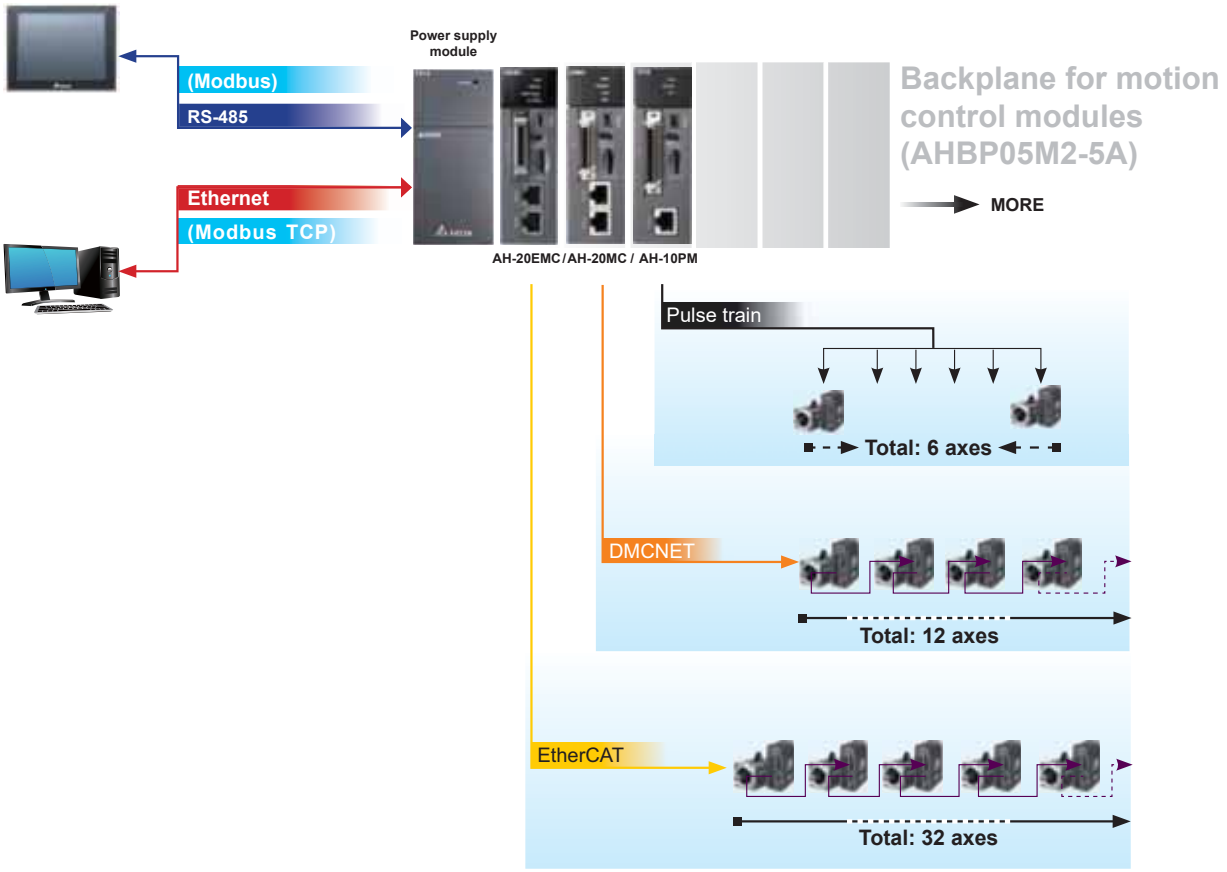
- Highly integrated programming software ISPSoft: Graphical interface with 5 programming languages
- Enhanced flexibility: Max. 100 m (cable) or 2 km (optical fiber) between 2 local extension racks
- Redundant system and hot-swapping function ensure non-stop system operation for improved maintainability

System Extension Structure



Motion Control Structure

Example: AH20EMC



Applications

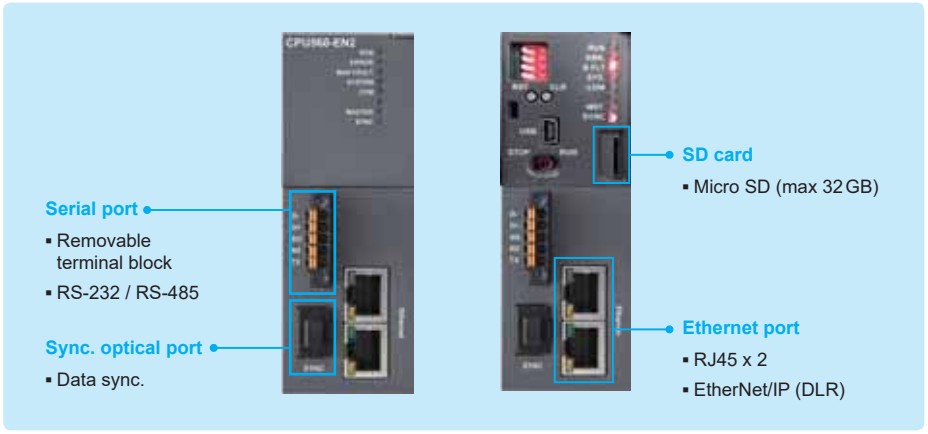
High-end industrial equipment: textile machines, packaging machines, injection and molding machines, electronics equipment, printing machines, paper making machines, warehousing management systems, and logistics management systems

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 communciation 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
▪ Ethernet module - AH10EN-5A (V3) ▪ Serial module - AH10SCM-5A (V3)	▪ DIO ▪ AIO (includes temperature modules) ▪ Serial modules - AH10SCM-5A, AH15SCM-5A	▪ DIO ▪ AIO (include temperature modules)

Tasks

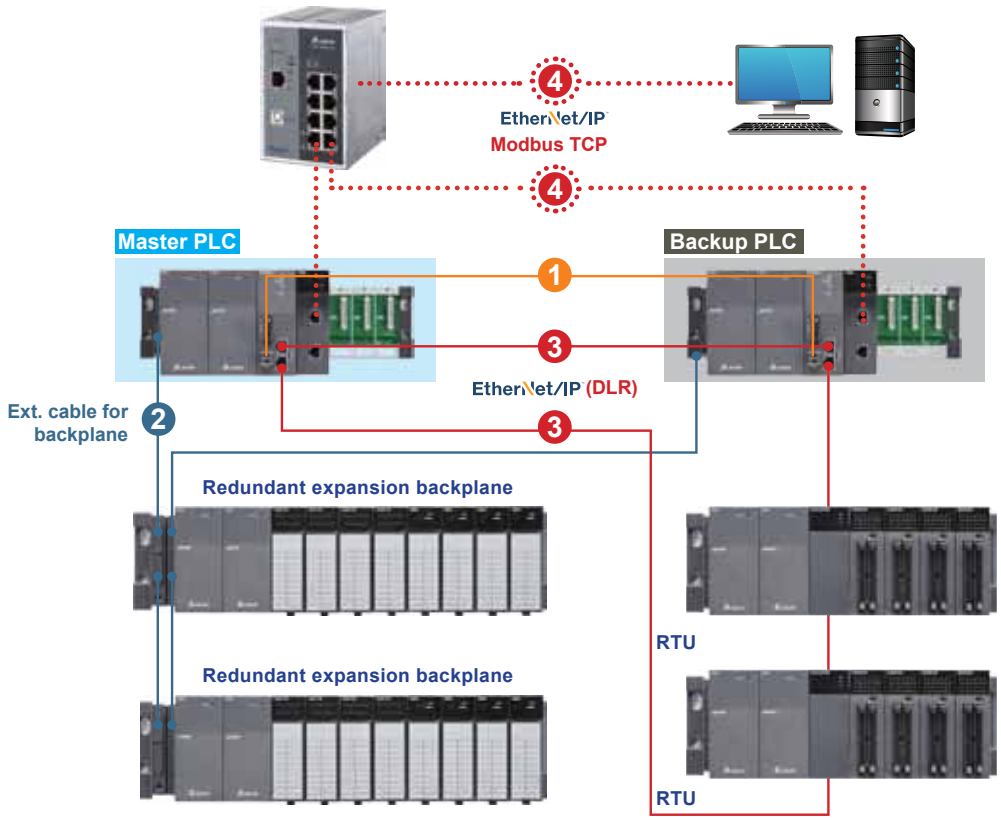
Cyclic	Timer interrupt

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

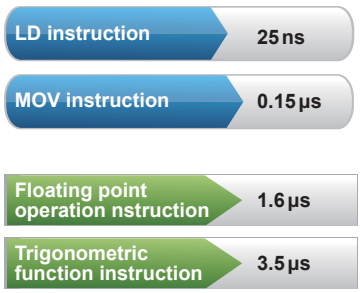
AS

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

- Max. I/O: 1,024 points
- Program capacity: 128 k 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 (200 kHz)
- 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

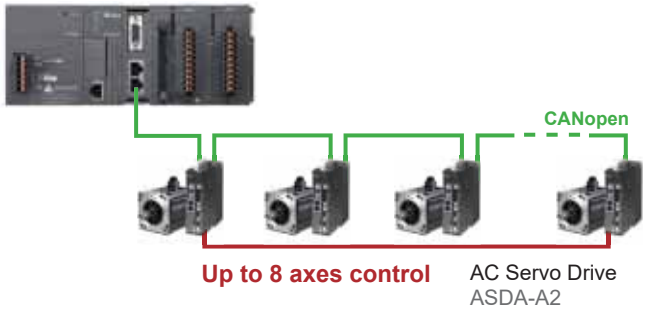
Advanced CPU Performance

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



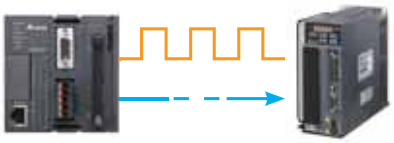
Positioning Control - Delta's CANopen Control

- 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

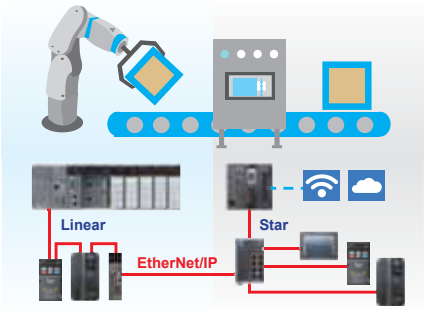
- AS332T-A / AS332P-A transistor CPU: 6 axes (or 12 channels) 200 kHz
- AS324MT-A differential CPU: 2 axes 4 MHz + 4 axes 200 kHz
- Positioning planning table for fast positioning planning and path simulation
- Choose any given 2 axes for linear and arc interpolation



AC Servo Drive
ASDA-B2

Flexible Network System Configuration

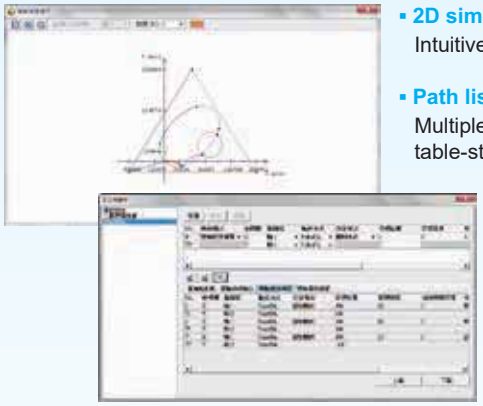
- Supports star, linear network topology for fast expansion and management on production lines
- Compatible with IT network; no independent network or IT technician required
- Combines with Delta's industrial Ethernet solutions to construct IoT for more automation application and industrial upgrades



New Programming Software

Various, Convenient Software Wizards for Effortless Planning

Positioning Planning Table



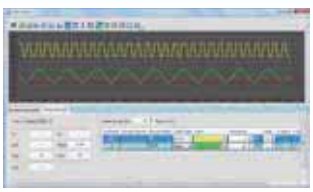
- **2D simulation**
  Intuitive 2D track simulation without complicated calculation for real-time path planning
- **Path list**
  Multiple combination for positioning modes and tracks; and fast path planning via table-structured planning
- **Axis parameter setting**
  Intuitive configuration interface 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

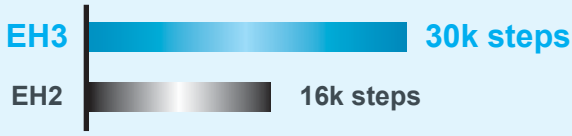
High Performance PLC

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

Program capacity



Data register

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)**

DVP-F232

DVP-F422

DVP-F485

- **For Ethernet Communication**

DVP-FEN01

- **Analog Input/Output**

DVP-F2AD
DVP-F2DA

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 tunning 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 μs
- Highly efficient processing abillity: 1 k steps of programs can be completed within 1ms
- Max. 100 kHz 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

Golden Pin Design Mark

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 μs
- 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)

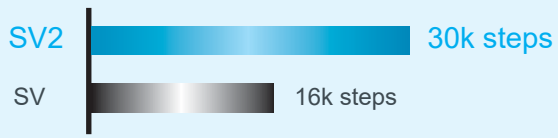
High Performance Slim PLC

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

Program capacity



Data register

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

- **DeviceNet Master**
  DVPDNET-SL

- **CANopen Master**
  DVPCOPM-SL

- **Ethernet**
  DVPEN01-SL

- **PROFIBUS DP Slave**
  DVPPF02-SL

- **RS-422 / RS-485 Serial Communication Module**
  DVPSCM12-SL

- **BACnet MS / TP Slave Serial Communication Module**
  DVPSCM52-SL

Analog Input / Output Modules

- **Analog Input**
  DVP04AD-SL
- **Analog Output**
  DVP04DA-SL

Load Cell Modules

DVP01LC-SL
DVP02LC-SL
DVP201LC-SL
DVP211LC-SL
DVP202LC-SL

Standard Slim PLC

DVP-SS2

Economic and compact model

- Max. I/O: 480 points
- Program capacity: 8k steps
- Data register: 5k words
- Max. execution speed of basic instructions: 0.35 μs
- 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 10kHz pulse output
  - 8 points of high-speed counters: 20kHz/4 points, 10kHz/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 μs
- 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: 100kHz/2 points, 10kHz/2 points
  - 8 points of high-speed pulse input: 100kHz/2 points, 10kHz/6 points, 1 set of A/B phase 50kHz
  - 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 μs
- 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: 100kHz/2 points, 10kHz/2 points
  - 8 points of high-speed pulse input: 100kHz/2 points, 10kHz/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)

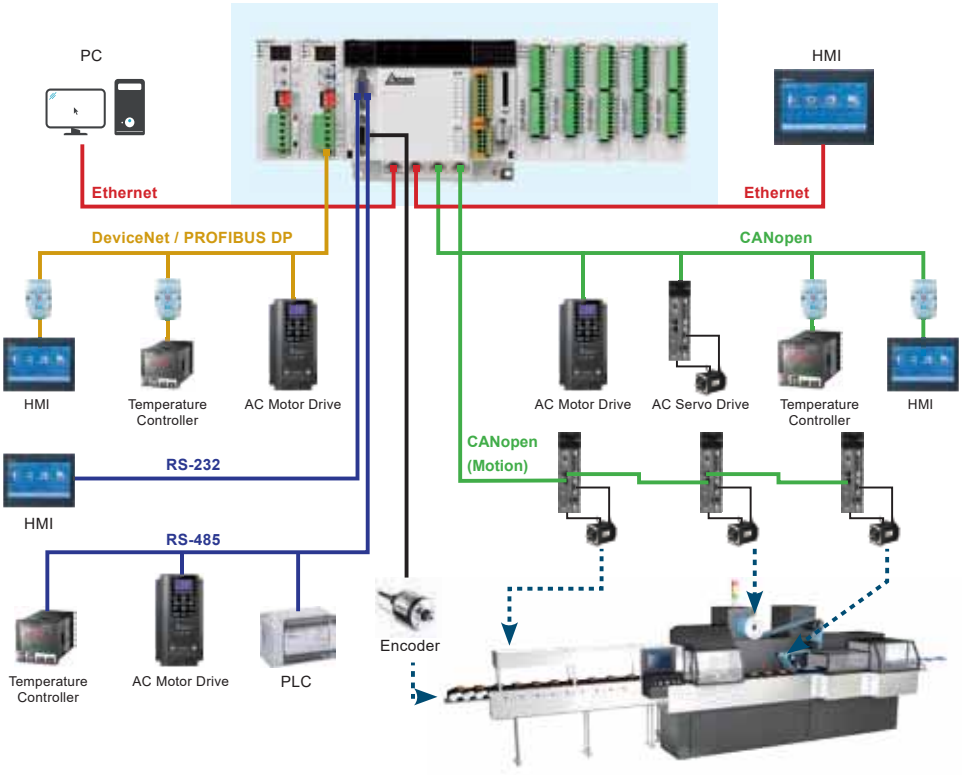
24-axis Motion Controller
DVP15MC11T (CANopen)
DVP50MC11T (EtherCAT)

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: 64 k steps
- Data register: 10k words
- Execution speed LD: 0.1375 μs, MOV: 2.1 μs
- 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: 64 k steps
- Data register: 10 k 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: 800 x 600 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 frontspeaker)

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: 800 x 480 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 (5 m / 10 m)

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 × 35.24 mm)
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 × 35.24 mm)
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: 240 x 128 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" (83 x 41 mm)
Resolution	240 × 128
Display Color	Monochrome
Flash Memory	1 M 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: 4 k steps / D device: 5k words
- Provide 2 sets of 10 kHz 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: 8 k steps / D device: 5k words
- Provide 2 sets of 10 kHz 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 New

LD

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

Area Sensor New

AS-B Standard

- 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_{DC}
- 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

Solid Mandrel

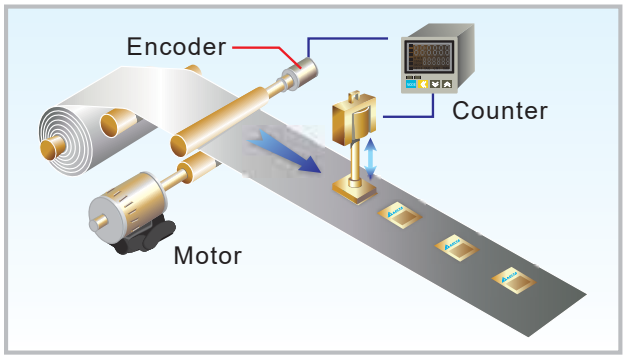
ES5 / ES3 (Optical)
HS5 / HS3 (Magnetic)

Hollow Mandrel

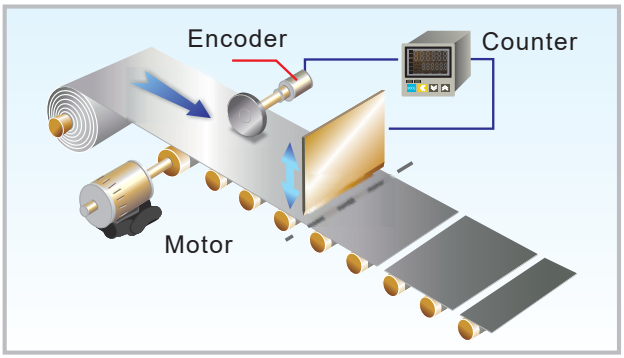
EH5 / EH3 (Optical)
HH5 / HH3 (Magnetic)coming soon

Applications

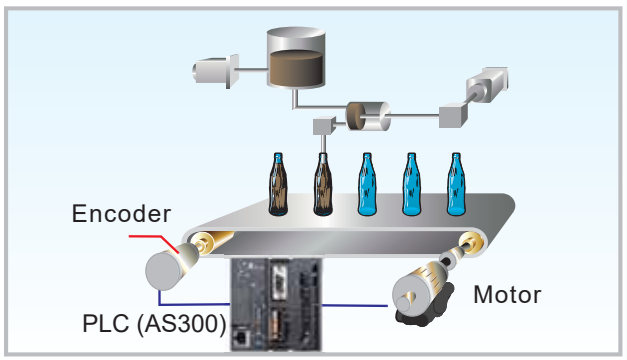
Label printing machines, detecting machines, elevators, bottling machines, cutting machines, elevator doors, testing/inspection machines



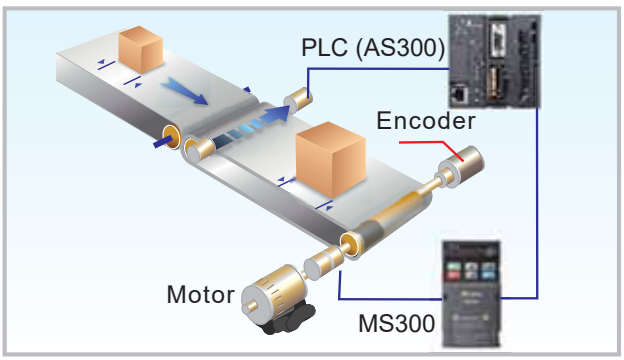
Label Printing Machine



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

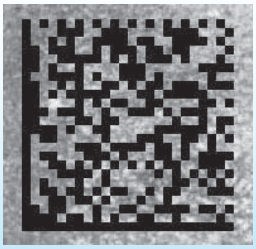
1D low contrast

1D optical noise

1D glare

1D damaged code

2D optical noise



2D ill-printed codes

2D uneven exposed code

2D ill-illuminated codes

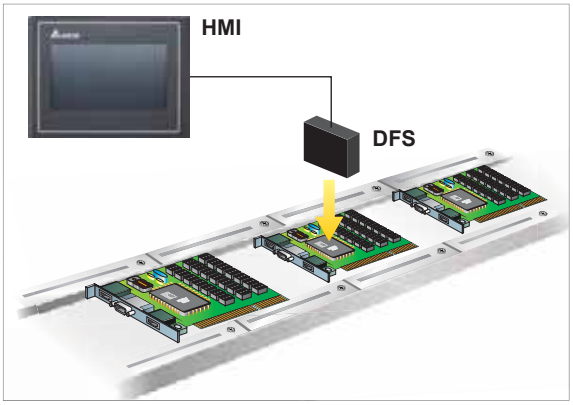
Fixed-mount Barcode Scanner New

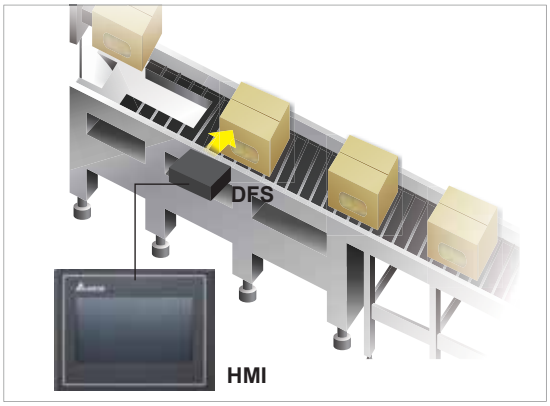
DFS131

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 ascanning 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

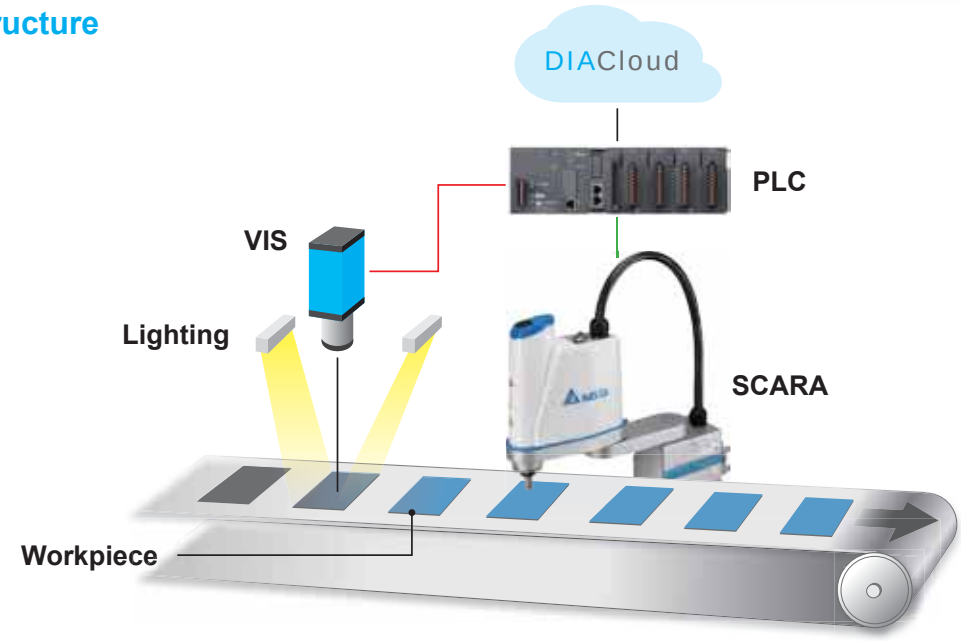
Vision Sensor New

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

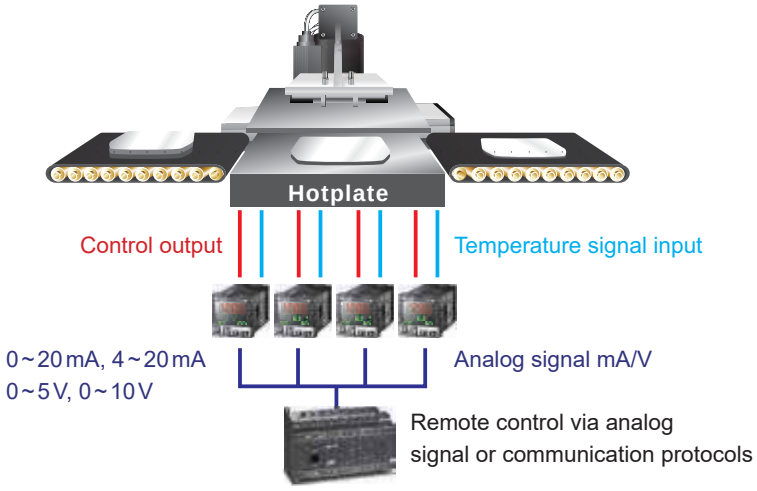
High Speed, High Precision, High Performance Multifunction Temperature Controller

Applications

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

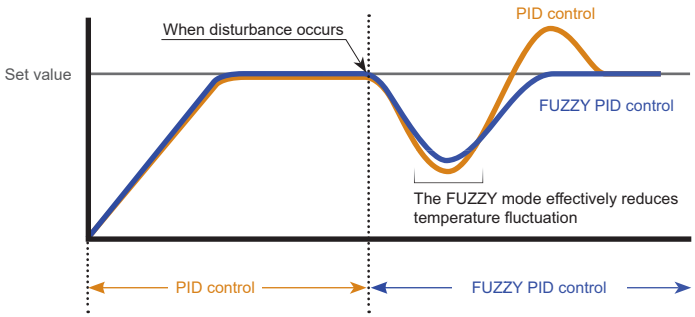
Remote Control

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

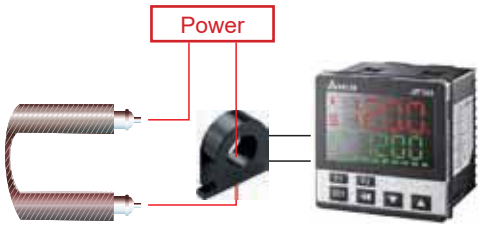
- Control modes selection
- Alarm clearing
- Controller ON/OFF
- Start PID
- Save menu
- Process control ON/OFF

Large Tri-color LCD Display

The 1st tri-color LCD temperature controller in Taiwan

Heater Disconnection Detection

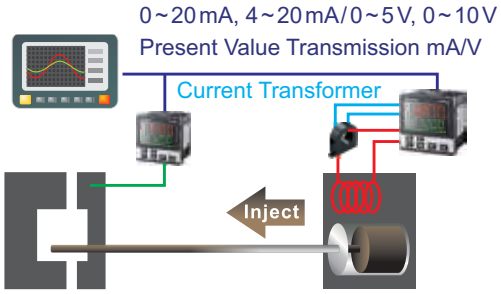
Measurable up to 100A



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

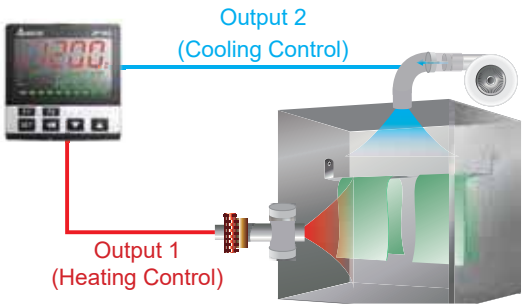
Sets the Present Value by point-to-point control

Retransmission Output



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

Multi-Channel Modular Temperature Controller

DTE

- Power input: DC 24 V ± 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 ~ 20 mA, pulse voltage, analog voltage 0 ~ 10 V
- 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 ~ 200 L/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

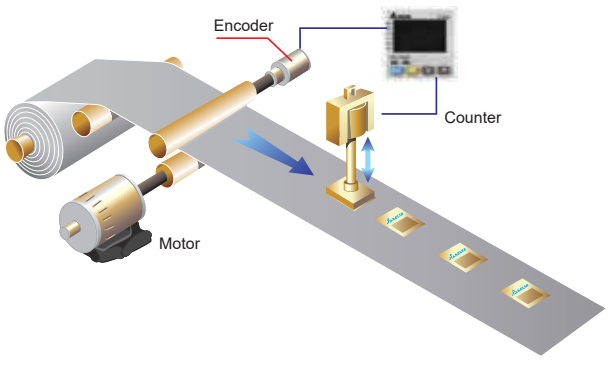
All-in-One

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

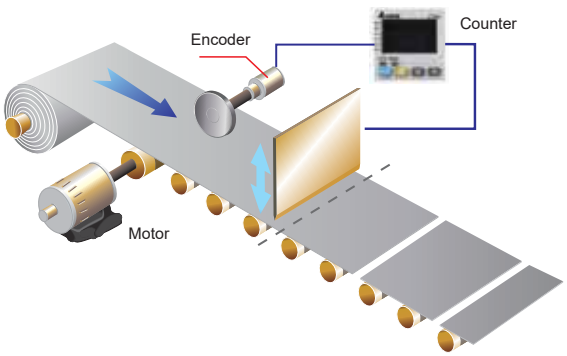
Applications

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
DPM-C530	**DPM-C530E** New	**DPM-C520**	**DPM-C520W**
- Front panel: 96mm x 96mm - History log (62 days) - Demand calculation - Period energy accumulation - BACNet MS/TP	- Front panel: 96mm x 96mm - History log (62 days) - Demand calculation - Period energy accumulation - BACNet MS/TP - RJ-45 x 2 - Modbus, EIP	- Front panel: 96mm x 96mm	- Front panel: 96mm x 96mm - Modbus TCP - (Wifi, IEEE801.11 b/g/n)

Compact Model	DIN-rail Model	Basic DI/DO Relay Model	Water Treatment Model
DPM-C310 New	**DPM-D520I**	**DPM-C501L**	**DPM-C502** New
- Front panel: 72mm x 72mm	- Current measurement: 63A - Period energy accumulation	- Front panel: 96mm x 96mm - 4DI/2DO	- Front panel: 96mm x 96mm - 4DI/2DO - History log (14 days) - Demand calculation

Features

- Precise measurement of bidirectional electrical energy and power parameters, 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

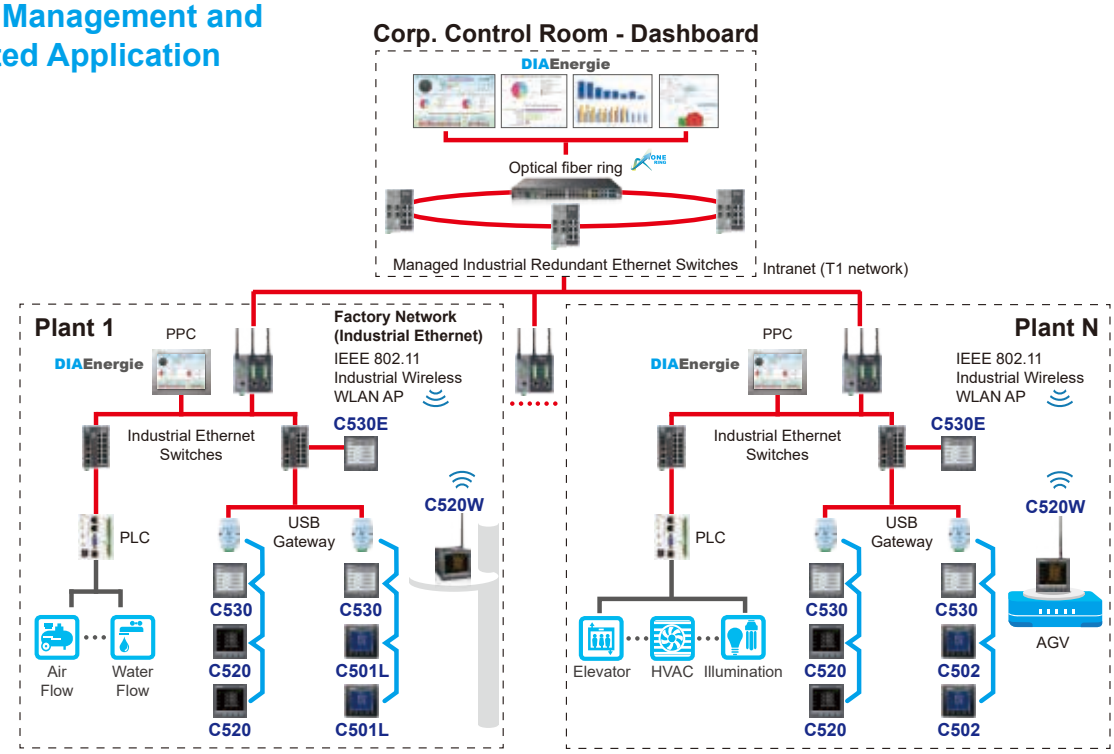
Applications

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

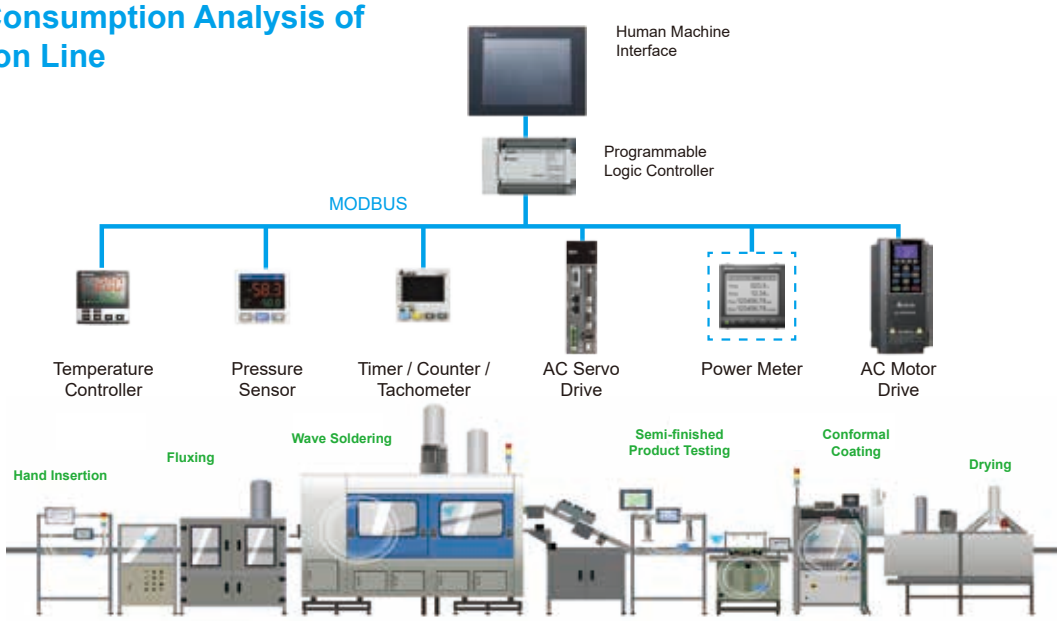
The DPM-C520W is suitable for: elevators, semiconductor plants, high-ceiling plants, and equipment with mobility

The DPM-D520I is 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 12 M pixels in gray scale using standard CameraLink cameras

Resolution (Mega Pixels)		0.3 M	2 M	4 M	5 M	12 M
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

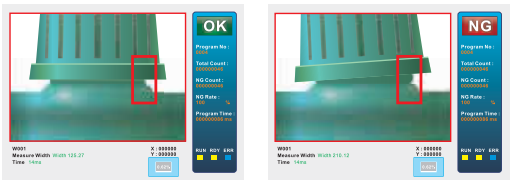
- User-friendly operation interface for a quick system setup
- Flowchart programming interface saves development time
- Built-in multi-functional developing tools save users from complex programming
- Offers versatile digital I/O terminals
- Compact and light, saves wiring and space
- Hardware specification 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

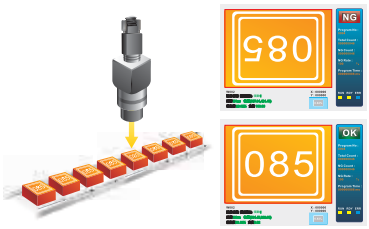
• Bottle Cap Position Identification

Identifies the bottle capping position



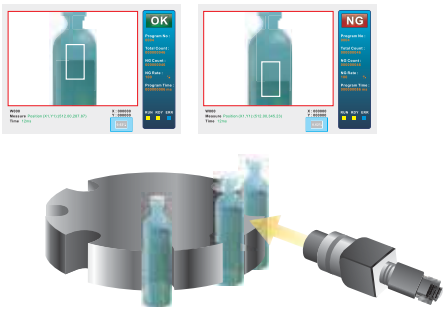
• Direction Identification

Inspects the direction of workpieces conveyed on a production line



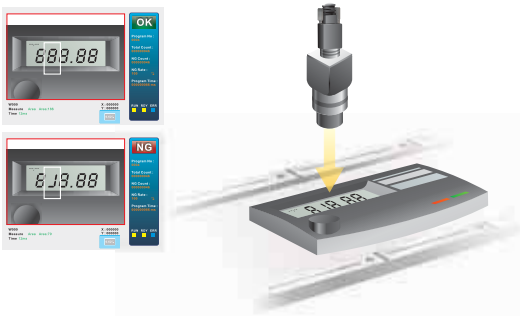
• Beverage Packing Inspection

Inspects the liquid level of each bottle



• Character Inspection

Inspects the characters on electronic devices

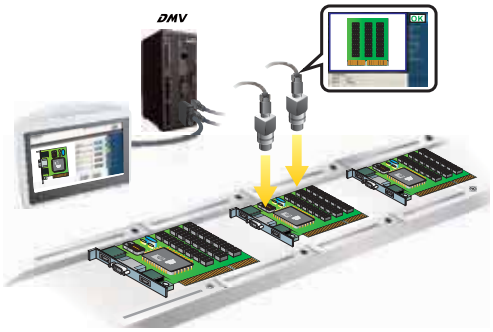


• Luminance Inspection

Inspects LED luminance automatically

• Position Identification

Inspects the position of IC components on PCBs

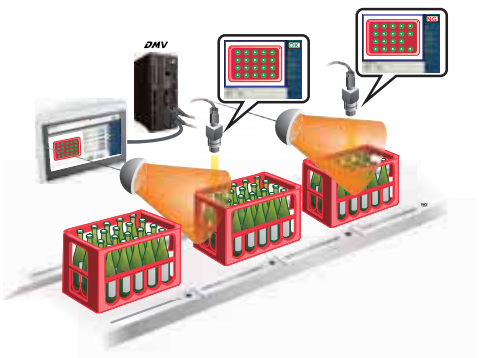


• Module Inspection

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 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		960W
	DRP048V060W1BN	48V	60W
	DRP048V120W1BN		120W
	DRP048V240W1BN		240W
	DRP048V480W1BN		480W

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

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

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

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

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		100W
	PMC-12V150W1BA		150W
	PMC-24V035W1AA	24V	35W
	PMC-24V050W1AA		50W
	PMC-24V075W1AA		75W
	PMC-24V100W1AA		100W
	PMC-24V150W1AA		150W
	PMC-24V150W2AA		150W
	PMC-24V150W1BA		150W
	PMC-24V300W1BA		300W
	PMC-24V600W1BA		600W
	PMC-DSPV100W1A	24V/5V	100W
	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	51W
	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		102W
	PJ-12V150WBNA		150W
	PJ-24V30WBNA	24V	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		80W [A] 100W [B]
	PJT-15V40WBAA	15V	40W
	PJT-15V65WBAA		63W
	PJT-15V100WBAA		100W
	PJT-15V100WBBA		80W [A] 100W [B]
	PJT-18V40WBAA	18V	40W
	PJT-18V65WBAA		65W
	PJT-18V100WBAA		100W
	PJT-18V100WBBA		80W [A] 100W [B]
	PJT-24V40WBAA	24V	40W
	PJT-24V65WBAA		65W
	PJT-24V100WBAA		100W
	PJT-24V100WBBA		80W [A] 100W [B]
	PJT-27V150WBNA	V_1: 27V V_{SB}: 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: -40ºC ~ 85ºC 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_{AC} and 88 ~ 370 V_{DC} wide range redundant power input
- IP40 metal case: -40ºC ~ 70ºC 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: -40ºC ~ 75ºC 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: -40ºC ~ 75ºC 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: -40ºC ~ 75ºC 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: -40ºC ~ 70ºC 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
- EEE Green Ethernet for power savings
- IP40 metal case: -10ºC ~ 60ºC 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 ~ 48 V_{DC} redundant terminal block power input
- IP40 metal case: -40ºC ~ 75ºC 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: -20ºC ~ 70ºC 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 30 W 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 ºC ~ 70 ºC 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 30 W 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: -40ºC ~ 70ºC 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: -20ºC ~ 70ºC 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: -40ºC ~ 85ºC 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: -40ºC ~ 85ºC operating temperature

PoE+ Splitter

DVS-G401

- 1-Port GbE for PoE+ data / power input and 1-Port GbE for data output
- Provide 30 W power supply / per port to meet IEEE 802.3at and IEEE 802.3af standards
- Intelligent PoE input overvoltage protection
- Power output up to 27 W
- IP30 metal case: -20ºC ~ 70ºC 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 30 W power supply / per port to meet IEEE 802.3at and IEEE 802.3af standards
- Intelligent PoE output overvoltage protection
- Built-in 12 V_{DC} power booster for flexible PoE deployment
- IP30 metal case: -20ºC ~ 70ºC 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: -40ºC ~ 75ºC 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 & 5 GHz dual-band omni-directional 5.5 & 8dBi, or 2.4 GHz 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
- -30ºC ~ 60ºC 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, 2100 MHz
- GSM / GPRS / EDGE: 850, 900, 1800, 1900 MHz
- 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: -20ºC ~ 70ºC 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: -20ºC ~ 70ºC 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: -20ºC ~ 70ºC 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: -20ºC ~ 70ºC 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: 500 m
- 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: 115.2 Kbps

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

UC-PRG020-12A **USB » RS-232**	• Delta programming cables • RS-232 port provides mini-DIN and DB9 connectors • A portable hot-plugging USB device, no power supply required
IFD6500 **USB » RS-485**	• Lightweight design for easy portability • Auto-detection of data flow direction • A portable USB device • Supports Win XP, Win7 32/64-bit
IFD6503 **USB » CAN**	• Extracts CAN messages (incl. standard and extended frames), decodes and displays following DeviceNet and CANopen protocols • Filters by set conditions • Sends CAN messages (1 message by manual mode, 8 messages by auto mode) • Max. 1 Mbps • A portable USB device
IFD6530 **USB » RS-485**	• Lightweight design for easy portability • Auto-detection of data flow direction • Supports KPC-CC01keypad in conducting parameters and page editing • Supports Win XP, Win7 32/64-bit • A portable USB device

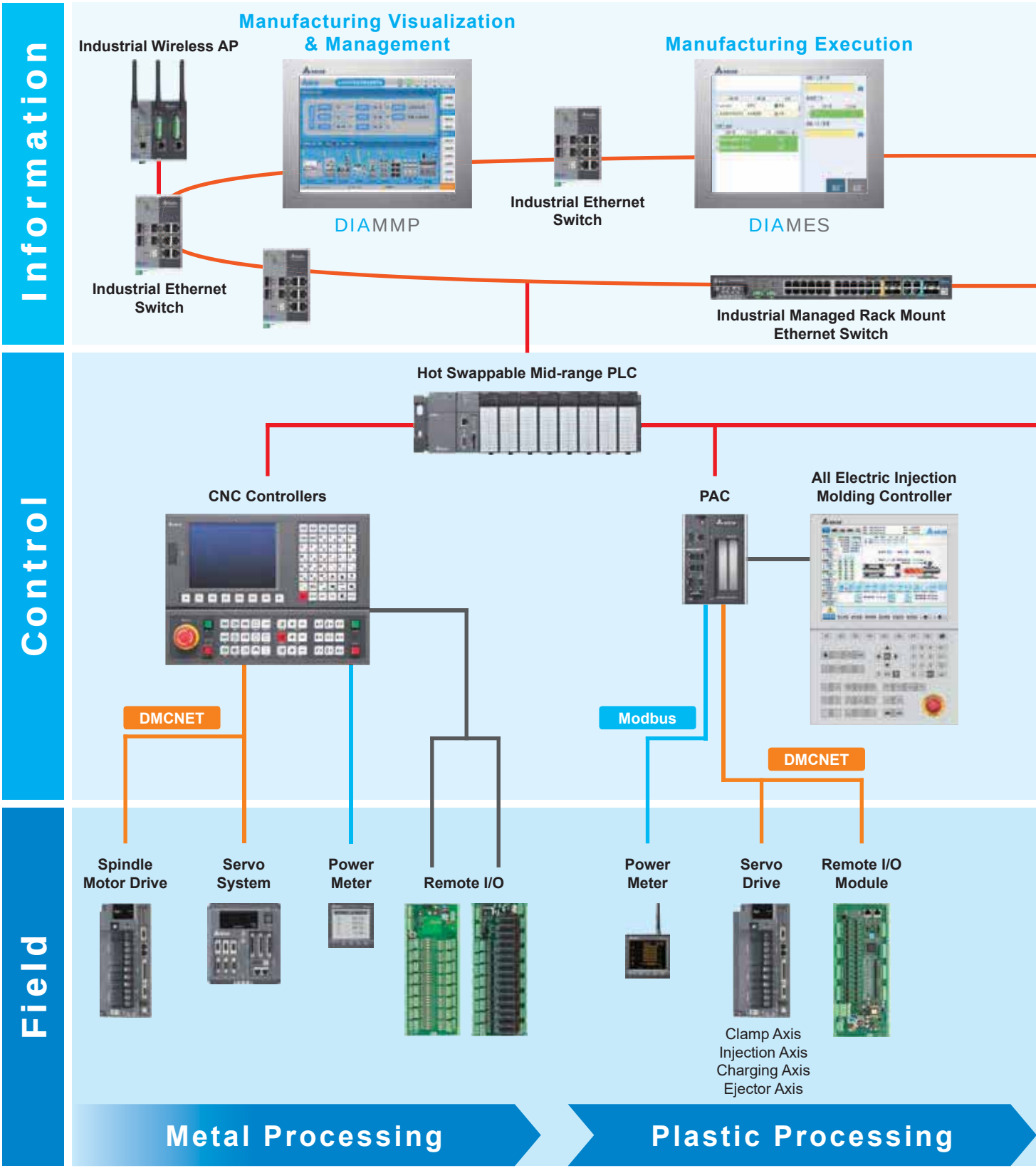
Modbus Serial Converter

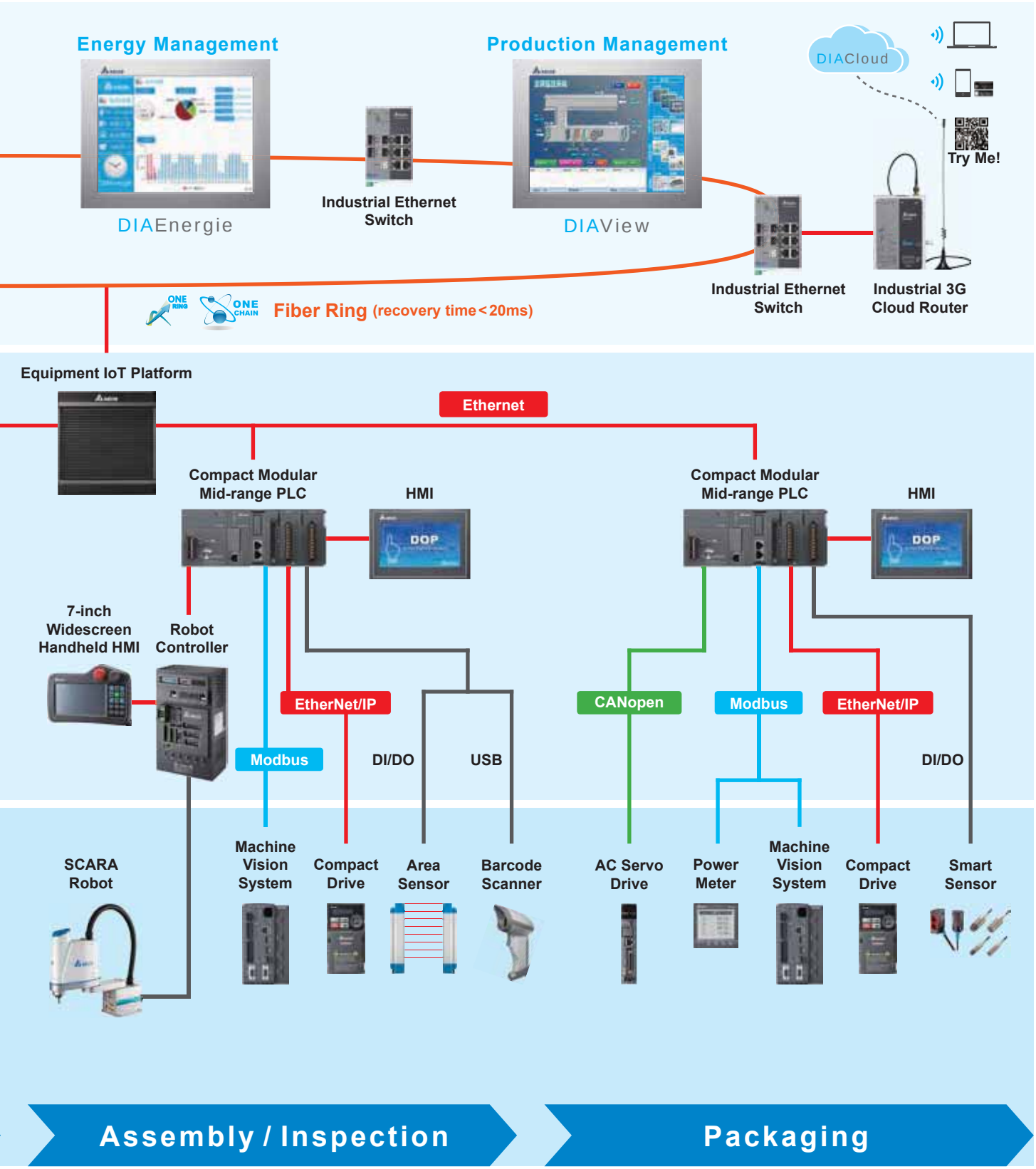
IFD8500A **RS-232 « » RS-485**	• RS-232 to RS-422 / 485 isolated converter • Auto transmission speed adjustment
IFD8510A **RS-422/485**	• RS-422 / 485 isolated regenerator • RS-422 / 485 transmission distance extended to 1.2 km • Able to connect to 32 RS-485 devices • Auto transmission speed adjustment and data flow direction control
IFD8520 **RS-232 « » RS-485**	• RS-232 to RS-422/485 addressable isolated converter • Connects RS-232 to RS-422/485 by setting up Modbus address

Industrial Network Converter

IFD9502 **DeviceNet » MODBUS**	• DeviceNet protocol • Able to connect Delta industrial automation products • Isolation in RS-485 channel (incl. power supply) • Full compatibility test passed
IFD9503 **CANopen » MODBUS**	• CANopen protocol • Able to connect all Delta industrial automation products • Isolation in RS-485 channel (incl. power supply) • Full compatibility test passed
IFD9506 **MODBUS TCP « » MODBUS**	• Isolation in RS-485 channel (incl. power supply) • Modbus TCP protocol • Smart monitor function • Supports webpage setup and on-line monitoring • Serial virtual COM available • Alarm notification through email
IFD9507 **EtherNet/IP « » MODBUS**	• Isolation in RS-485 channel (incl. power supply) • EtherNet/IP and Modbus TCP protocols • Smart monitor function • Supports webpage setup and on-line monitoring • Serial virtual COM available • Alarm notification through email

Industrial Automation Solutions




Energy Management
DIAEnergie
Industrial Ethernet Switch
Production Management
DIAView
DIACloud
Try Me!
Industrial Ethernet Switch
Industrial 3G Cloud Router
ONE RING
ONE CHAIN
Fiber Ring (recovery time < 20ms)
Equipment IoT Platform
Ethernet
Compact Modular Mid-range PLC
HMI
Compact Modular Mid-range PLC
HMI
7-inch Widescreen Handheld HMI
Robot Controller
EtherNet/IP
Modbus
DI/DO
USB
CANopen
Modbus
EtherNet/IP
DI/DO
SCARA Robot
Machine Vision System
Compact Drive
Area Sensor
Barcode Scanner
AC Servo Drive
Power Meter
Machine Vision System
Compact Drive
Smart Sensor
Assembly / Inspection
Packaging

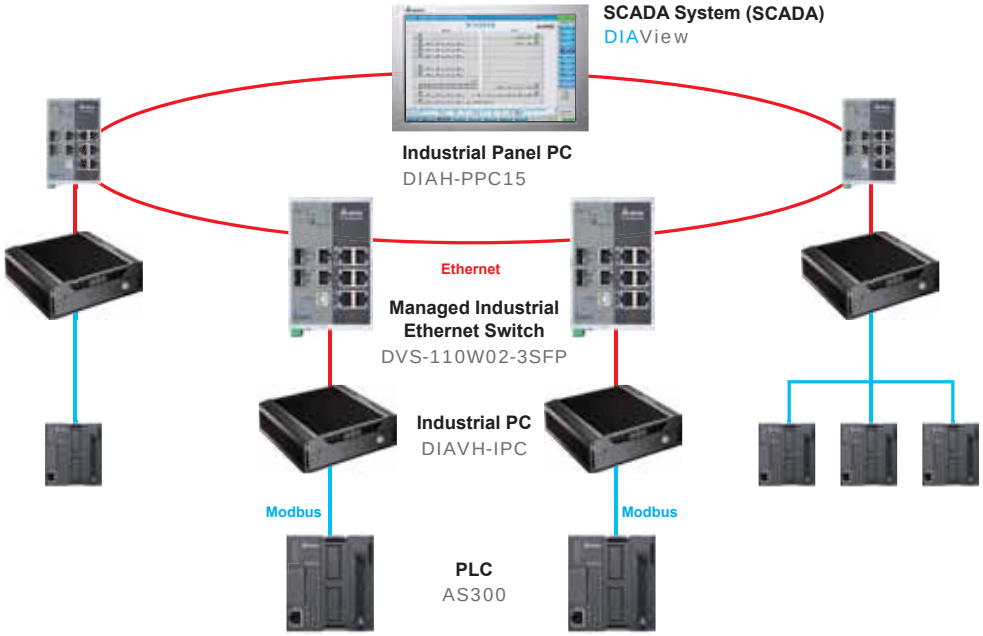
Industrial PC

DIAV

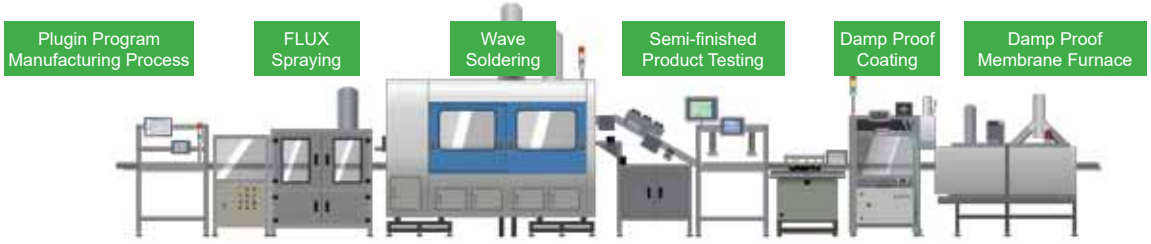
Stable and High-performance Integration Platform

- 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

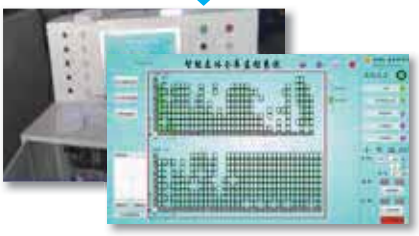
Factory Digitalization

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

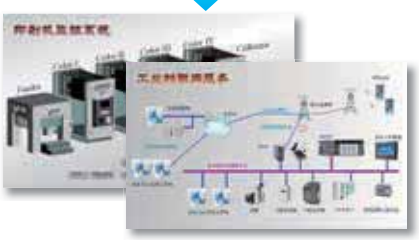
Electronic Inspection Equipment

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

DIAEnergie
Industrial Energy Management System

Power Monitoring
Rate Analytics
Demand Control

DIAView
SCADA System

Real-time Monitoring
Data Acquisition
Alarm Management

DIAMES
Manufacturing Execution System

Production Process Management
Equipment Management and Maintenance
Overall Equipment Effectiveness (OEE) Management

- Equipment Data Acquisition
- Easy Programming Software
- Software and Hardware Integrating Platform
- Seamless Software / Data Transmission

Equipment Monitoring and Data Acquisition

Features

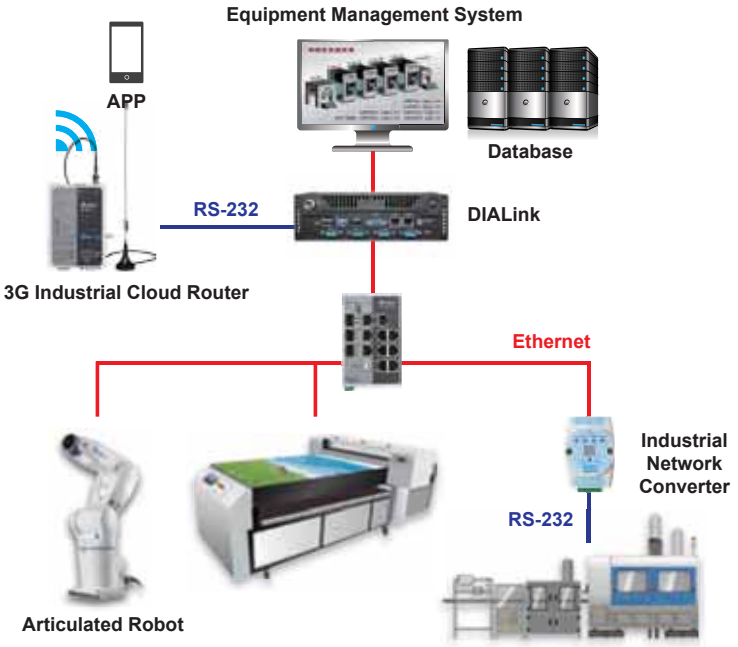
- Supports all major CNC and PLC drivers
- Equipment monitoring and data acquisition
- Data temporary storage function

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)

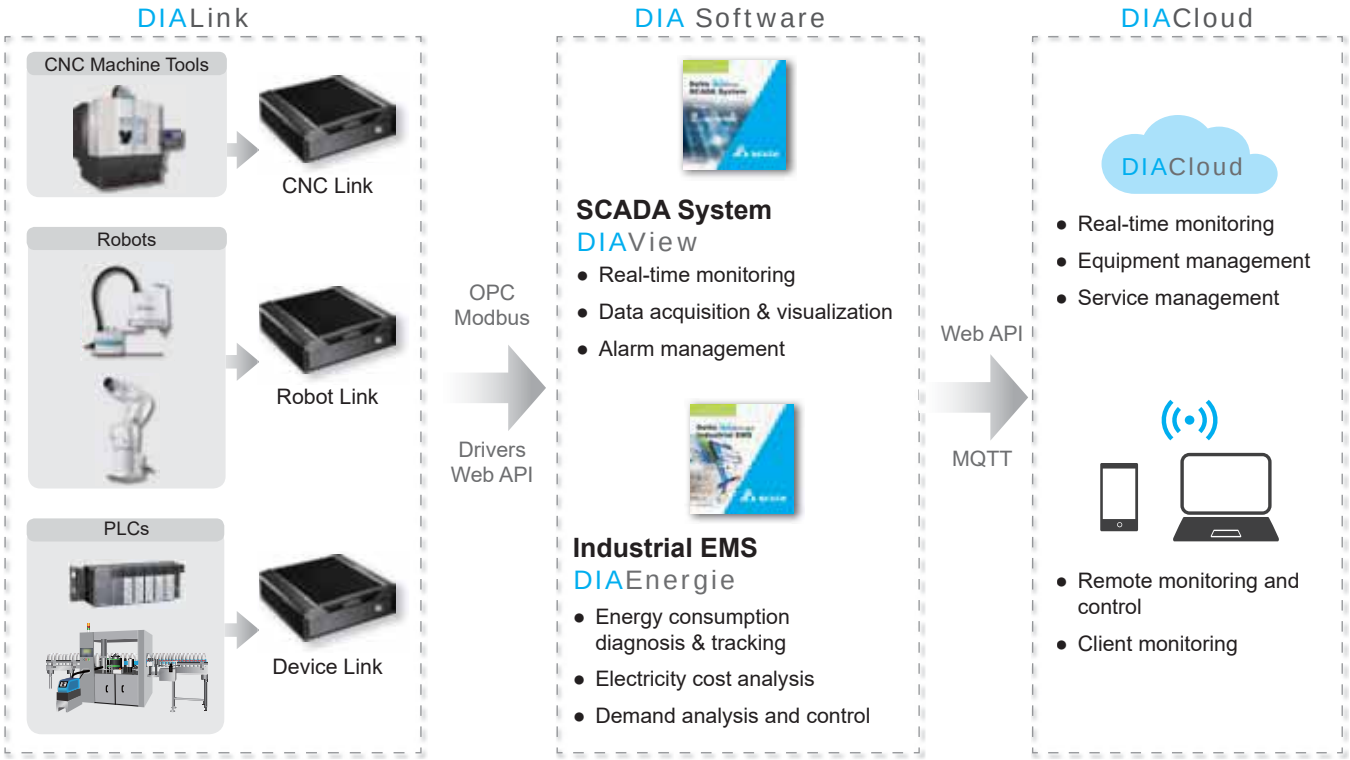
Applications

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

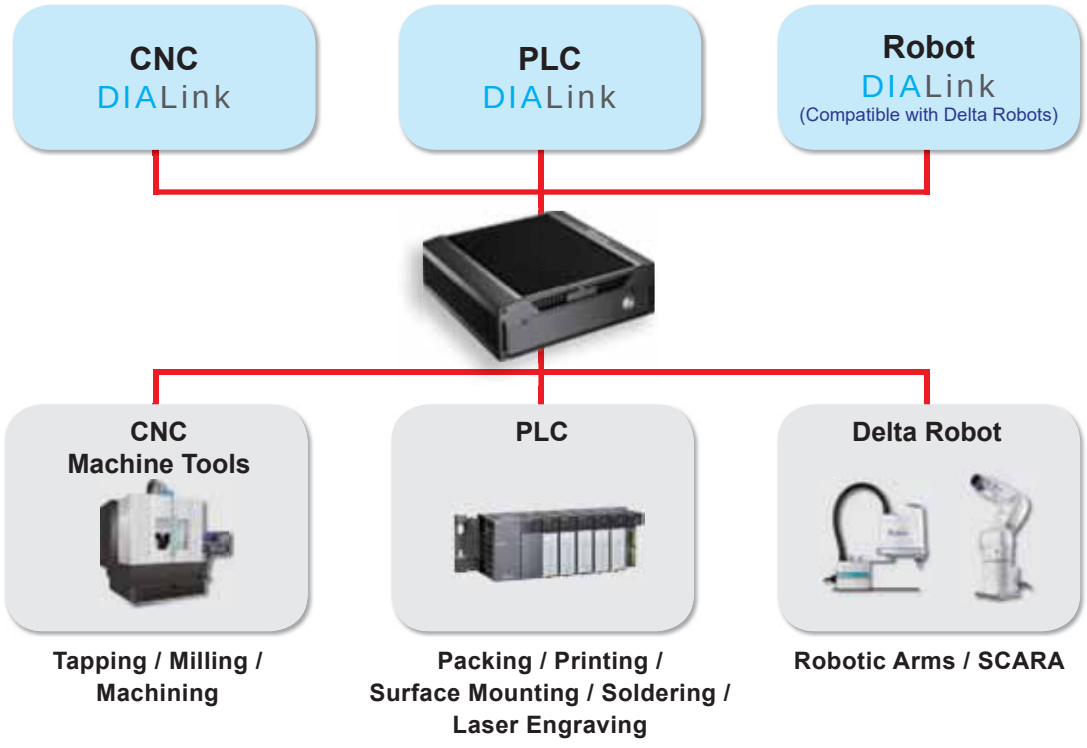


Rapid, Seamless and Secure Data Transfer

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



DIALink Models - PLC/CNC/Robot



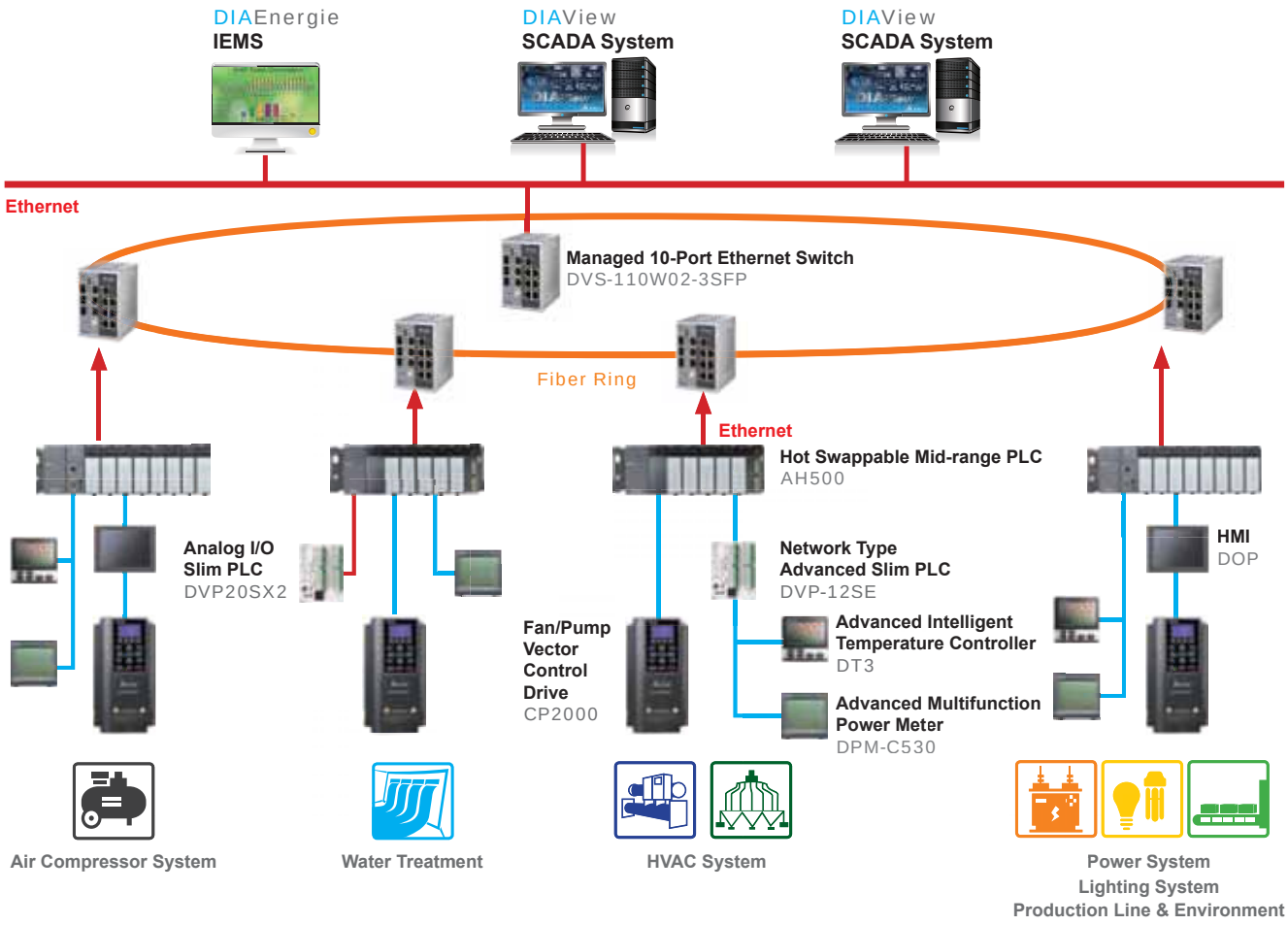
SCADA System

DIAView

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

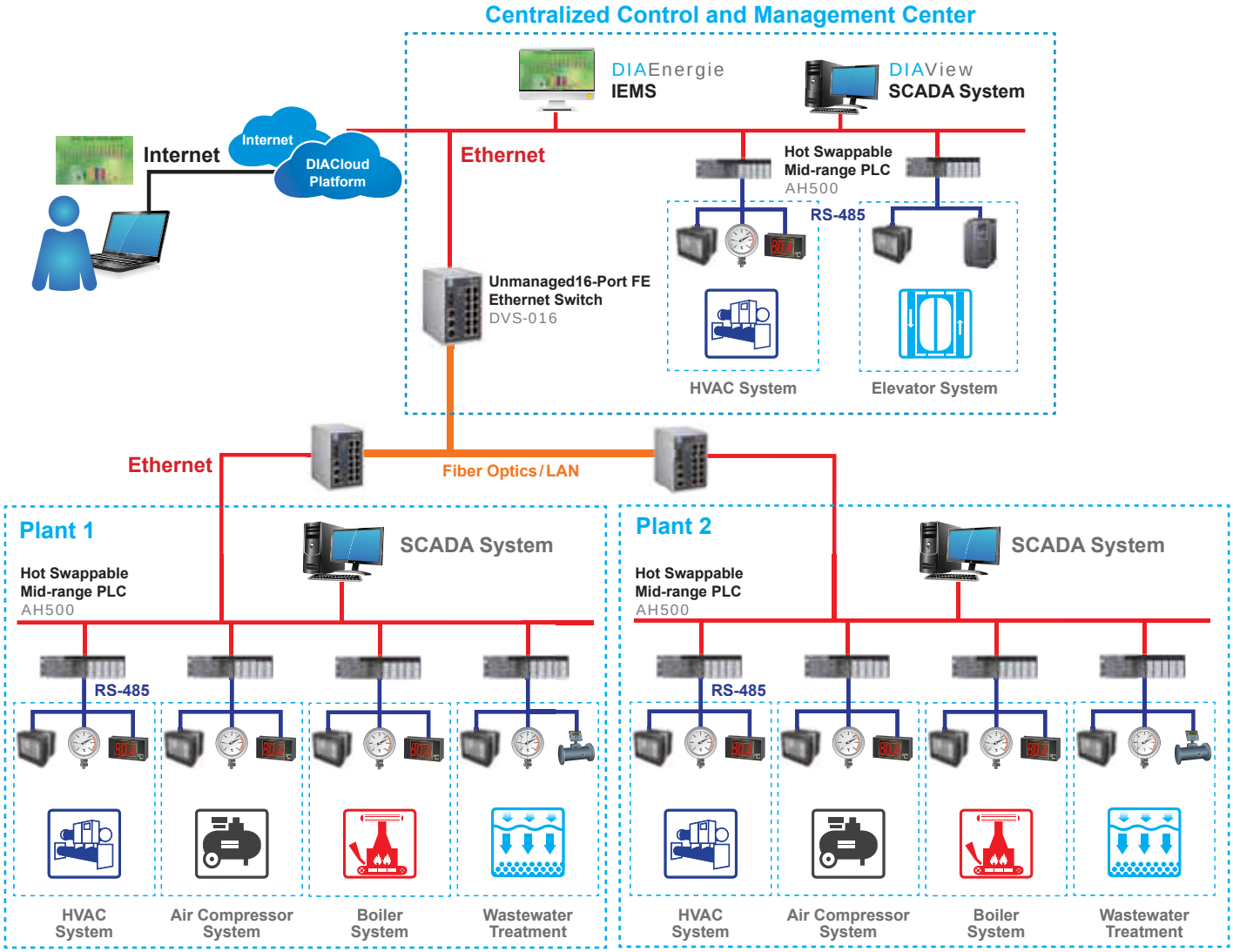
Industrial Energy Management System

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



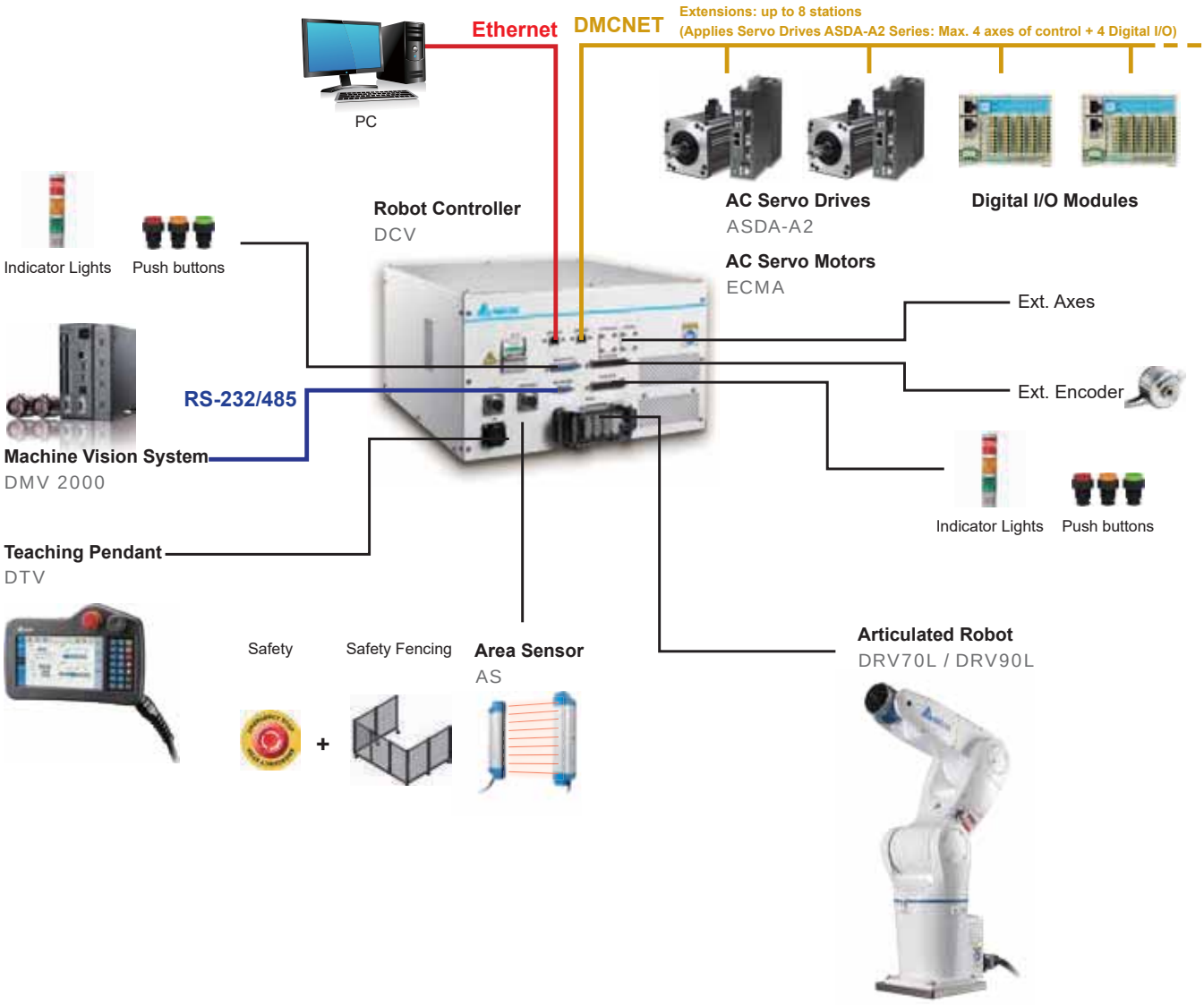
Delta Articulated Robot

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 6th 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*1		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*2		IP40 (Standard) / IP65 (Optional)	
Environment	Temperature	0°C ~ 40°C	
	Humidity	20 ~ 85%RH	
	Vibration	0.5G	
Weight		37kg	39kg
Controller Series		Robot Controller DCV Series	

*1. When carrying a payload of 1kg 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)
*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

DRAStudio 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 New /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 25ºC 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

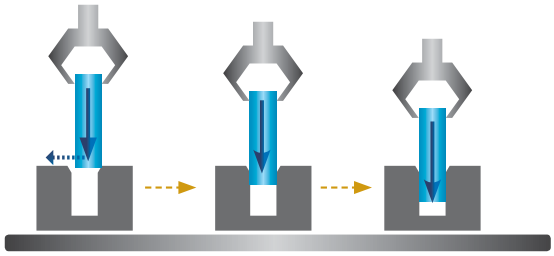
Product Inspection

Screw Driving

Soldering

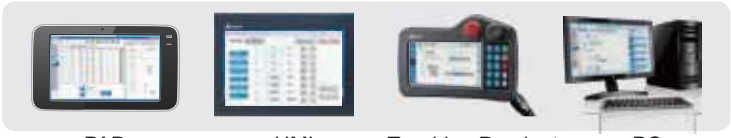
• Sensor-less Compliance Control Function

- 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



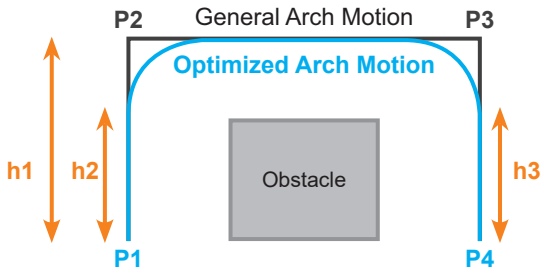
Positions are directly taught and controlled by hand, and recorded by SCARA.

• Off-line Simulation Function

- Robotic integration software with simulation modules
- Fast programming
- Shortens development time
- Pre-evaluation, saves cost
- 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

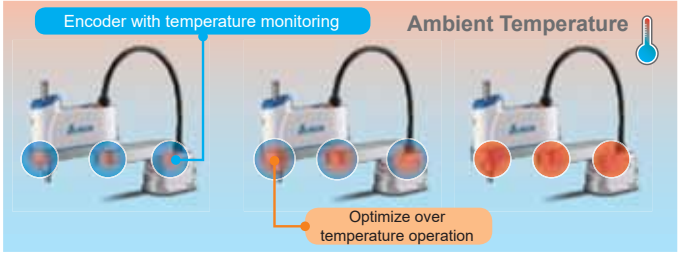
- Robot machine data monitoring and analysis
- Oversees real-time machine operation data
- On-site production information acquisition

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)

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Technology Center
(Green Building)

Taoyuan Plant 1

Tainan Plant
(Diamond-rated Green Building)

ASIA (China)

Wujiang Plant 3

Delta Electronics

Tokyo Office

Rudrapur Plant
(Green Building)

Amsterdam, Netherlands

Research Triangle Park

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

Smarter. Greener. Together.

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*We reserve the right to change the information in this catalogue without prior notice.

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