



Digitized Automation for a Changing World

# Delta Industrial Automation

2021 Full Range Catalogue



# About Delta



**Bruce Cheng**  
Founder and Honorary Chairman



**Yancey Hai**  
Chairman

## Corporate Mission

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

Delta, founded in 1971, is a global provider of power and thermal management solutions. Its mission statement, "To provide innovative, clean and energy-efficient solutions for a better tomorrow," focuses on addressing key environmental issues such as global climate change. As an energy-saving solutions provider with core competencies in power electronics and automation, Delta's business categories include Power Electronics, Automation, and Infrastructure.

Delta offers some of the most energy efficient power products in the industry, including switching power supplies with efficiency over 90%, telecom power with up to 98%, and PV inverters with up to 99.2% efficiency. We have also developed the world's first server power supply certified as 80 Plus Titanium.

Headquartered in Taiwan, we regularly invest over 8% of our annual sales revenues in R&D and have worldwide R&D facilities in China, Europe, Japan, Singapore, Thailand, and the U.S

Delta is a frequent recipient of international awards and related recognition for innovation, design, and continuous dedication to ESG. Since 2011, Delta has been listed on the DJSI World Index of Dow Jones Sustainability™ Indices for 10 consecutive years. In 2020, Delta was also recognized by CDP with two "A" leadership level ratings for its substantial contribution to climate change and water security issues and named Supplier Engagement Leader for its continuous development of a sustainable value chain

In response to the challenge of climate change, Delta will remain committed to the research and development of innovative, energy-saving products, solutions and services that contributing substantially to the sustainable development of mankind.

## 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, high variety low volume (HVLV), 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 “Digitized Automation for a Changing World”.

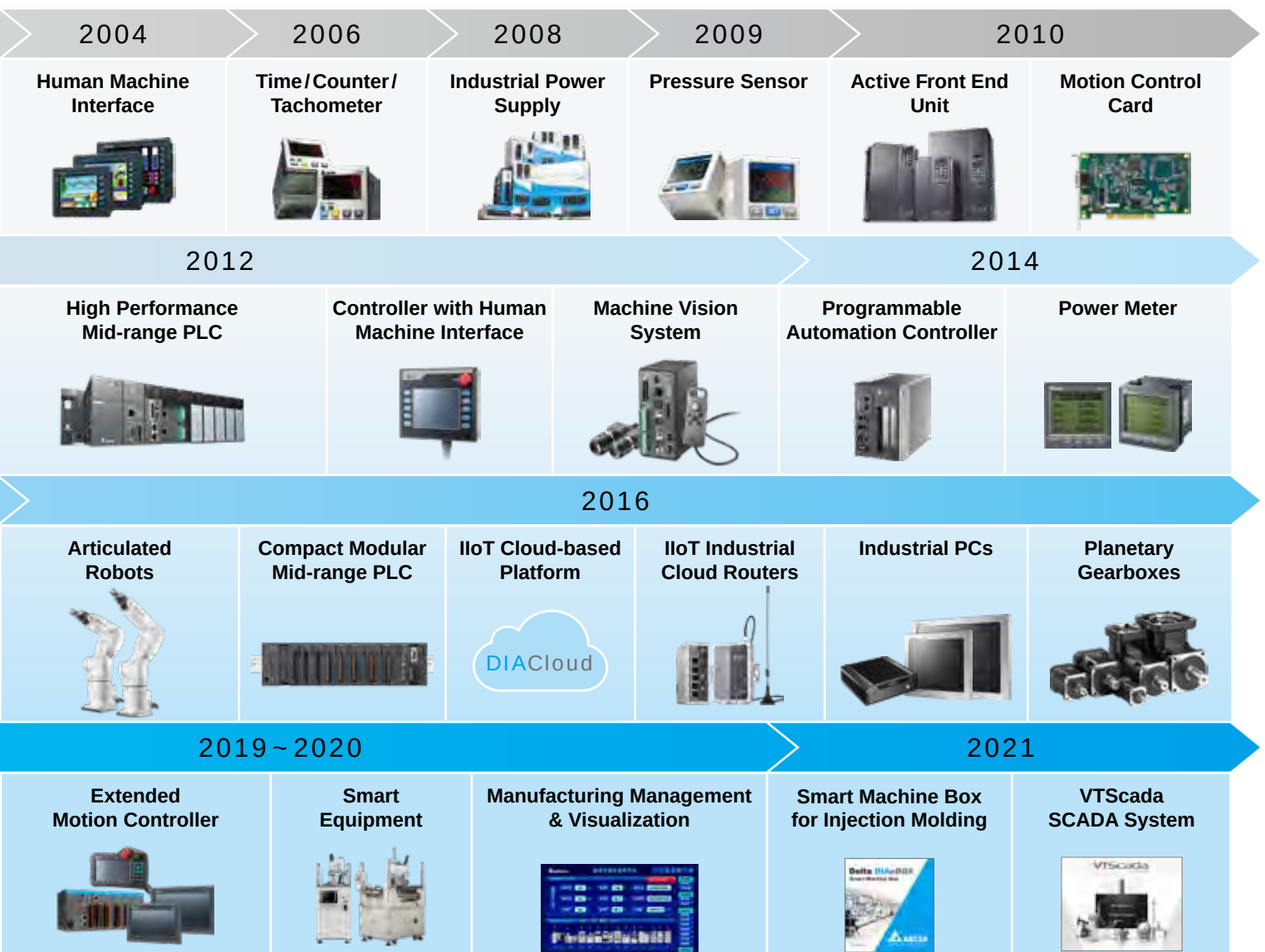
## Delta IABG Milestones

| 1995                                                                                |                                                                                     | 1999                                                                                |                                                                                      | 2003                                                                                  |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| AC Motor Drive                                                                      |                                                                                     | Small PLC                                                                           |                                                                                      | AC Servo Drive and Motor                                                              | Temperature Controller                                                                |
|  |                                                                                     |  |                                                                                      |    |  |
| 2011                                                                                |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| CNC Controller                                                                      |                                                                                     | Hybrid Energy Saving System                                                         |                                                                                      | Integrated Elevator Drive                                                             | Unmanaged Industrial Ethernet Switch                                                  |
|  |                                                                                     |  |                                                                                      |   |  |
| 2015                                                                                |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
| Smart Sensor                                                                        | Linear Stage                                                                        | Robot Controller with Servo Drive Integrated                                        | SCARA Robot                                                                          | Industrial Energy Management System                                                   | SCADA System                                                                          |
|  |  |  |  |  |  |
| 2017                                                                                |                                                                                     |                                                                                     | 2018                                                                                 |                                                                                       |                                                                                       |
| Flow Switch                                                                         | Laser Displacement                                                                  | Barcode Scanner                                                                     | Area Sensor                                                                          | Motion Controller Based on CODESYS                                                    | Servo Press                                                                           |
|  |  |  |  |  |  |



# 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, Pingjhen, Taichung, Tainan)
  - China (Shanghai, Wujiang, Dongguan)
  - India (Hosur, Krishnagiri)
  - Thailand
- Number of employees: 7,027 (R&D 1,185)



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# High-Performance Vector Control Drive New

## C2000 Plus

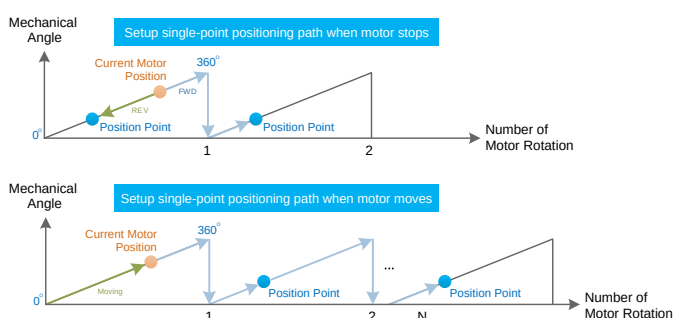
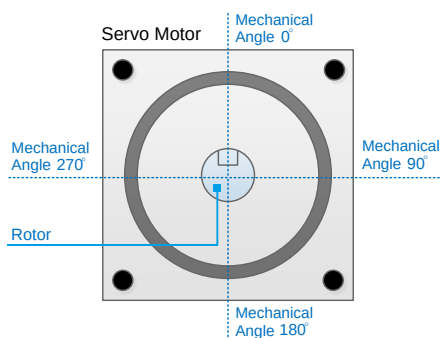
### Best Choice for General Drive Controls

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



### Single-point Positioning

Positions the motor at a specific point (within a single rotation) for precise stop upon request



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

\* The default of 575V & 690V models are light duty

### Applications

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

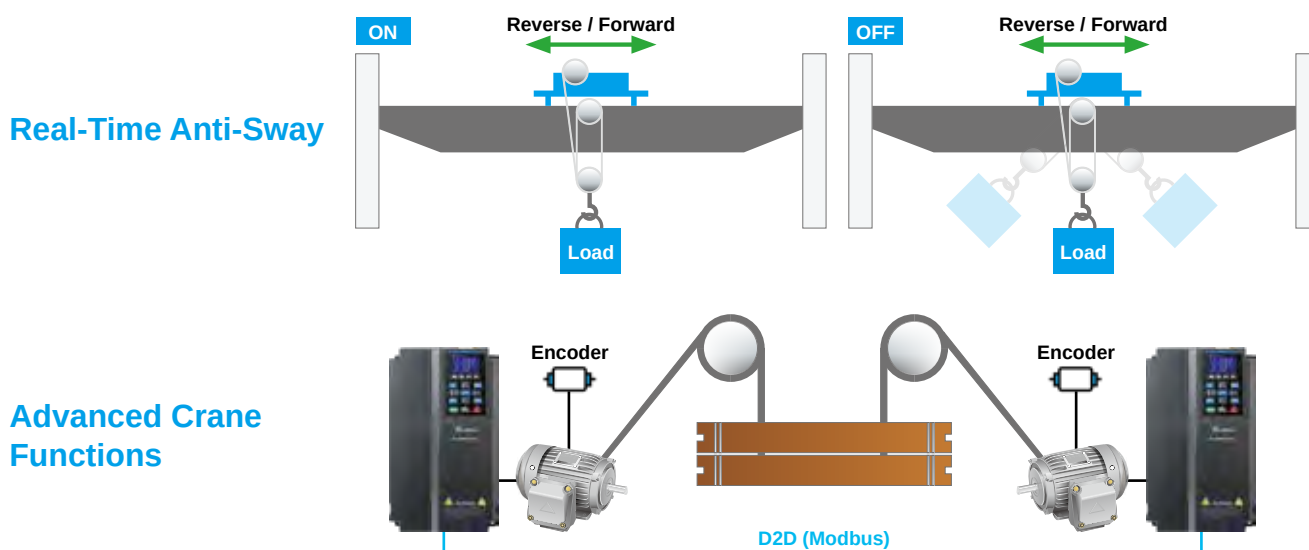


# Heavy Duty Vector Control Drive

## CH2000

### Excellent High Overload Capability for Impact Loading Applications

- Fast response to impact loads
- Super Heavy Duty (SHD) setting for high overload capability:  
150%/60 secs, 200%/3 secs
- Large starting torque: Over 200% at 0.5Hz /  
200% at 0Hz in FOC+PG mode
- Supports both induction and permanent magnet motors
- Various crane functions for high performance:  
Real-time anti-sway, anti-crab, torque proving, and shaft-synchro
- Modular design for easy installation and maintenance
- Built-in PLC with 10k steps program capacity
- Built-in braking unit (up to 75 kW)
- Built-in Modbus communication
- Optional communication cards: PROFIBUS DP, DeviceNet, Modbus TCP, EtherNet/IP, EtherCAT and CANopen



| Power Range | 0.75 ~ 3.7 kW<br>1 ~ 5 HP | 5.5 ~ 18.5 kW<br>7.5 ~ 25 HP | 22 ~ 37 kW<br>30 ~ 50 HP | 45 ~ 75 kW<br>60 ~ 100 HP | 90 ~ 220 kW<br>125 ~ 300 HP | 280 ~ 450 kW<br>375 ~ 600 HP |
|-------------|---------------------------|------------------------------|--------------------------|---------------------------|-----------------------------|------------------------------|
| CH2000      | 230 V/3-phase             |                              |                          |                           |                             |                              |
|             | 460 V/3-phase             |                              |                          |                           |                             |                              |

### Applications

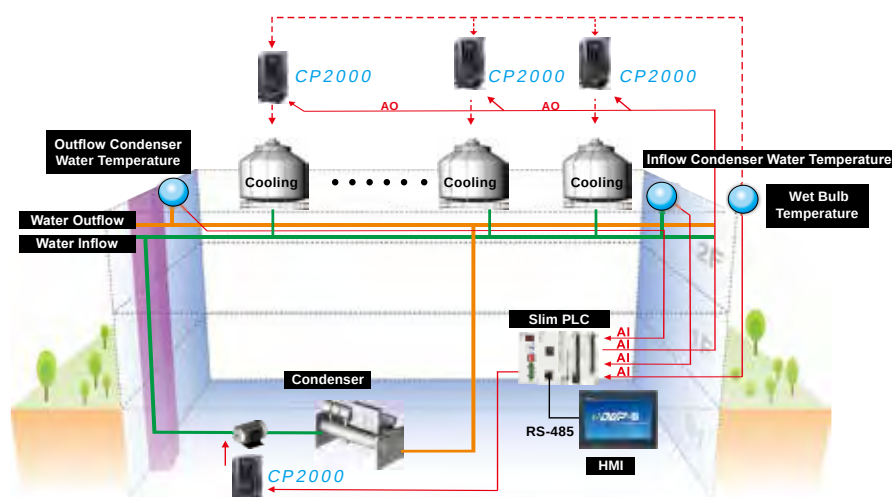
Machine tools, punching machines, cranes and hoists

# Fan / Pump Vector Control Drive

## CP2000

### Excellent for Large Power Fans and Pumps Applications

- Supports induction / PM / SynRM motors
- Built-in Modbus and BACnet MS/TP communication
- Enhanced PCB (Printed Circuit Board) conformal coating improves drive durability; compliant with Class 3C3
- Fire mode and Bypass mode: Continuous pressure output to extract smoke when a fire accident or other emergency occurs
- Fast and easy installation with quick settings for self-defined parameter groups and parameter duplication
- Various modes for fans/pumps applications: PID control, sleep/wake up functions, flying start and frequency-hopping functions
- Supports Delta's MSI motors for an IE5 energy-efficient system (please refer to p.15)
- Built-in LCD keypad for easy operation, and the TPEditor software allows user-defined home page editing
- Synchronous multi-pump control of up to 8 motors, and fixed amount / fixed time circulation control (optional relay expansion cards available)
- Built-in PLC with 10k steps program capacity and real-time clock (RTC)
- Optional communication cards: PROFIBUS DP, DeviceNet, Modbus TCP, EtherNet/IP, CANopen, PROFINET and BACnet IP



| Power Range | 0.75 ~ 3.7 kW<br>1 ~ 5 HP | 5.5 ~ 18.5 kW<br>7.5 ~ 25 HP | 22 ~ 37 kW<br>30 ~ 50 HP | 45 ~ 90 kW<br>60 ~ 125 HP | 110 ~ 185 kW<br>150 ~ 250 HP | 220 ~ 450 kW<br>300 ~ 600 HP | 560 ~ 630 kW<br>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

## CFP2000

### For HVAC and Fans/Pumps Applications

- Supports induction/PM/SynRM motors
- 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; compliant with IEC 61800-3 C2/C1
- Built-in DC reactor effectively reduces harmonic distortion; compliant with IEC 61000-3-12
- Enhanced PCB (Printed Circuit Board) conformal coating improves drive durability; compliant with Class 3C3
- 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, PROFINET and BACnet IP
- Built-in Quick Start and industry recipes to simplify installation and setup

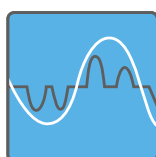


#### Built-in EMC Filter



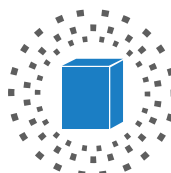
- EN61800-3 C2 & C1

#### Built-in DC Choke

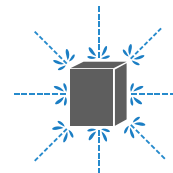


- Suppress harmonics, THDi < 48%
- EN61000-3-12

#### Protection Class



- IP41 Dust Resistant Type (standard)



- IP41 Water Resistant Type (optional)



| Power Range | 0.75 ~ 5.5 kW<br>1 ~ 7.5 HP | 11 ~ 22 kW<br>15 ~ 30 HP | 30 ~ 37 kW<br>40 ~ 50 HP | 45 ~ 55 kW<br>60 ~ 75 HP | 75 ~ 90 kW<br>100 ~ 125 HP |
|-------------|-----------------------------|--------------------------|--------------------------|--------------------------|----------------------------|
| CFP2000     | 220V/3-phase                |                          |                          |                          |                            |
|             | 380 to 480 V/3-phase        |                          |                          |                          |                            |
|             | 600 V/3-phase               |                          |                          |                          |                            |

### Applications

HVAC, fans & pumps, water supply / water treatment systems

# High Performance Compact Drive

MH300

Transmission & Tension Control Solutions



## Outstanding Drive Performance

- Overload capacity up to 150%/60 sec. and 200%/3 sec., suitable for constant torque applications
- Supports induction and PM motors with optional PG cards for highly precise speed and position control
- Provides powerful torque output at low frequency (0.5 Hz/200% without PG vector control; 0 Hz/200% with PG vector control) for stable heavy duty operation at low speed and high torque
- Built-in tension control function for constant tension
- Speed, torque and position control

## Strong System Support

- Built-in PLC with 5k steps; system programming function saves costs
- Built-in STO (SIL2/PL d) safety function and measures for sudden power outages
- All models can be connected through common DC bus
- Built-in Modbus and CANopen communication; optional communication card: EtherNet/IP, Modbus TCP, EtherCAT, DeviceNet, PROFIBUS DP, PROFINET\*
- Optional models with built-in filter
- Optional 24 V power supply card to reduce unexpected downtime

\* Please contact Delta for purchase.

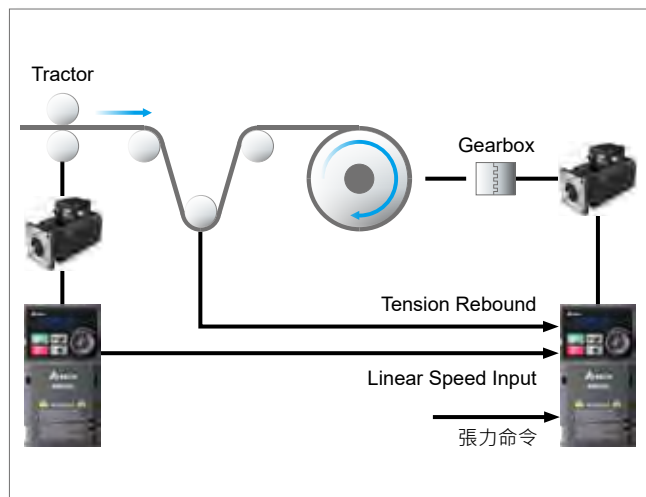
## Flexible Expansion

- Built-in two 33 kHz high-speed pulse input terminals (MI6 & 7) and one output terminal (DFM)
- Built-in two accessory card slots for PG card, I/O expansion card, communication card, or 24 V power card at the same time
- Expandable to 3 DI and 3 DO, including 6 ports in total
- Expandable to 2 or 3 relays

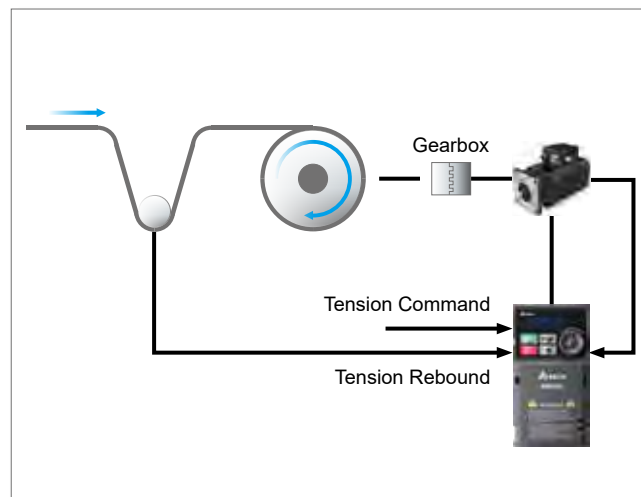
## Tension Control

- Built-in roll diameter calculation by linear speed, material thickness, and distance meter
- Two PID parameters: Linearly adjustable to control tension at startup, of small/large rolls, and at high/low linear speed
- Tension taper calculation: Automatically adjusts tension per the winding roll diameter to avoid wrinkles or deformation
- Friction and inertia compensation for torque control: Automatically compensates friction and inertia during winding/unwinding for constant tension
- Automatic roll change merely using external signal without machine shutdown

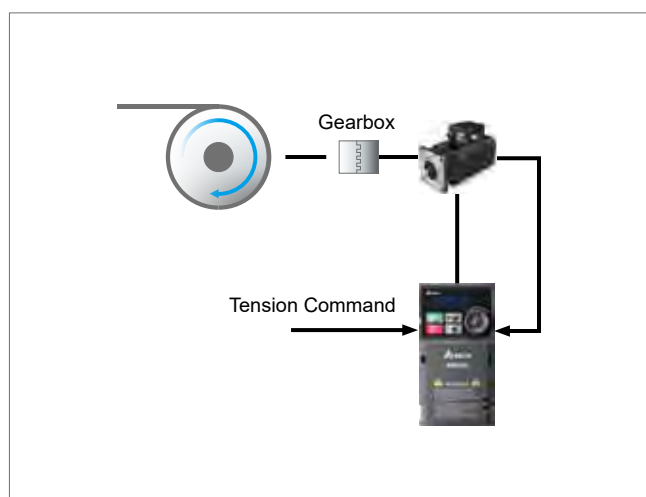
• Closed-loop tension, speed control



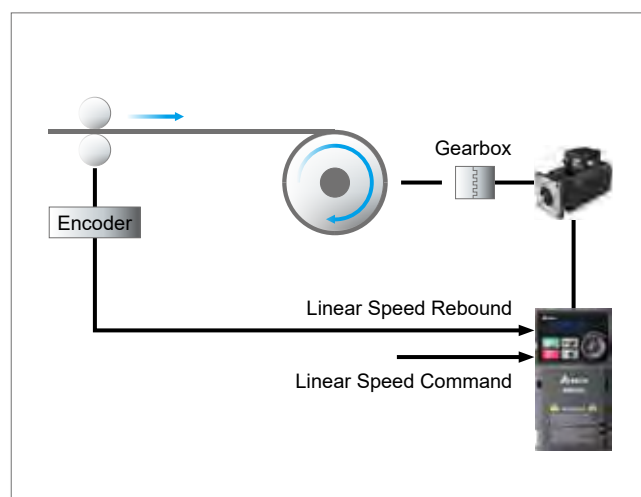
• Closed-loop tension, torque control



• Open-loop tension, torque control



• Constant linear speed control



| Power Range | 0.2 kW<br>0.25 HP | 0.4 kW<br>0.5 HP | 0.75 kW<br>1 HP | 1.5 kW<br>2 HP | 2.2 kW<br>3 HP | 3 kW<br>4 HP | 3.7/4 kW<br>5 HP | 5.5 kW<br>7.5 HP | 7.5 kW<br>10 HP | 11 kW<br>15 HP | 15 kW<br>20 HP | 18.5 kW<br>25 HP | 22 kW<br>30 HP | 30 kW<br>40 HP | 37 kW<br>50 HP | 45 kW<br>60 HP | 55 kW<br>75 HP | 75 kW<br>100 HP |
|-------------|-------------------|------------------|-----------------|----------------|----------------|--------------|------------------|------------------|-----------------|----------------|----------------|------------------|----------------|----------------|----------------|----------------|----------------|-----------------|
| MH300       | 115 V/1-phase     |                  |                 |                |                |              |                  |                  |                 |                |                |                  |                |                |                |                |                |                 |
|             | 230 V/1-phase     |                  |                 |                |                |              |                  |                  |                 |                |                |                  |                |                |                |                |                |                 |
|             | 230 V/3-phase     |                  |                 |                |                |              |                  |                  |                 |                |                |                  |                |                |                |                |                |                 |
|             | 460 V/3-phase     |                  |                 |                |                |              |                  |                  |                 |                |                |                  |                |                |                |                |                |                 |

## Applications

Machine tools, textile machinery, woodworking machinery, rubber and plastic machinery, winding/unwinding applications

# Compact Drive

## MS300

### Built-in PLC, Various Communication Protocols and Wide Power Range

- Overload capacity up to 150%/60 secs and 200%/3 secs for various constant torque loads
- Supports IM/IPM/SPM motors
- Supports Delta's MSI motors for an IE5 energy-efficient system (please refer to p.15)
- High torque at low speed (up to 200% at 0.5Hz with vector control) for stable operation of heavy-duty equipment
- Integrated PLC function (2k steps)
- Highly safe and reliable with Safe Torque Off (STO) SIL2/PL d
- Built-in EMC filter (optional)
- Pull-out keypad
- 24 V power supply card (optional) for unexpected shutdowns
- USB charging on PC is available for parameter setting and update (no need for power supply from main circuit)
- Built-in Modbus and optional communication cards: CANopen, DeviceNet, EtherNet/IP, EtherCAT, PROFIBUS DP, Modbus TCP, and PROFITNET\*
- High-speed model up to 1,500 Hz

\* Under development



### Optimized Space Utilization

- Compact design improves space utilization
- Seamless and parallel installation for flexible deployment and high efficiency



| Power Range |                        | 0.2 kW<br>0.25 HP | 0.4 kW<br>0.5 HP | 0.75 kW<br>1 HP | 1.5 kW<br>2 HP | 2.2 kW<br>3 HP | 3 kW<br>4 HP | 3.7 kW<br>5 HP | 5.5 kW<br>7.5 HP | 7.5 kW<br>10 HP | 11 kW<br>15 HP | 15 kW<br>20 HP | 18.5 kW<br>25 HP | 22 kW<br>30 HP |
|-------------|------------------------|-------------------|------------------|-----------------|----------------|----------------|--------------|----------------|------------------|-----------------|----------------|----------------|------------------|----------------|
| MS300       | Standard<br>0~599Hz    | 115 V/1-phase     |                  |                 |                |                |              |                |                  |                 |                |                |                  |                |
|             |                        | 230 V/1-phase     |                  |                 |                |                |              |                |                  |                 |                |                |                  |                |
|             |                        | 230 V/3-phase     |                  |                 |                |                |              |                |                  |                 |                |                |                  |                |
|             |                        | 460 V/3-phase     |                  |                 |                |                | New          |                |                  |                 |                |                |                  |                |
|             | High-speed<br>0~1500Hz |                   |                  |                 | 230 V/1-phase  |                |              |                |                  |                 |                |                |                  |                |
|             |                        |                   |                  |                 | 230 V/3-phase  |                |              |                |                  |                 |                |                |                  |                |
|             |                        |                   |                  |                 | 460 V/3-phase  |                |              |                |                  |                 |                |                |                  |                |

### Applications

Machine tools, air compressors, textile machines, woodworking machines, packaging machines, electronics, fans, pumps

# Basic Compact Drive

## ME300

### Compact and Low Power Range for Basic Applications

- Overload capacity up to 150%/60 secs and 200%/3 secs for various constant torque loads
- Supports IM/IPM/SPM motors
- High torque of 200% at low speed 3 Hz
- Built-in braking chopper
- Pulse/PWM input as frequency command
- Built-in EMC filter (optional) and Safe Torque Off (STO) SIL2/PL d (optional)
- Operating temperature: Max. 60°C/50°C at rated current
- Built-in sleep mode, water leak inspection, and multi-pump (in parallel) alternative operation function
- PCB with 100% conformal coating; compliant with IEC 60721-3-3 Class 3C3
- Built-in Modbus protocol
- Macro function for quick parameter setting for pumps, conveyor systems and more



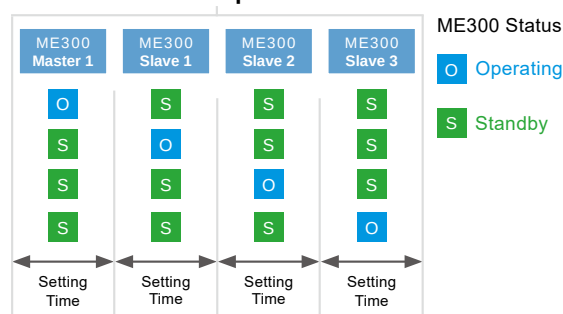
### Pumping Functions

- Sleep mode and water leakage detection: Enters/Maintains sleep status at constant voltage to avoid frequent start and stop (parameter configuration required)
- Lack-of-water detection: Decelerates and stops operation for no water supply to avoid pump damage due to dry-run operation

### Multi-pump Control

- Alternate operation: Multiple pumps alternately operate at regular intervals (hourly, daily, or weekly) for easy maintenance and pump lifespan extension
- Constant pressure mode: Maintains constant water output pressure and adjusts the number of pumps per requirements for water supply and energy efficiency

#### Alternate Operation



#### Constant Pressure Mode



| Power Range |                        | 0.1 kW<br>0.125 HP | 0.2 kW<br>0.25 HP | 0.4 kW<br>0.5 HP | 0.75 kW<br>1 HP | 1.5 kW<br>2 HP | 2.2 kW<br>3 HP | 3 kW<br>4 HP | 3.7 kW<br>5 HP | 5.5 kW<br>7.5 HP | 7.5 kW<br>10 HP |
|-------------|------------------------|--------------------|-------------------|------------------|-----------------|----------------|----------------|--------------|----------------|------------------|-----------------|
| ME300       | Standard<br>0 ~ 599 Hz | 115V/1-phase       |                   |                  |                 |                |                |              |                |                  |                 |
|             |                        | 230V/1-phase       |                   |                  |                 |                |                |              |                |                  |                 |
|             |                        | 230V/3-phase       |                   |                  |                 |                |                |              |                |                  |                 |
|             |                        | 460V/3-phase       |                   |                  |                 |                |                |              | New            |                  |                 |

### Applications

Logistics, food packaging machines, woodworking machines, packaging machines, fans & pumps, electronics, conveyance equipment



# High Protection Compact Drive (IP66 Model)

## MS300 IP66/NEMA 4X

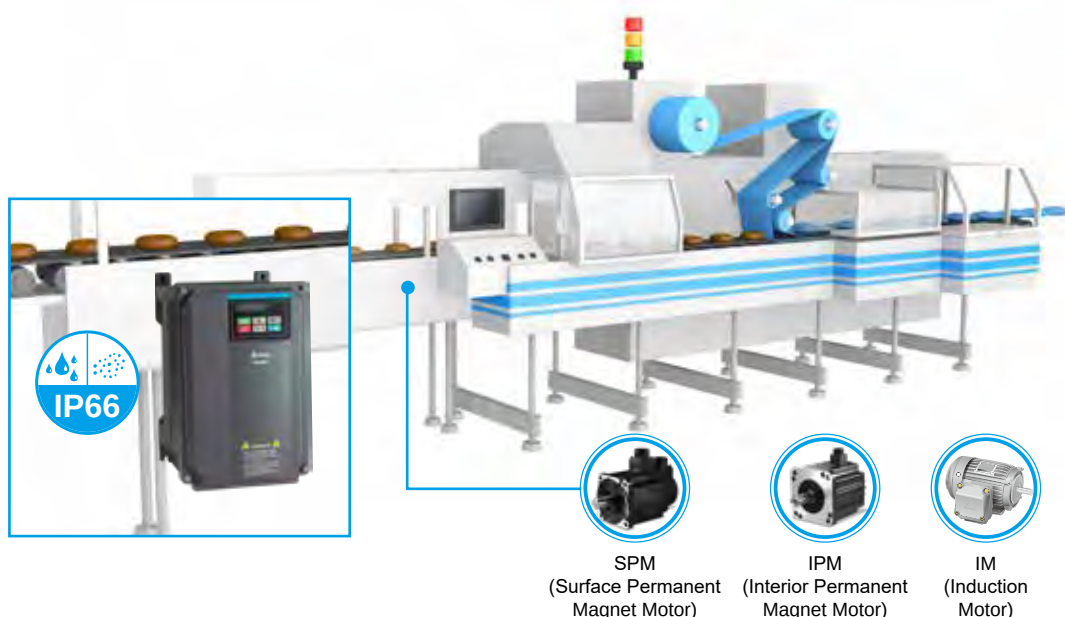
### Durable Operation under Harsh Conditions

- Protection against humidity and dust in industrial environments
- Main switch (optional) for fast installation, no need for an electric control cabinet to save cost
- Built-in braking chopper
- Integrated PLC function (2k steps)
- Highly safe and reliable with Safe Torque Off (STO) SIL2/PL d
- Built-in EMC filter (optional)
- Standard keypad
- Built-in Modbus; optional communication cards: CANopen, DeviceNet, EtherNet/IP, EtherCAT, PROFIBUS DP, Modbus TCP, PROFINET\* for multiple applications and communication needs

\* Under development



### IP66/NEMA 4X Rated Protection Against Water and Dust



SPM  
(Surface Permanent  
Magnet Motor)

IPM  
(Interior Permanent  
Magnet Motor)

IM  
(Induction  
Motor)



| Power Range |              | 0.1 kW<br>0.125 HP | 0.2 kW<br>0.25 HP | 0.4 kW<br>0.5 HP | 0.75 kW<br>1 HP | 1.5 kW<br>2 HP | 2.2 kW<br>3 HP | 3.7 kW<br>5 HP | 5.5 kW<br>7.5 HP | 7.5 kW<br>10 HP | 11 kW<br>15 HP | 15 kW<br>20 HP | 18.5 kW<br>25 HP | 22 kW<br>30 HP |
|-------------|--------------|--------------------|-------------------|------------------|-----------------|----------------|----------------|----------------|------------------|-----------------|----------------|----------------|------------------|----------------|
| MS300       | IP66/NEMA 4X | 230 V/1-phase      |                   |                  |                 |                |                |                |                  |                 |                |                |                  |                |
|             |              | 230 V/3-phase      |                   |                  |                 |                |                |                |                  |                 |                |                |                  |                |
|             |              | 460 V/3-phase      |                   |                  |                 |                |                |                |                  |                 |                |                |                  |                |

### Applications

For humid or dusty environments in various industries such as food & beverages, pumps and more



## Sensorless Vector Control Compact Drive VFD-E

- Built-in EMC filter for 230 V single-phase and 460 V three-phase models to effectively minimize electromagnetic interference
- Standard Modbus protocol via RS-485 and optional fieldbus cards (including PROFIBUS, DeviceNet and CANopen)
- Optional extension modules for more flexible applications, such as PG (Encoder) card , I/O card and Relay card
- Built-in PLC with 500 steps program capacity



## Sensorless Vector Control Compact Drive VFD-EL

- Built-in EMI filter for 230 V single-phase and 460 V three-phase models to effectively minimize the electromagnetic interference
- Intensified air channel, built-in constant pump pressure control and PID control
- Supports side-by-side installation and DIN-rail mounting



## Sensorless Vector Control Compact Drive VFD-EL-W

- Built-in RS-485 (Modbus), baud rate up to 38,400 bps
- Built-in constant pump pressure control and PID control
- 150% / 60secs. overload capability



\* Supports VFD-E and VFD-EL  
\*\* Only for VFD-E

| Power Range | 0.2 kW<br>0.25 HP | 0.4 kW<br>0.5 HP | 0.75 kW<br>1 HP | 1.5 kW<br>2 HP | 2.2 kW<br>3 HP | 3.7 kW<br>5 HP | 5.5 kW<br>7.5 HP | 7.5 kW<br>10 HP | 11 kW<br>15 HP | 15 kW<br>20 HP | 18.5 kW<br>25 HP | 22 kW<br>30 HP |
|-------------|-------------------|------------------|-----------------|----------------|----------------|----------------|------------------|-----------------|----------------|----------------|------------------|----------------|
| VFD-E       | 115 V / 1-phase   |                  |                 |                |                |                |                  |                 |                |                |                  |                |
|             | 230 V / 1-phase   |                  |                 |                |                |                |                  |                 |                |                |                  |                |
|             | 230 V / 3-phase   |                  |                 |                |                |                |                  |                 |                |                |                  |                |
|             | 460 V / 3-phase   |                  |                 |                |                |                |                  |                 |                |                |                  |                |
| VFD-EL      | 115 V / 1-phase   |                  |                 |                |                |                |                  |                 |                |                |                  |                |
|             | 230 V / 1-phase   |                  |                 |                |                |                |                  |                 |                |                |                  |                |
|             | 230 V / 3-phase   |                  |                 |                |                |                |                  |                 |                |                |                  |                |
|             | 460 V / 3-phase   |                  |                 |                |                |                |                  |                 |                |                |                  |                |
| VFD-EL-W    | 230 V / 1-phase   |                  |                 |                |                |                |                  |                 |                |                |                  |                |
|             | 460 V / 3-phase   |                  |                 |                |                | 4.0 kW         |                  |                 |                |                |                  |                |

### Applications

Conveyors, fans, pumps, woodworking machines, food packaging machines, textile machines

# Integrated Elevator Drive <sup>New</sup>

## IED-S

### Integrated Drive and Control Saves Space

#### Compact Design

- Suitable for limited installation spaces
- Modular design of fans and capacitors for easy replacement and maintenance
- Built-in 5-digit 7-segment LED display

#### Versatile I/O Terminals

- 25 digital input ports
- 8 relay output ports
- 5 high-voltage input ports

#### Encoders

- Incremental
- Sin/Cos
- SICK HIPERFACE
- HEIDENHAIN EnDat 2.1

#### Control

- Highly efficient group control of up to 8 elevators without additional control cards
- Various operation modes: Demo, attendant service, and time-based
- Single/double-door elevator applications
- Max. 63 floors

#### Efficiency

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

#### Auto-adjustment

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



#### Energy Saving

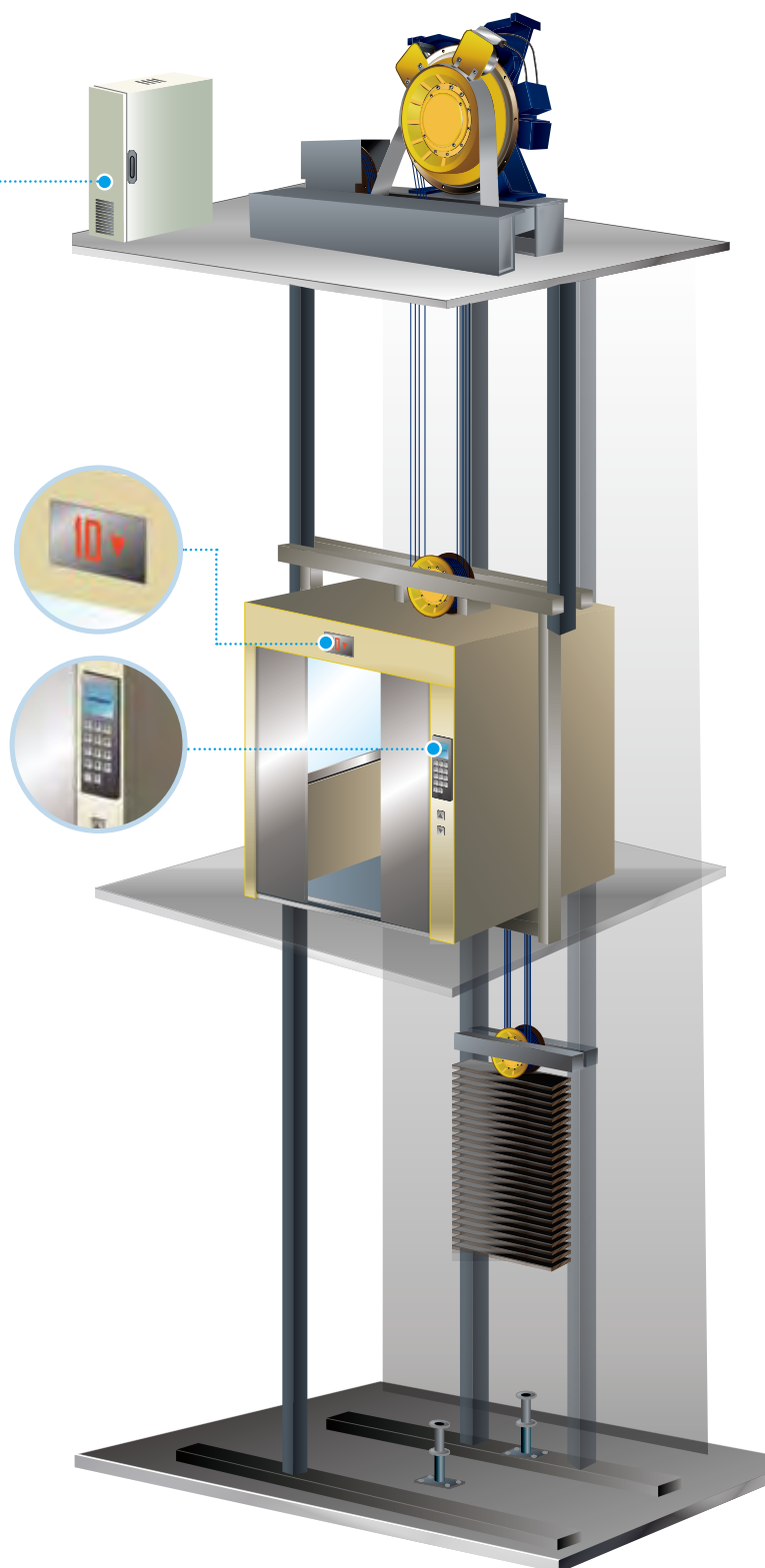
- Power regeneration function available when installed with Delta's Active Front End (AFE2000 Series) or Power Regenerative Unit (REG2000 Series)
- Lighting and air circulation scheduling for elevator cars
- Standby mode to save energy

#### Certifications Compliant

- CE, UL certifications
- Supports Safe Torque Off (STO) SIL2
- Safety circuit certificate for electronic components
- Certificate for self-monitoring subsystem
- Compliance with CN elevator verification, meets EN81-20/50

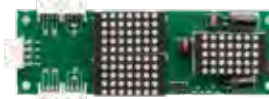
#### Drive

- Supports induction and permanent-magnet motors
- Emergency power supply (EPS) mode
- Supports versatile encoder types

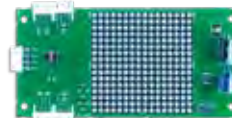


## Hall Call / Car Call Display Boards

- EA-FM02MVN02



- EA-FM02MBT01



## Car top Board

- EA-CT01



## Command Board

- EA-CP16



## (Optional) External Digital Keypad

- KPC-CC01



- Control settings
- Drive settings
- Parameter duplication

| Power Range | 5.5 kW<br>7.5 HP | 7.5 kW<br>10 HP | 11 kW<br>15 HP | 15 kW<br>20 HP | 18.5 kW<br>25 HP | 22 kW<br>30 HP | 30 kW<br>40 HP | 37 kW<br>50 HP | 45 kW<br>60 HP | 55 kW<br>75 HP | 75 kW<br>100 HP |
|-------------|------------------|-----------------|----------------|----------------|------------------|----------------|----------------|----------------|----------------|----------------|-----------------|
| IED-S       | 230 V/3-phase    |                 |                |                |                  |                |                |                |                |                |                 |
|             | 460 V/3-phase    |                 |                |                |                  |                |                |                |                |                |                 |



## Applications

Commercial, residential building, villa and freight elevators, as well as MR and MRL elevators

# Elevator Drive

## VFD-ED

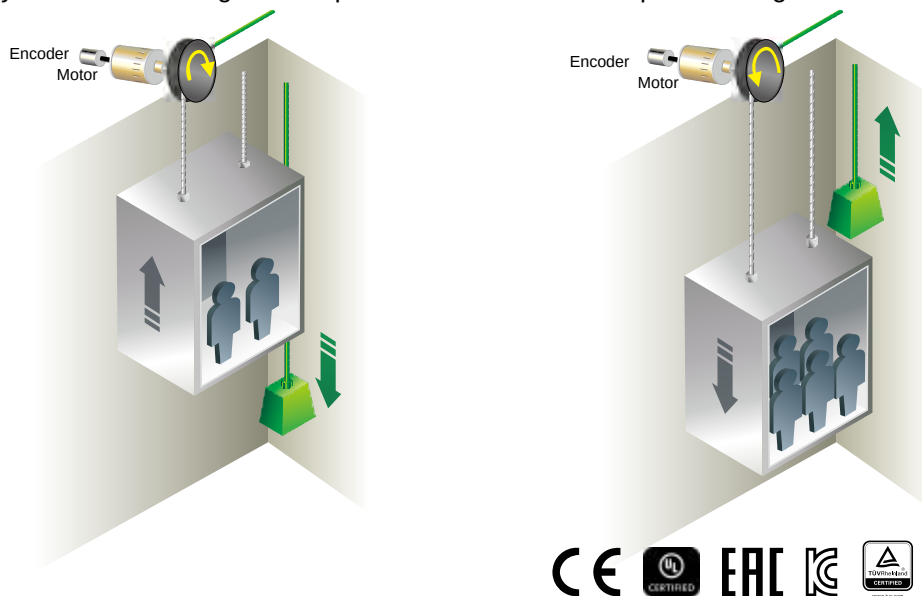
### Excellent Time Sequence Control for Smooth Rides

- Supports induction and permanent magnet motors
- Precise control of S curve performs smooth start and stop for a comfortable ride
- Optional PG feedback cards (Incremental/SinCos/SICK HIPERFACE/HEIDENHAIN)
- Highly precise field-oriented vector control
- Automatic torque compensation function to prevent elevators from slipping or vibrating
- Emergency operation enabled with UPS or battery when a power outage occurs
- Wall-mount or embedded installation
- Built-in LED digital keypad
- Built-in plentiful IO terminals for various elevator applications
- 1 CANopen and 2 RS-485 (Modbus)



### Emergency Operation

- Supports single phase 230 V<sub>AC</sub> uninterrupted power system (UPS)
- Automatically determines the light load operation direction when a power outage occurs



CE UL CERTIFIED EAC KC TÜV SÜD (EN81-1+A3, EN81-20)

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

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

### Applications

Commercial, residential building, villa and freight elevators, as well as MR and MRL elevators

# Door Control Drive

## VFD-DD

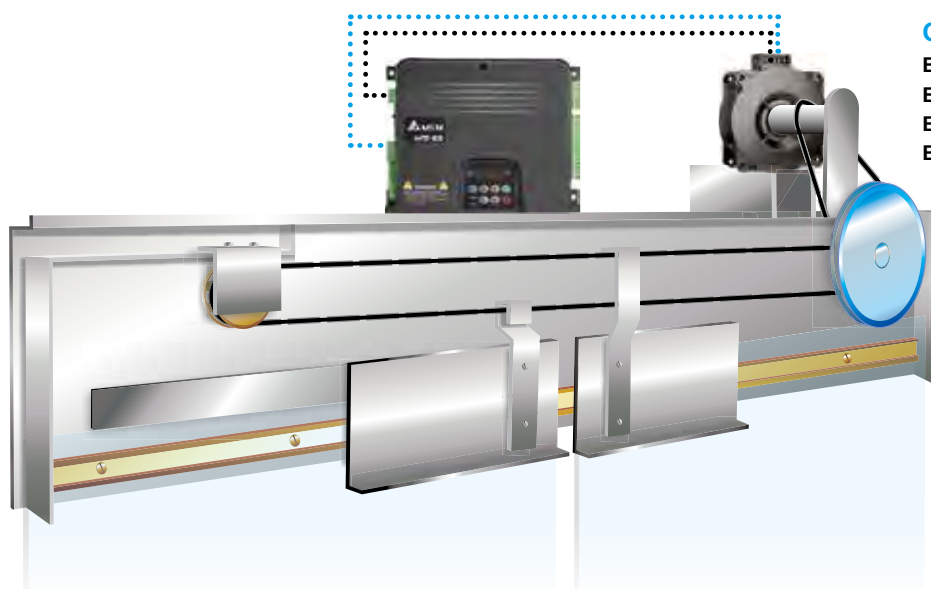
### Door Control Solution

- Compact design
- Simplified elevator door control system supports various motors
- Easy installation with dedicated inputs/outputs
- Various protection functions ensure passenger safety
- Auto-tuning of door width
- Auto-positioning when power is applied
- Smooth door re-open/re-close curve
- Supports elevator door obstruction detection
- Demo mode



### Structure

- **Distance Control Mode:** Precisely controls the door's opening and closing position via encoder feedback signal for encoder applications
- **Speed Control Mode:** Executes door opening and closing via 2~4 limit sensors or switch sensors for induction motor applications
- **Multi-speed Control Mode:** Uses Delta's PLC as a host controller to control door opening and closing in multi-step speeds for PLC applications



#### Optional Motors

ECMD-B91207MN  
ECMD-B91207MS  
ECMD-B91608MS  
ECMD-B81610MS



| Power Range | 0.1 kW<br>0.125 HP | 0.2 kW<br>0.25 HP | 0.4 kW<br>0.5 HP |
|-------------|--------------------|-------------------|------------------|
| VFD-DD      | 115V/1-phase       |                   |                  |
|             |                    | 230V/1-phase      |                  |

### Applications

Elevator door, automatic door system, gate of injection machine

# Hybrid Injection Molding Solution New

High Energy Efficiency, Precise Control and User-friendly Design for Optimized Injection Molding Processes

- Perfect combination of industrial know-how and advanced key components for high performance and energy-saving injection molding solutions:
  - **Hybrid Energy Saving System HES-C:**  
Precise pressure and flow control for each process to ensure highly accurate injection for stable and consistent products and quality
  - **Synchronous Torque Motor MST:**  
Replaces hydraulic motors or gearboxes; simultaneously performs mold opening and material feeding to shorten production cycle and increase productivity
  - **Control Unit for Injection Molding Machine CSJ:**  
Connects all the components in the system to reduce system complexity and achieves seamless integration
- Up to 75% energy-saving for holding and cooling processes
- Compatible with dedicated production monitoring and management software (DIAeBOX) for real-time production data collection, handling and monitoring



## Delta Hybrid Injection Molding Solution





## Hybrid Energy Saving System HES-C

- Significant energy efficiency
- High overload capability
- Three sets of PID pressure control
- S-Curve for pressure/smooth flow control
- Field-weakening control of motor
- Easy adjustment
- Multiple protections
- Multi-pump control for confluence/flow diversion
- User-friendly software for machine commissioning
- Diagnoses of component health



| Flow Range (L/min) | 63    | 80 | 100 | 125 | 160 | 200 | 250 | 320 |
|--------------------|-------|----|-----|-----|-----|-----|-----|-----|
| HES-C              | 230 V |    |     |     |     |     |     |     |
|                    | 460 V |    |     |     |     |     |     |     |

## Synchronous Torque Motor MST

- High torque at low speed and stable operation: Precise control of feeding position
- Direct drive, no energy loss during transmission
- Fast acceleration/deceleration response and zero-speed holding function to avoid screw rotation during injection
- High efficiency, low noise
- Long service life, easy maintenance (No oil lines, belts, or gearboxes)
- Direct oil cooling in oil tanks, no need to install additional water tanks
- Shortens molding cycle and improves production efficiency



| Power Range (kW) | 15    | 22 | 30 | 55 | 75 | 132 | 160 | 220 | 280 |
|------------------|-------|----|----|----|----|-----|-----|-----|-----|
| MST              | 460 V |    |    |    |    |     |     |     |     |

## Control Unit for Injection Molding Machine CSJ

- 12" full-color display for operation via both keyboard and touchscreen
- Dedicated PLC programming for secondary development
- Adopts Delta's superior drive technology, tuning capability, and monitoring interface
- Supports CANopen and Modbus for connection to other equipment
- Supports high-speed pulses for servo rotary tables
- Integrated as an all-in-one injection molding machine solution with one-stop-shop service



|                           |              |                               |                          |
|---------------------------|--------------|-------------------------------|--------------------------|
| Digital Input/Output      | 32/32, 40/40 | Analog Input                  | 4 (0 ~ 10 V)             |
| Relay Output              | 12           | Analog Output                 | 4 (-10 ~ 10 V/0 ~ 10 V)  |
| Temperature Feedback      | 8            | High-speed Pulse Input/Output | 2/2                      |
| Temperature Sensing Cable | K, J, E      | Communication                 | RS485, CANopen, Ethernet |



# Motor-Mounted Pump Drive New

MPD

## Highly Efficient Pumping Solution

- Adopts an efficient IE5 motor for energy efficiency, compliant with EN61800-9-2 IES2
- IP55-rated protection level
- Built-in PLC with 14k steps program capacity and RTC for flexible operation
- Suitable for water pumps requiring constant pressure and variable frequency; built-in multi-pump control of up to 8 pumps
- Smart pumping: Multi-pump redundancy, flow estimation, cavitation protection
- Pumping protection: Dry pump, high/low water pressure
- Optional EMI for EN61800-3 C1 compliance
- Delta's optional dedicated pumping application with bluetooth connection for monitoring and adjustment



## Structure



|             |                        |                         |
|-------------|------------------------|-------------------------|
| Power Range | 0.75~7.5 kW<br>1~10 HP | 11M~22 kW<br>15~30 HP   |
| MPD         | 460V/3-phase           | Coming soon in Q3, 2021 |

## Applications

Industrial/commercial water supply system, water supply systems in residential areas, water pumps for pressurization and transportation



# Active Magnetic Bearing Drive New

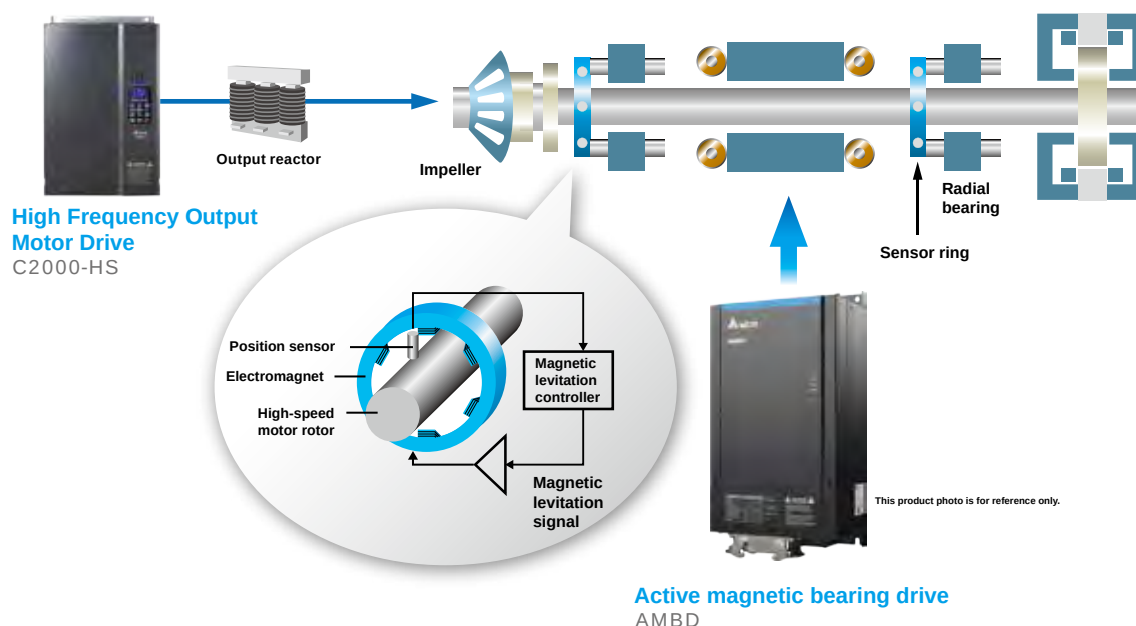
## AMBD

### Excellent Functions for High-Speed Operation

- Wide DC voltage input with DC terminals
- Built-in DEB function to recover DC bus with system inertia and avoid mechanical damages due to mains power failure, no need for any UPS
- Independent front and rear radial control to reduce bearing shaking and improve suspension control accuracy
- Independent axial position control to detect the elongation of a shaft to avoid collisions due to high shaft temperature
- High control accuracy meets ISO standards; the bearing sways less than 30% of the maximum motion range
- Temperature protection with 6 motors and magnetic bearings, applicable to PTC: PT100/PT1000; the protection levels can be adjusted by parameters
- Peak power up to 3kW, applicable to magnetic levitation control of high-speed motors of up to 500 kW
- Output frequency up to 1,500Hz if used with the High-frequency Motor Drive C2000-HS Series
- Reduces current ripples of the high-speed motor and restrains the temperature rise of the motor rotor with an output reactor



### Structure



| Power Range |                      | 1.5 kW                    | 3.0 kW  |
|-------------|----------------------|---------------------------|---------|
| VFD-DD      | Input Voltage        | 250 ~ 600 V <sub>DC</sub> |         |
|             | Rated Output Voltage | 6 Arms                    | 10 Arms |

### Applications

Chiller, turbo blower, micro gas turbine, flywheel energy storage

# Textile Vector Control Drive

## CT2000

### Highly Flexible Flange Mount and Wall Mount Methods

- Fanless design with highly effective heat sink to prevent fiber and dust from clogging or entering the drive, solving overheating problems<sup>(\*)1</sup>
- Flange-mounting installation to enhance system safety and stability, providing excellent heat dissipation performance<sup>(\*)1</sup>
- Supports external fan connection (optional)<sup>(\*)1</sup>
- Wall-mounting installation model with an enlarged fan<sup>(\*)2</sup>
- Deceleration Energy Backup (DEB) function for smooth motor deceleration control
- Supports induction and permanent magnet motors
- Common DC BUS design
- Built-in PLC with 10k steps program capacity RS-485, supports 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-Mounting Types

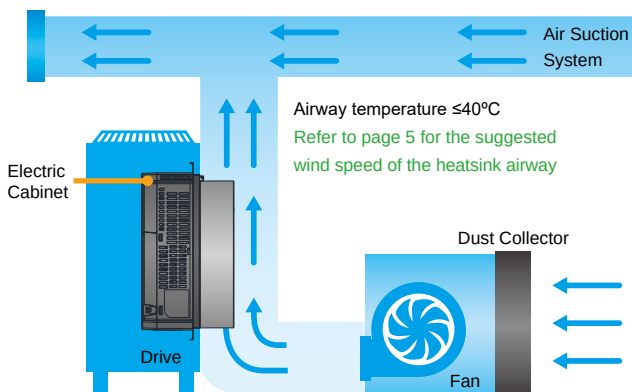


Wall-Mounting Types

### Flange-Mounting Types

Flange-mounting installation for fanless models. This design avoids fiber or dust clumping in the fan or entering the drive and prevents overheating problems. This model is suitable for an application environment that has sufficient space for an airway for the drive.

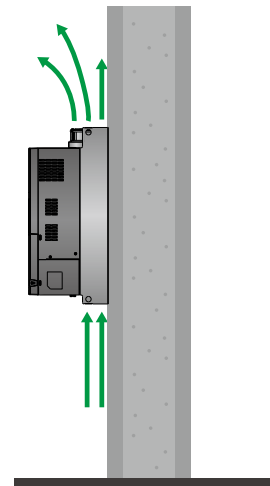
Available for models with names ending in A or B



### Wall-Mounting Types

Larger fan design for wall-mounting installation to fulfill other textile application needs.

Larger fan is available for models with names ending in C



### 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

# Synchronous Reluctance Motor New

MSI

## High Power Density and High Efficiency

- Built with the latest materials and magnetic reluctance technology
- Ultra-high efficiency: Rated load / partial load
- Super Premium Efficiency IE4 without rare earth elements (NdFeB)
- Lightweight design, small size, and high power density
- Low noise and vibration
- Easy replacement for a corresponding motor frame size
- IP55 enclosure protection
- Flexible installation: Flange mounting / foot mounting



## High Efficiency and Energy-Saving Systems:

- **Quick Settings:** Enter MSI motor codes for Delta's motor drive to automatically identify and load the motor parameters
- **Space-saving:** 1 ~ 2 frames smaller than induction motors with the same power range

## Matches with Standard Compact Drive MS300 Series for Fan and Pump Applications

Standard  
Compact Drive  
MS300

\* Refer to page 7 for MS300.



Synchronous Reluctance Motor  
(Standard)  
MSI

- Overload capacity up to 120% / 60 secs



## Matches with Fan/Pump Vector Control Drive CP2000 Series for Compressor Applications

Fan/Pump Vector  
Control Drive  
CP2000

\* Refer to page 3 for CP2000.



Synchronous Reluctance Motor  
(Models of SF 1.2)  
MSI

- Up to 120% operational capacity



| Power Range (kW)                     | 0.75         | 1.1 | 1.5 | 2.2 | 3 | 4 | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 | 30                | 37 | 45 | 55 | 75 |
|--------------------------------------|--------------|-----|-----|-----|---|---|-----|-----|----|----|------|----|-------------------|----|----|----|----|
| 1500 rpm Standard MSI + MS300 Series | 380V/3-phase |     |     |     |   |   |     |     |    |    |      |    | Under development |    |    |    |    |
| 3000 rpm Standard MSI + MS300 Series | 380V/3-phase |     |     |     |   |   |     |     |    |    |      |    | Under development |    |    |    |    |
| MSI SF 1.2 + CP2000 Series           | 380V/3-phase |     |     |     |   |   |     |     |    |    |      |    |                   |    |    |    |    |

\* Applicable system voltage is 380 V.

## Applications

Fan, pump, compressor

# Active Front End

## AFE2000

### The Best Energy Saving Device with Power Factor Compensation and Power Regeneration

- More than 95% power regeneration efficiency
- Improves power factor to more than 99% with input current THD  $\leq 5\%$  at full load
- Realizes 4-quadrant operation with variable frequencies and speed control when applied with AC motor drives
- Maintains constant DC bus voltage or current when the mains voltage is unstable
- Built-in RS-485 (Modbus) communication



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

## Applications

**Large-inertia load applications:** Centrifuge equipment, dewatering machines and roving machines

**4-quadrant load 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

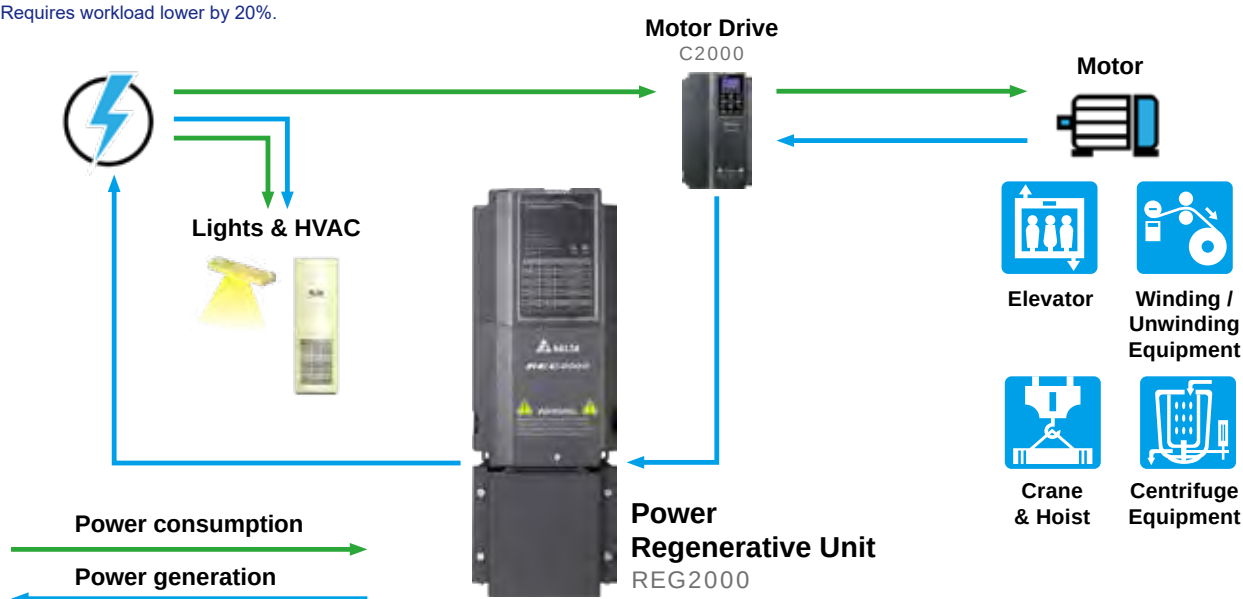
# Power Regenerative Unit

## REG2000

### Replaces Traditional Brake Resistor and Features Power Regeneration

- Compact design with a built-in reactor for easy installation
- No need for parameter setting, suitable for general applications and installation to existing systems
- Outstanding energy-saving performance with more than 95% power regeneration efficiency
- Replaces traditional brake resistors to reduce the generation of heat
- Compatible with the drives and servo drives that have DC terminals
- Supports 4 parallel connections\* for large power applications
- Improves motor braking capability up to 150% from 125% of braking resistors
- Built-in RS-485 (Modbus) communication and real-time monitoring of energy-saving performance and cost

\* Requires workload lower by 20%.



CE UL CERTIFIED EAC 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, heavy duty conveyors, roving machines, gantry machine tools and more

**4-quadrant load applications:** Elevators, cranes and hoists, 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, winding/unwinding machines and more

# AC Servo Drive & Motor New

ASDA-A3

24-bit Absolute Encoder

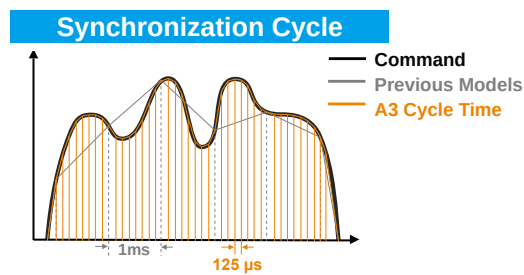
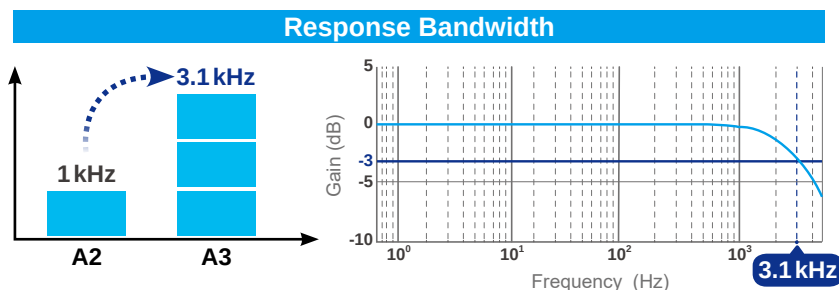
3.1 kHz Bandwidth

Advanced Motion Control Functions



## 3.1 kHz Bandwidth and Shorter Synchronization Cycle

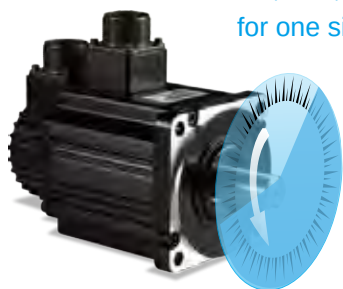
- Response bandwidth increased by 3.1 times (compared to the ASDA-A2 Series), providing higher speed for commands
- Higher responsiveness and shorter settling time increases productivity
- The synchronization cycle of the ASDA-A3 Series is 125  $\mu$ s, which is 8 times faster than that of the ASDA-A2 Series



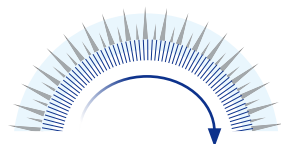
## 24-bit Absolute Encoder

- 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 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

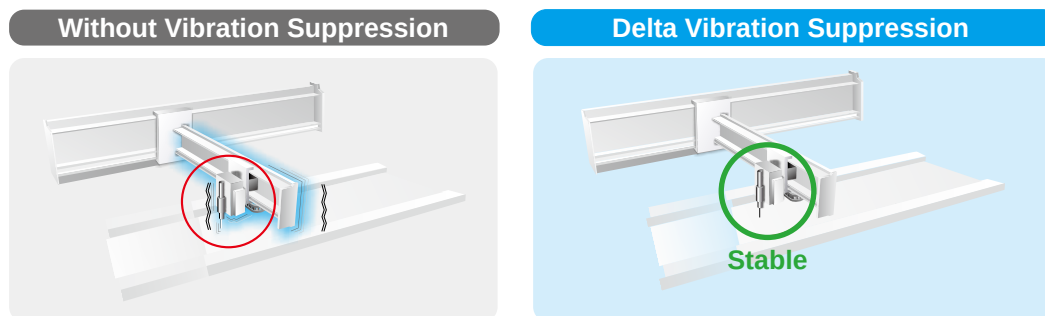
- 99 sophisticated motion commands and segments allowed
- Graphical user interface offers simple setup and programming
- Arithmetic operation and condition jump commands are added
- General motion functions: homing, positioning, speed, superimposition, blending, on-the-fly motion change commands and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





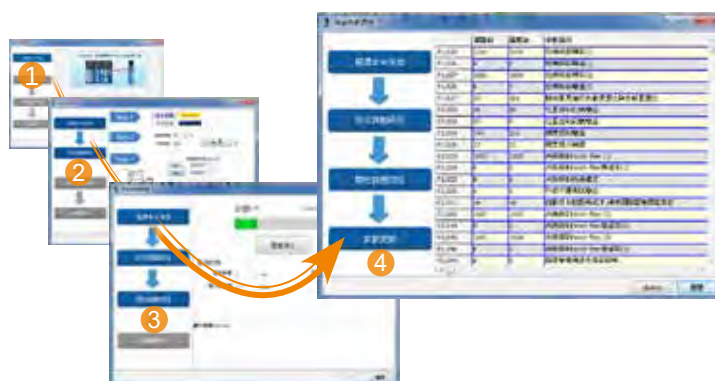
## Low Frequency Vibration Suppression

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



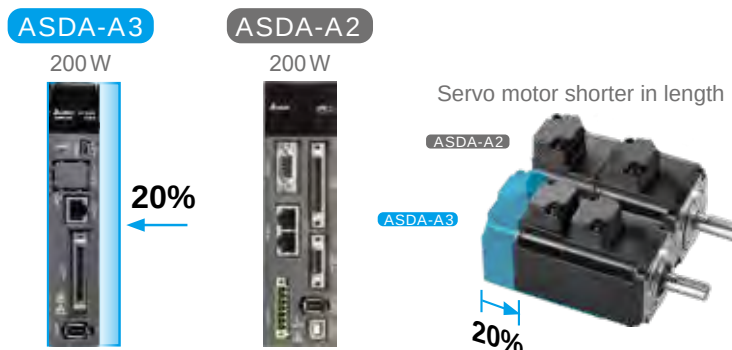
## Auto-Tuning

- Optimizes machine performance with less tuning effort
- Simple setup procedures via panel keypad or software



## Compact Size

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



## Models

|    | Type | PT Mode<br>Pulse Train | PR Mode | RS-485 | CANopen | DMCNET | EtherCAT | Analog<br>Voltage<br>Control | Full-closed<br>Loop<br>Control | E-CAM | STO |
|----|------|------------------------|---------|--------|---------|--------|----------|------------------------------|--------------------------------|-------|-----|
| A3 | L    | O                      | O       | O      | X       | X      | X        | O                            | O                              | X     | X   |
|    | M    | O                      | O       | O      | O       | X      | X        | O                            | O                              | O     | O   |
|    | F    | X                      | O       | X      | X       | O      | X        | X                            | O                              | O     | X   |
|    | E    | X                      | O       | X      | X       | X      | O        | X                            | O                              | O     | O   |

## Applications

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



# AC Servo Drive & Motor New

ASDA-B3

24-bit Absolute Encoder

3.1 kHz Bandwidth

Advanced Motion Control Functions

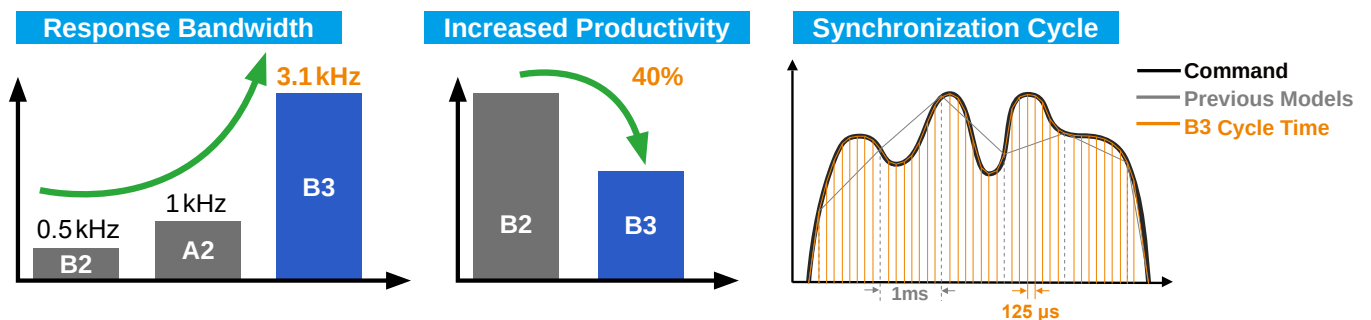


## Various Models Available

|     | Type | PT Mode<br>Pulse Train | PR Mode | RS-485 | Analog<br>Voltage<br>Control | CANopen | DMCNET | EtherCAT | STO | Dynamic<br>Brake |
|-----|------|------------------------|---------|--------|------------------------------|---------|--------|----------|-----|------------------|
| B3  | L    | O                      | O       | O      | O                            | X       | X      | X        | X   | X                |
|     | M    | X                      | O       | X      | O                            | O       | X      | X        | X   | X                |
|     | F    | X                      | O       | X      | O                            | X       | O      | X        | X   | X                |
|     | E    | X                      | O       | X      | O                            | X       | X      | O        | X   | X                |
| B3A | L    | O                      | O       | O      | O                            | X       | X      | X        | O   | O                |
|     | M    | O                      | O       | O      | O                            | O       | X      | X        | O   | O                |
|     | F    | O                      | O       | X      | O                            | X       | O      | X        | O   | O                |
|     | E    | O                      | O       | X      | O                            | X       | X      | O        | O   | O                |

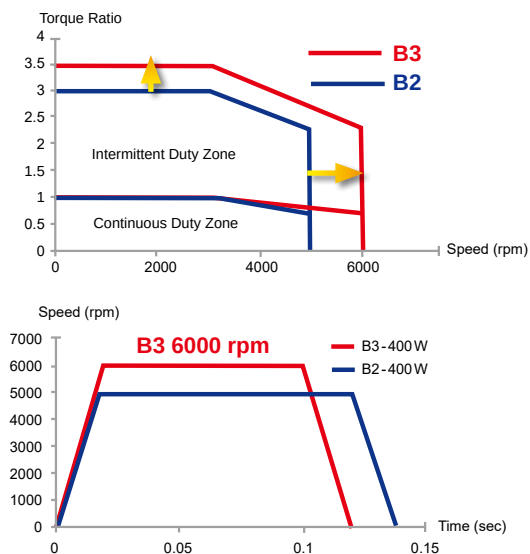
## High Response Bandwidth and Shorter Synchronization Cycle

- Higher responsiveness: from 0.5kHz of the ASDA-B2 Series to 3.1 kHz of the ASDA-B3 Series
- Increased productivity: settling time decreased by 40%
- The synchronization cycle of the ASDA-B3 Series is 125μs, which is 8 times faster than that of the ASDA-A2 Series



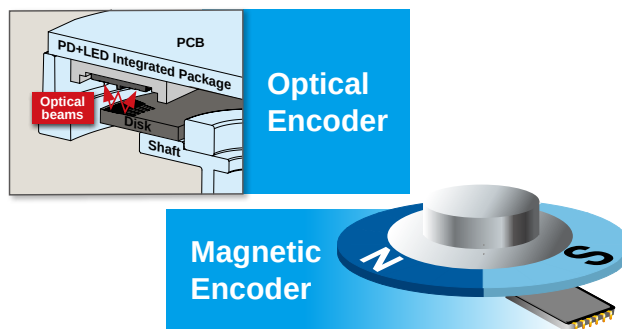
## Increased Speed and Torque

- Motor speed increased to 6,000 rpm
- Torque overload ratio increased to 3.5 times and the time required for acceleration and deceleration is shortened
- Significantly increases productivity and efficiency



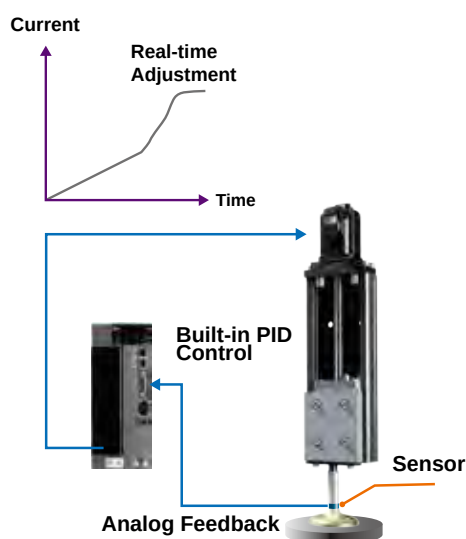
## High Resolution Encoder

- High resolution for more precise positioning
- The incremental encoder can retain the single-turn absolute position without the need to execute homing after cycling the power
- After the absolute encoder is powered off, the number of turns and the position are retained
- 24-bit optical encoder: the encoder is lighter and thinner with the reflective sensor technology; the exclusive optical sensor compensation function improves product reliability
- 17-bit magnetic encoder: the magnetic induction technology improves the capability to prevent vibration and increases the oil resistant level



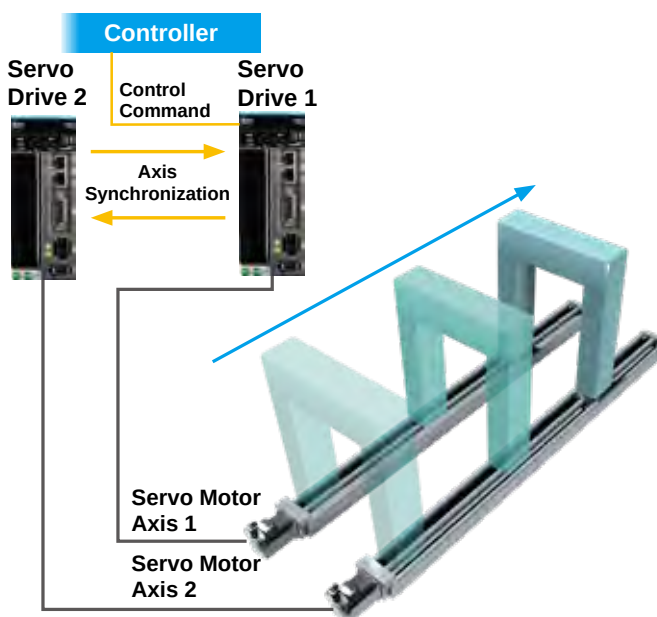
## Analog Feedback PID Control

- Supports analog signal input
- Achieves real-time and precise PID control with the analog signals from the external sensor for improved production yield and processing performance



## Axis Synchronization Function

- Easy gantry control with the EtherCAT high-speed inter-axis data exchange



## Applications

Machine tools, electronics assembly equipment, tool magazines and turrets, industrial robots, packaging machines, labeling machines, semi-conductor equipment, textiles equipment, diamond cutting machines

# AC Servo Drive & Motor

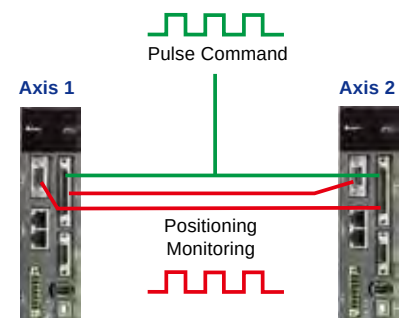
## ASDA-A2

Implements 20-bit (1,280,000 p/rev) superior resolution encoder as a standard  
Built-in motion control functions



### Built-in Motion Control Functions

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

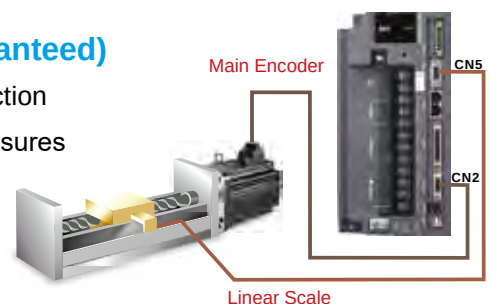


### High Precision, High Performance Servo Motors

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

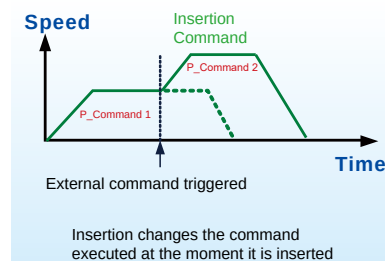
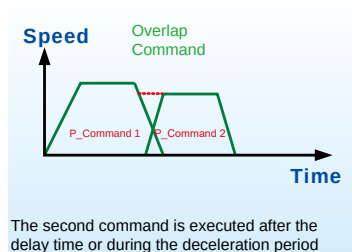
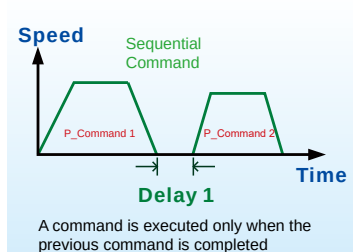
### Full-Closed Loop Control (Accuracy of Positioning Guaranteed)

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



## Versatile PR mode

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



## Basic Features

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

|                | Type | RS-485 (CN3) | Full Closed-Loop Control (CN5) <sup>*1</sup> | Extension Port for Digital Input (CN7) | PR Parameters <sup>*2</sup> | E-CAM <sup>*3</sup> | EtherCAT <sup>*4</sup> | CANopen | 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, high-speed labeling machines, feeding machines, TFT LCD cutting machines, IC packaging machines, injection processing equipment, lathes, electric discharge machines (EDM), woodworking machines, gantry machines, wire cutting machines, printing machines, textile equipment



Food Packaging Machine



Wire Cutting Machine



Feeding Machine



High-speed Labeling Machine

# AC Servo Drive EtherCAT<sup>®</sup>

## ASDA-A2-E

### Supports EtherCAT High-Speed Communication

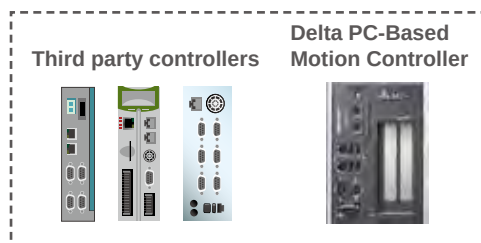
Delta's ASDA-A2-E Series supports EtherCAT communication, and complies with IEC61158 and IEC61800-7 to enable fast, real-time and precise performance in high-end applications. It also supports a CoE device profile based on CiA402, and all command types of EtherCAT.

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

- 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
- Supports absolute and incremental ECMA Series motors



#### EtherCAT controllers



## Applications



Printing Machine



Metal Working Machine



Food Packaging



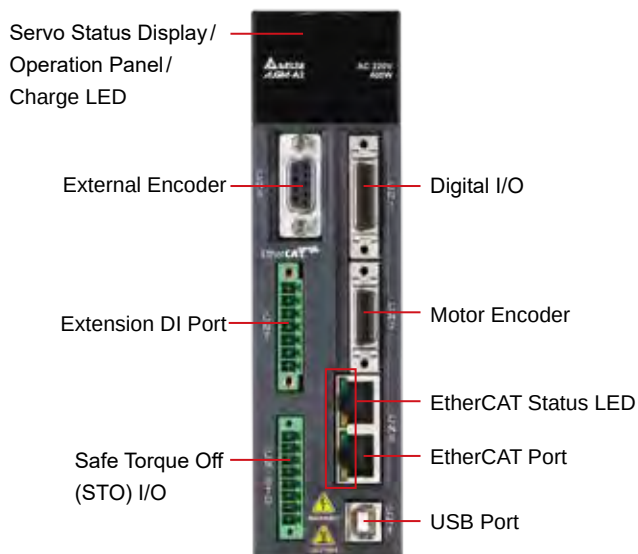
Woodworking Machine



## Communication Specifications

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

## Part Names and Functions



## Accessories

|                                                                                       |                                                                |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------|
| <b>Part Number</b>                                                                    | ASD-CN5C0026                                                   |
| <b>Description</b>                                                                    | CN1 connector                                                  |
|  |                                                                |
| <b>Part Number</b>                                                                    | ASD-CNFS0808                                                   |
| <b>Description</b>                                                                    | Pack of connectors used for STO Wiring connectors (8 pcs/pack) |
|  |                                                                |



# AC Servo Drive & Motor

## ASDA-B2

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



### Power Range: 0.1kW~3kW

- Input voltage: 200V<sub>AC</sub>~230V<sub>AC</sub>, 1-phase/3-phase, or 3-phase
- Fulfills high precision positioning control requirements of general applications:
  - Built-in Position, Speed and Torque modes (Speed and Torque modes can be controlled via internal parameters or external voltage)
  - Command sources: pulse input (up to 4 Mpps) and analog voltage
  - Three notch filters 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 costs



### Applications



Bar Feeder



Transporting and  
Conveying Equipment



Electric Discharge  
Machines (EDM)



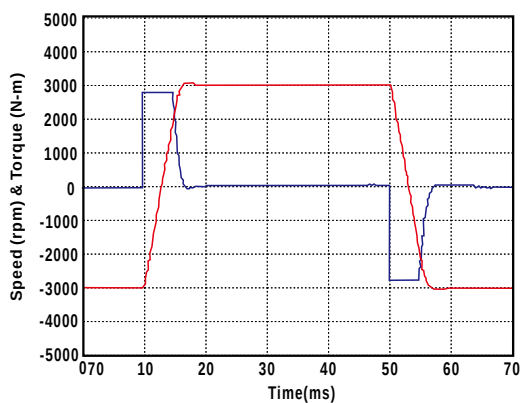
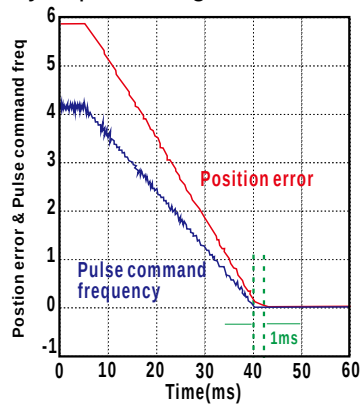
Cutting Machine



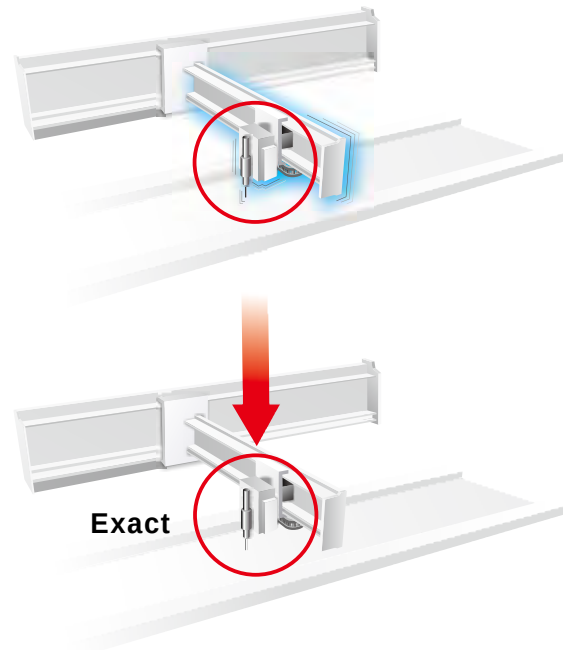


## High Accuracy for Positioning

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

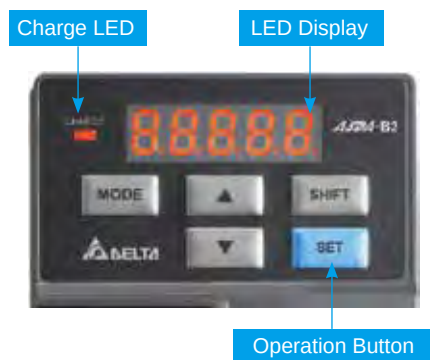


- Three auto notch filters to suppress mechanical resonance efficiently

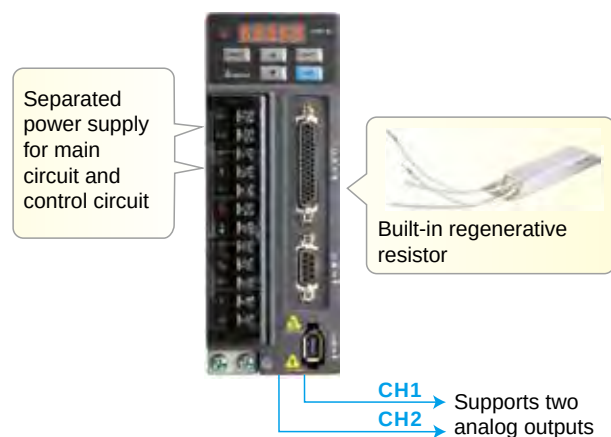


## Easy-to-Use and Cost-Saving

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



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



# AC Servo Drive & Motor

## ASDA-M

### Three-in-One Intelligent Servo System Harmonizing Motion Controller and Servo Drive

#### Impeccable Motion Control

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

#### New PC Software Functions

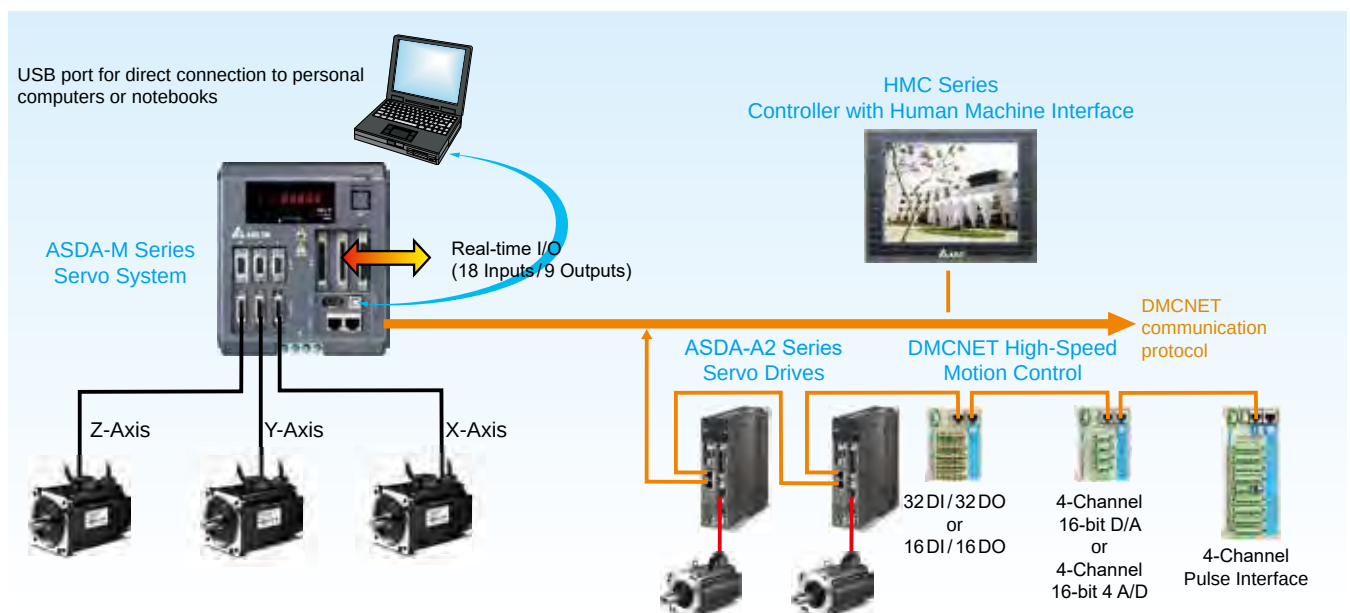
- ASDA-Soft provides built-in contour analysis function
- EzASD provides PLC programming and motion commands editing environment

#### High Precision, High Performance Servo Motors

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



#### Product Line-up

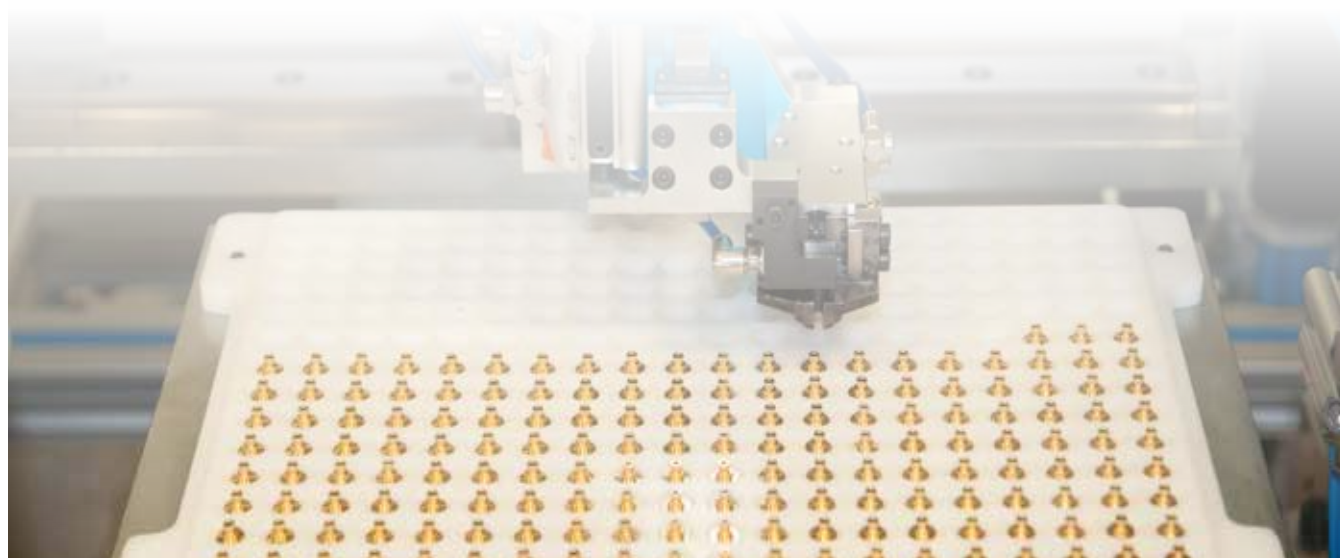
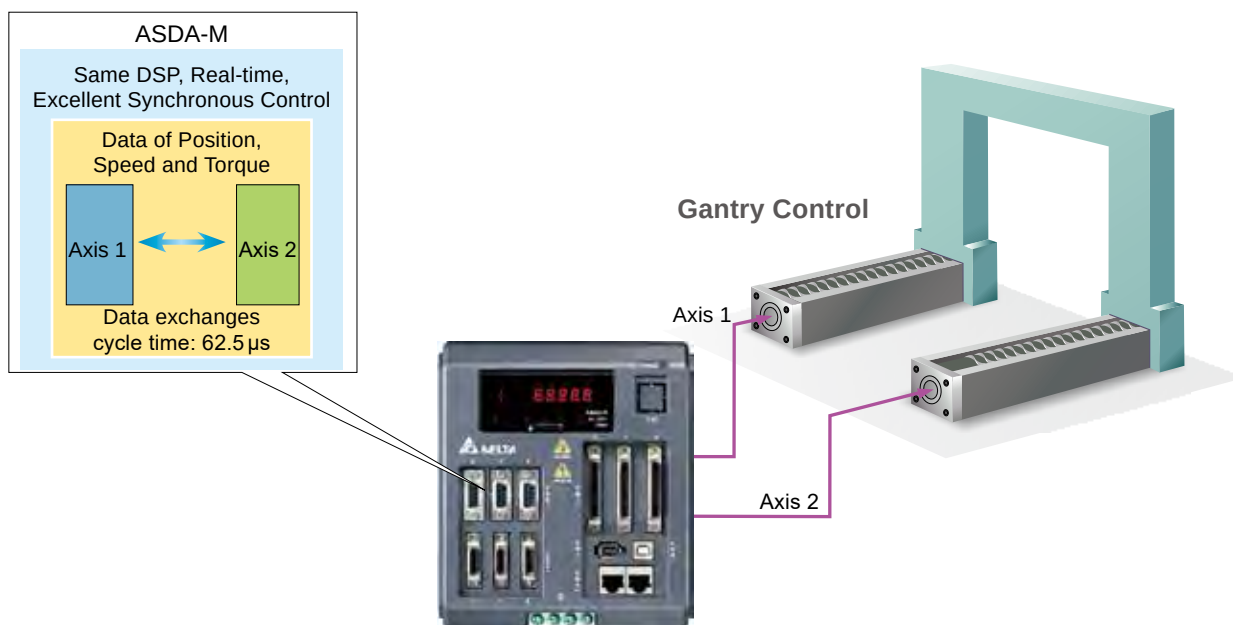


## Real-Time, Reliable and High-Speed Motion Control Network

- Supports DMCNET and CANopen communication protocols
- Builds an integrated system configuration by DMCNET with the aid of Delta's Controller with Human Machine Interface (HMC)
- Supports 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



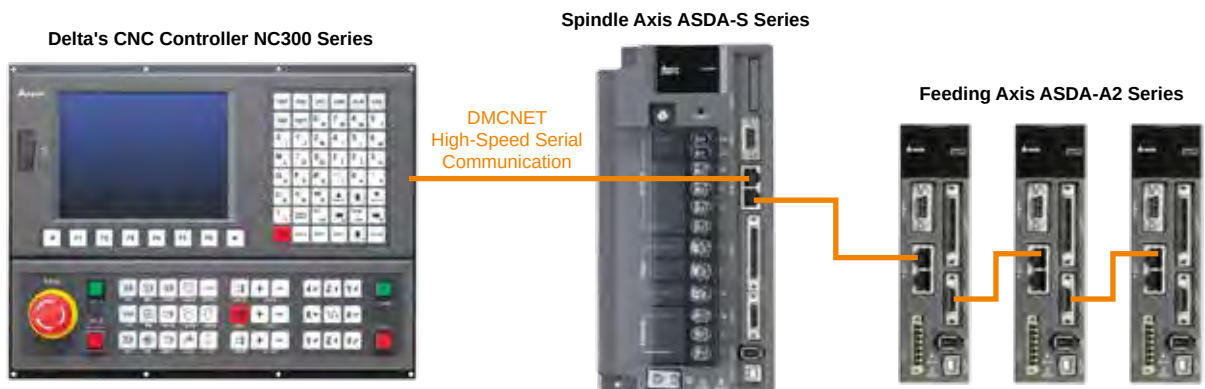
# Spindle Motor Drive

## ASDA-S

### Ensuring Premium Surface Finish Quality for the CNC Industry

#### Power range: 3 kW~15 kW

- Supports Delta permanent magnet spindle motors and other induction motors
- Provides high-performance servo vector control as in the ASDA-A2 Series
- Supports 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
- Supports analog voltage, position pulse and DMCNET motion commands
- 200V and 400V models are available for selection
- Capable of connecting to CNC controllers via DMCNET high-speed serial communication



# IPM Spindle Motor

## ECMS

#### Power range: 3.7 kw/5.5 kw/6.7 kw

- Magnetic encoder resolution: 20 bit
- Max. torque: 14.72 N-m / 26.65 N-m
- Speed range: 6,000 r/min ~ 1,500 r/min
- Optional accessories: Coolant through spindle
- IP rating: IP54



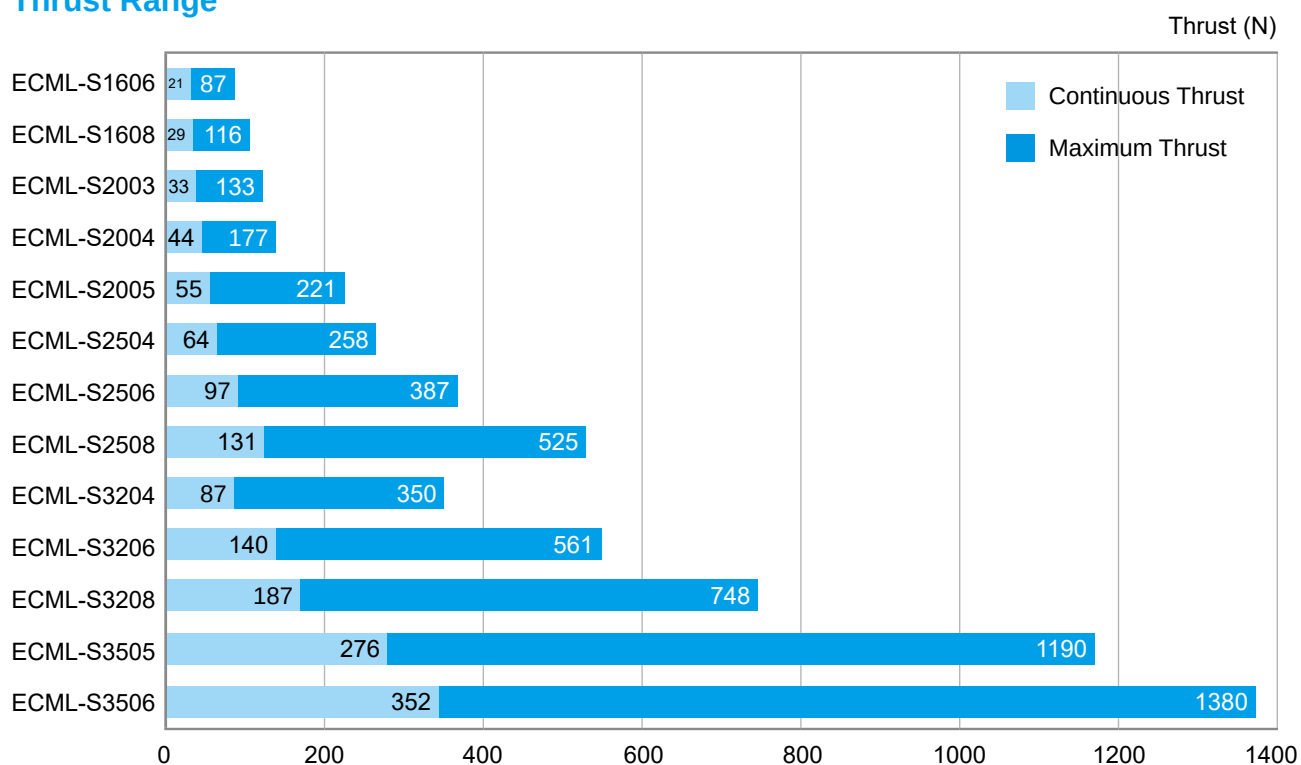
# Linear Shaft Motor

## ECML-S

- Simple design for easy mounting on equipment
- 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



### Magnetic Shaft Length (Unit: mm)

| Model Name | Minimum Length | Maximum Length | Gap |
|------------|----------------|----------------|-----|
| 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  |

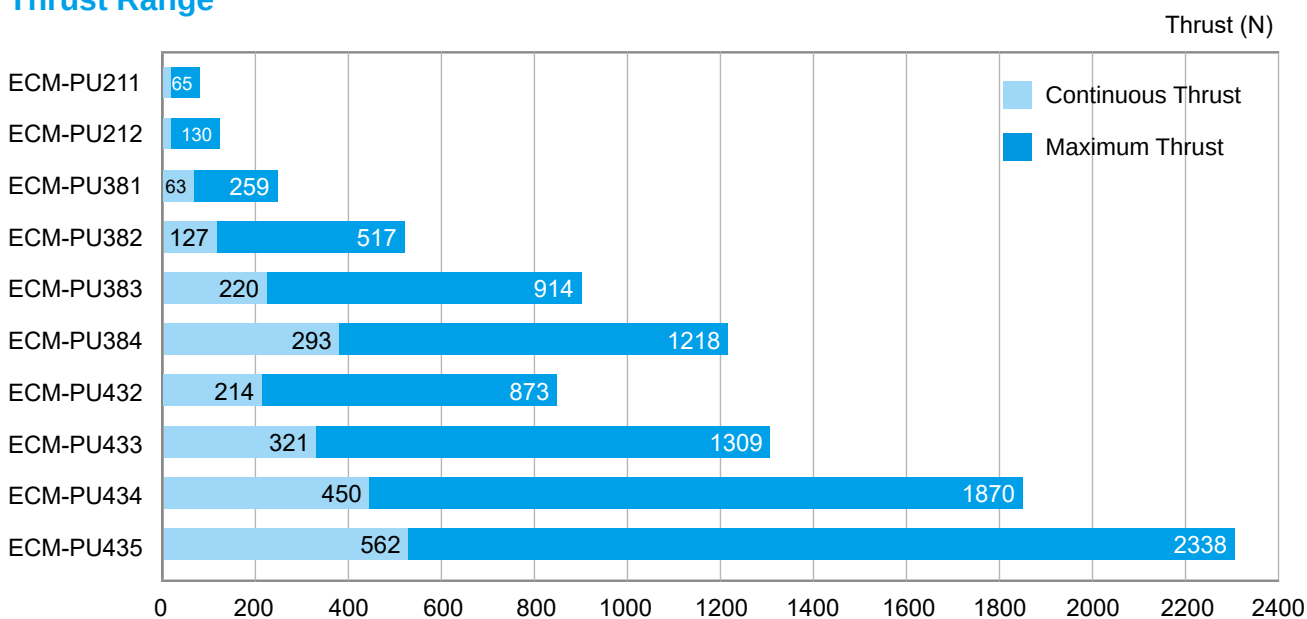
# U-shaped Ironless Linear Motor New

## ECM-PU

- Simple design for easy mounting on equipment
- Suitable for continuous motions
- No cogging force, low thrust ripple
- Excellent dynamic response
- No backlash
- Built-in temperature sensors and Hall devices
- Large air gap for quick installation
- Long and non-restricted distance



### Thrust Range



### Magnetic Shaft Length (Unit: mm)

| Model Name | Length   | Gap |
|------------|----------|-----|
| ECM-PU21   | 135, 270 | 135 |
| ECM-PU38   | 156, 312 | 156 |
| ECM-PU43   | 156, 312 | 156 |



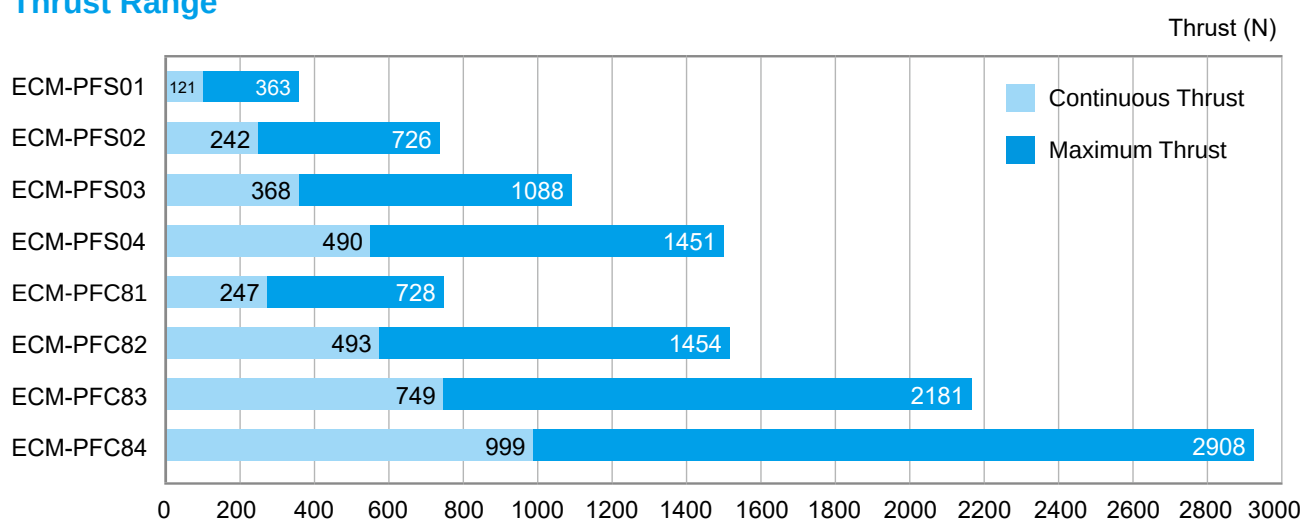
# Flat Iron-Core Linear Motor New

## ECM-PF

- Simple design for easy mounting on equipment
- Intense unit thrust
- Suitable for point-to-point motion
- Excellent dynamic response
- No backlash
- Built-in temperature sensors and Hall devices
- Large air gap for quick installation
- Long and non-restricted distance



### Thrust Range



### Magnetic Shaft Length (Unit: mm)

| Model Name | Length   | Gap |
|------------|----------|-----|
| ECM-PF80   | 128, 320 | 135 |
| ECM-PFC8   | 128, 320 | 156 |

# Linear Stage

## LU

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

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



## Features

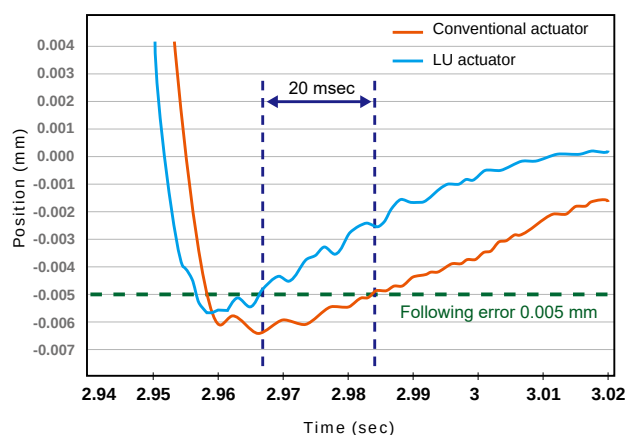


Delta LU Series  
(without coupling)



Conventional Linear Stage  
(with coupling)

### Measured Data by Laser Interferometer

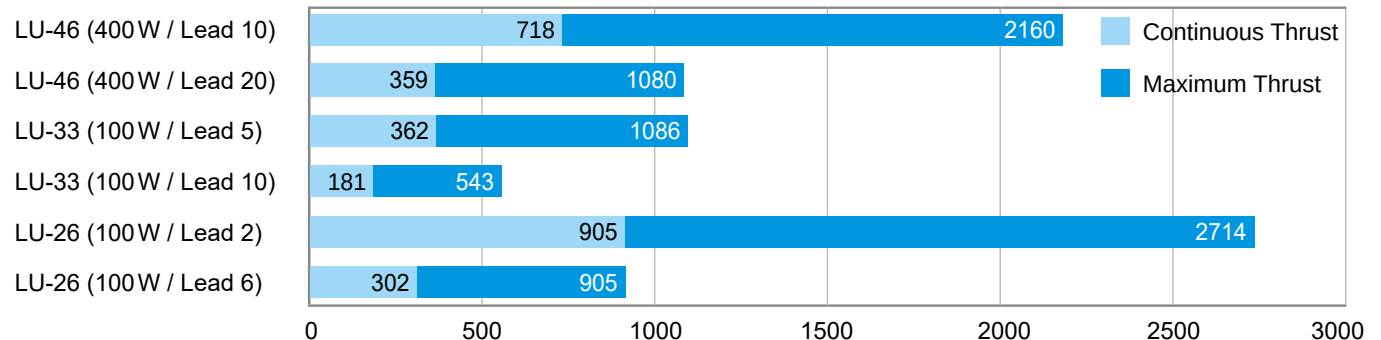


**Test condition**

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

## Thrust Range

Thrust (N)



# Linear Stage

## LA-S

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

- **Direct drive with zero backlash**

Directly driven by Delta's linear motor without backlash and alignment issues

- **High speed and high precision**

- Provides high-precision and high-stability motion operation:  
high speed capability of up to 4m/s
- Integrates with linear motor and optical linear encoder for direct drive  
and prevents backlash and accumulated offsets caused by changing machines

- **Cog-free design with low thrust ripple**

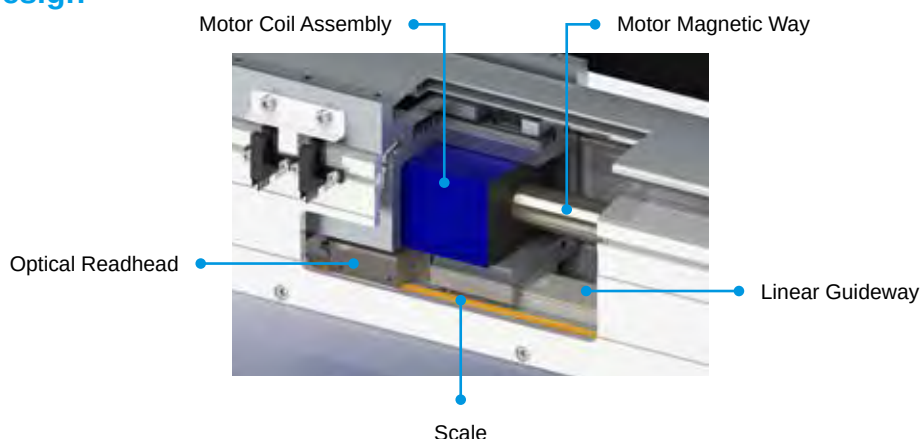
Use an ironless forcer for zero cogging and low thrust ripple to perform smooth motion, even at low speed

- **Long travel distance with multiple sliders**

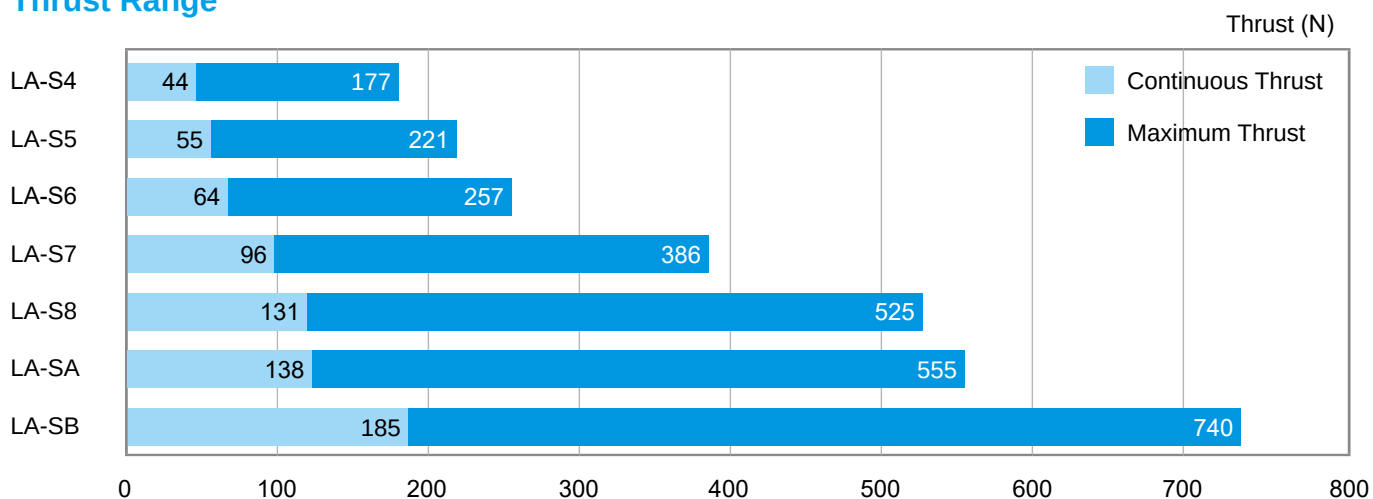
- Good performance on long travel distances (up to 1.5 m) for various positioning applications
- Single-axis platform supports more than 2 linear motors, creating multiple sliders within one stage unit for efficient space savings and independent operation



## Mechanism Design



## Thrust Range



# High Precision Planetary Gearbox

## PS



- **Supports all series of Delta servo motors**
- **Provides 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



- **Supports all series of Delta servo motors**
- **Provides concentric models**
- **High rigidity and high torque**
  - Employs uncaged needle roller bearings with a set design
  - Includes 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

# Extended Motion Controller New

## DXMC

The DXMC Series is an advanced synchronous multi-axis motion controller with max. 32 real axes and 64 virtual axes control. It provides tension control, rotary cut, flying shear and E-CAM function modules and enables easy programming with Delta's user-friendly programming interface for a wide range of industry applications, including packaging machines, printing machines, winding machines, industrial robots and more. In addition, the DXMC Series features an optional Multiprog PLC or Delta Motion Kernel to provide a flexible and customized motion control platform for machine upgrades and smart equipment.

## Standard Type

### DXMC-S

- Max. 32 servo axes control (execution cycle: 0.5 ms)
- Supports **EtherCAT**, Modbus TCP and Non-protocol communication
- Built-in 16DI/16DO terminals and RS-485 serial port
- Supports A/B/Z and SSI encoder signal input
- Various robot modules to control multiple robots simultaneously
- Function blocks available: tension control, rotary cut, flying shear, E-CAM
- IEC-61131-3 compliant PLC programming and advanced robot languages



Synchronous multi-axis motion control, built-in 16DI/16DO terminals, EtherCAT bus, simple wiring

## Panel Type

### DXMC-P

- Motion controller integrated with HMI
- Max. 8 servo axes control (execution cycle: 2 ms)
- Supports **EtherCAT**, Modbus TCP, and Non-protocol communication
- Built-in RS-232/RS-422/RS-485 COM ports
- IEC-61131-3 compliant PLC programming and advanced robot languages



Built-in 7" & 10" LED monitor for display and operation



# Motion Control Function Blocks

## – Delta Motion Kernel

### E-CAM

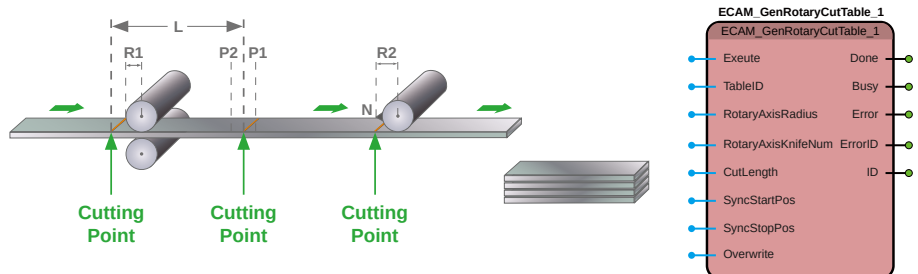
#### Multiple Engagement Timing and Shearing Mode Settings

- E-CAM function and shearing action start simultaneously to ensure no phase offset due to position deviation

### Rotary Cut and Flying Shear

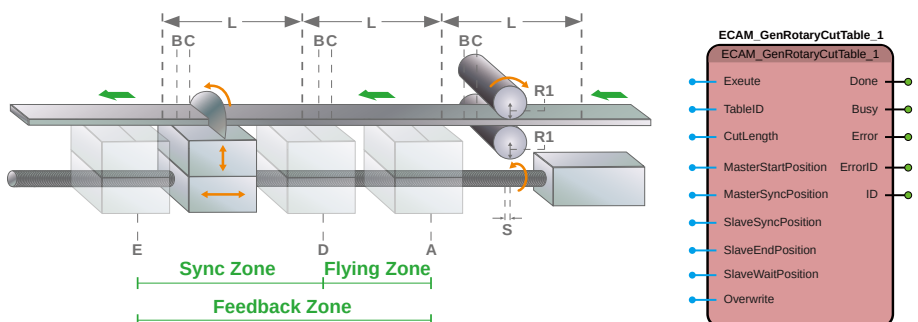
#### Rotary Cut

- Sets up cutting length, tool quantity, sync. zone data with application parameters to build up rotary cutting E-CAM table
- Feeding axis and rotary axis rotate with the same speed ratio in the sync. zone (usually at a consistent speed)
- Users are able to adjust rotary speed in sync. zone online to fix the deviation between theory and reality, no need to build up a new table



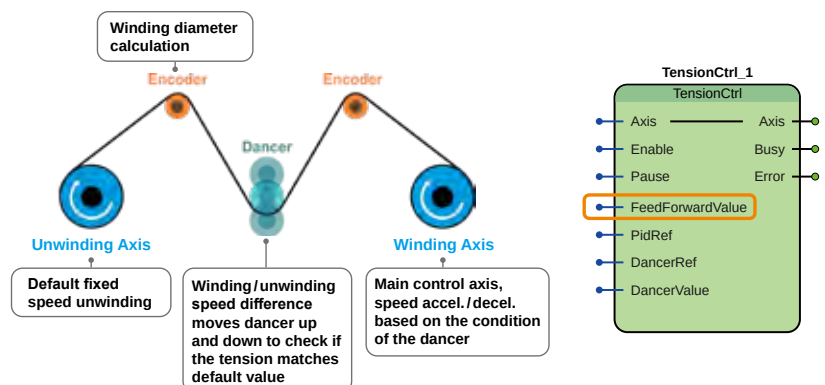
#### Flying Shear

- Suitable for motion control of cutting or filling machines
- Sets up the cutting length, wait position, flying zone, sync. zone, and feedback zone data with application parameters to build up flying shear CAM table
- Master axis and slave axis rotate with the same speed ratio in the sync. zone (usually at a consistent speed) and cut the workpiece in the sync. zone



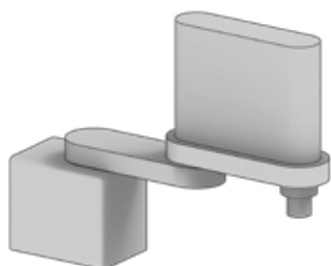
### Tension Control

- Speed Mode for quicker response
- Dancer Mode: Feed-forward input to accelerate response

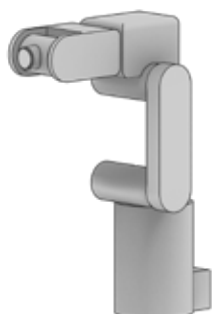




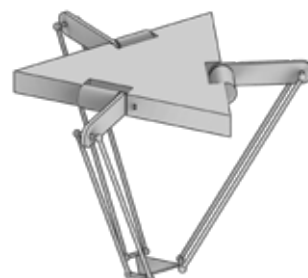
## Supports more than 42 types of robot modules



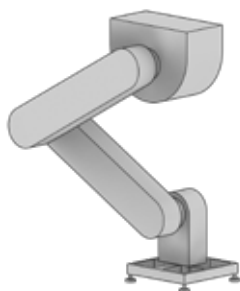
**SCARA Robot**



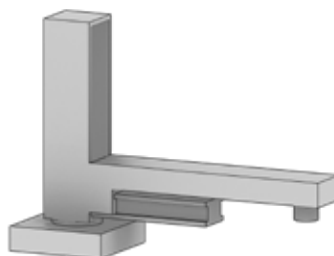
**Articulated Robot**



**DELTA Robot**



**Top-mounted Robot**



**Cylindrical Coordinates Robot**

## Applications



**Welding**



**Food Pick-and-Place**



**Palletizing**



**Packaging Machines**



**Printing Machines**



**Winding Machines**

# PC-Based Motion Controller

MH2 **New** / MP1

Supports EtherCAT/DMCNET fieldbus for various motion control applications

- **Energy Efficiency and Robust Hardware**

- The MH2 Series: cable-less, fan-less and low-power consumption design supports stable operation; built-in SD card, SSD and M.2 SSD slots provide fast and stable data transmission
- The MP1 Series: equipped with a 15" touchscreen for more flexible operation

- **Multiple Peripheral Interfaces for Communication**

Built-in USB ports, serial COM ports, Gbps Ethernet ports

- **Supports Master and Slave Modules**

Built-in EtherCAT / DMCNET fieldbus for servo system and motion control module connection (up to 64 axes/100 stations via EtherCAT; up to 12 axes/12 stations via DMCNET)

- **High Security**

Dedicated IC for programming security and confidential information protection

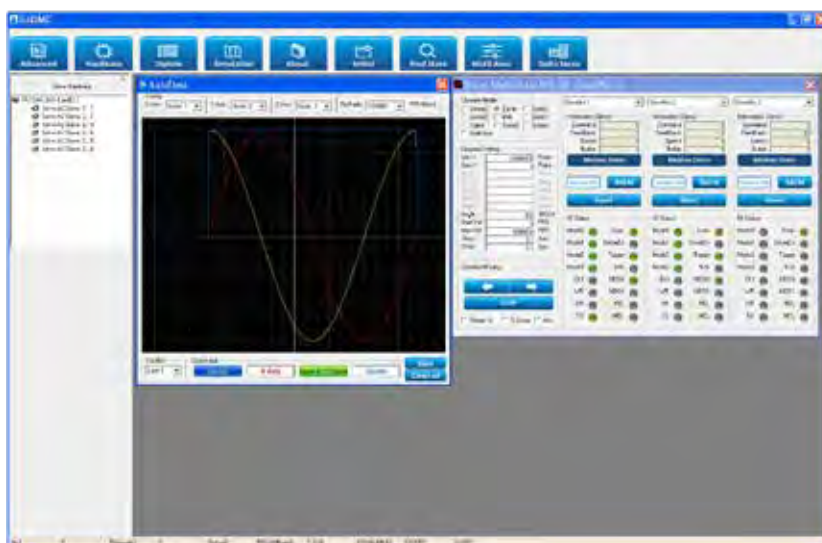
- **OS and Software Support**

The MH2 Series is built in with Windows 10 IoT and DLL for flexible usage and software development



Host PAC  
MH2

Panel PAC  
MP1



## 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
- JOG
- PP/PT/PVT
- Compare Trigger
- Motion Buffer
- Gantry control (EtherCAT)
- E-CAM (EtherCAT)

- **Speed Curve Tracing**

Speed curve tracing function traces current motion speed and adjusts 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

- **Verification Software for EtherCAT/DMCNET**

The EcNavi / EzDMC software enables verification for data communication, functional identification, programming and debugging, providing a fast and easy way for first-timers to understand the solution

## Applications

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

**Woodworking:** CNC drilling machines, woodworking machines, board slitting machines, mortising & tenoning machine, solid wood door machine

**Other:** Aluminum curtain walls, flame cutting, ion cutting, stone processing, pipe bending



## EtherCAT Modules Supported

### Gateway Type E-Bus Remote Power Coupler

**R1-EC5500D0**

Connects 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 input signals remote control for an EtherCAT master



#### 4-Channel Analog Input Remote Module

**R1-EC8124D0**

Provides analog input signals remote control for an EtherCAT master



#### MPG Module

**R1-EC5614D0**

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



#### 16 Digital Output Remote Modules

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

Provides digital output signals remote control for an EtherCAT master



#### 4-Channel Analog Output Remote Module

**R1-EC9144D0**

Provides analog output signals remote control for an EtherCAT master



#### 32-Channel DI/32-Channel DO (Relay, 2A/Port) Modules

**R2-EC0902D0**

Provides digital input and output signals for remote monitoring via an EtherCAT master



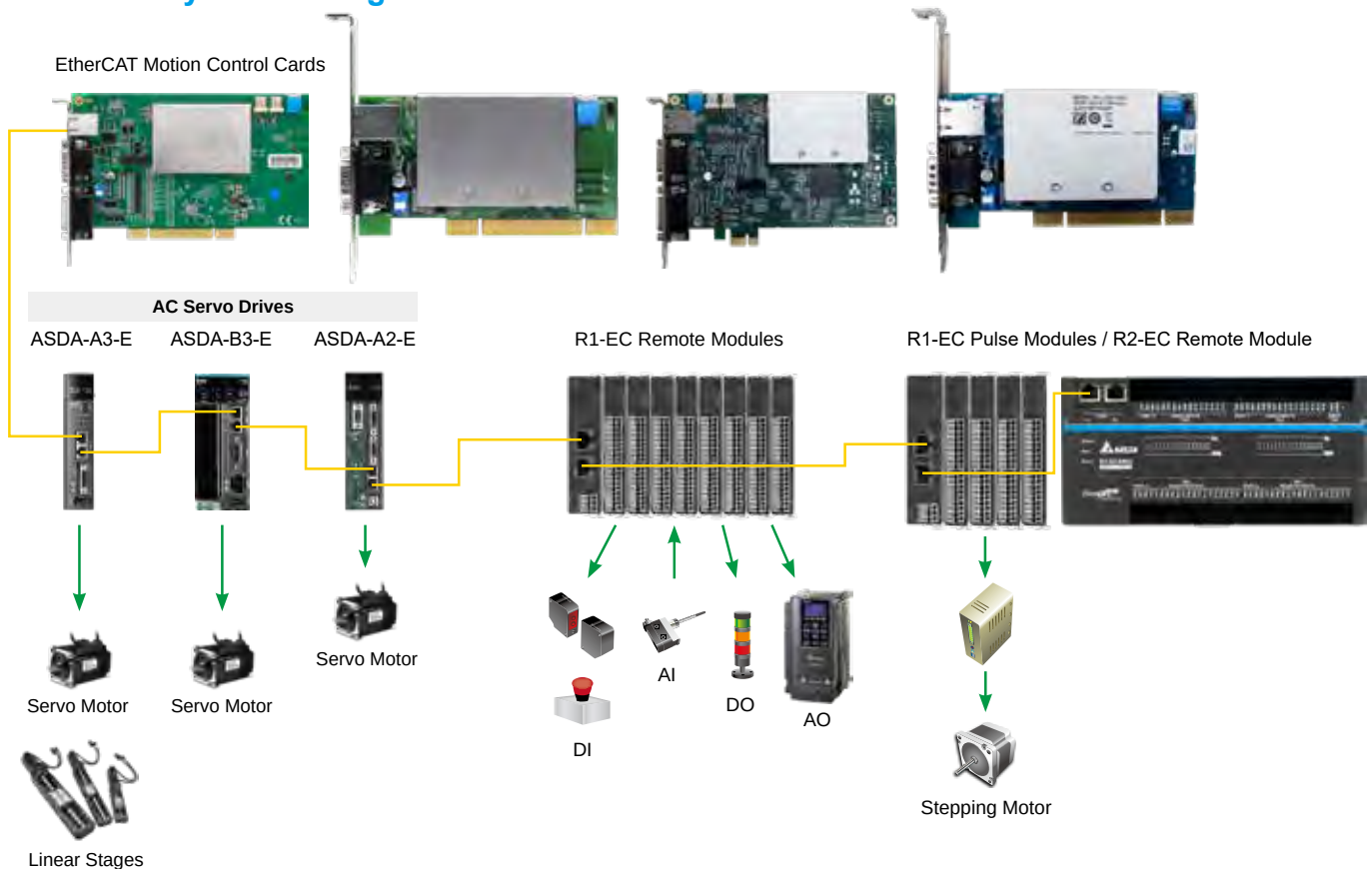
# EtherCAT High-Speed Motion Control System

EtherCAT (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 series and PCIE-L221 series motion control cards that provide complete functions for EtherCAT masters and support device descriptions in XML format (EtherCAT Slave Information ESI file), allowing quick identification of ESI files and information from different slaves 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 1 ms cycle time
- Communication cycle time among 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

Integrated electronics applications, glue dispensing machines, woodworking machines, pipe bending machines, stone processing machines, aluminum curtain walls, flame cutting machines, ion cutting machines



# High-Speed Motion Control System

## DMCNET

Delta's Motion Control NETWORK (DMCNET) is a high-speed and real-time communication system that features:

- Up to 12-axis simultaneous servo control within 1 ms; could be divided into 4 groups of 3-axis helical / linear interpolation or 6 groups of 2-axis linear/arc interpolation
- Supports 64-bit double-precision floating point for highly precise calculation and flexible operation
- Supports incremental and absolute 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 protocol, offering fast communication and motion control for various applications

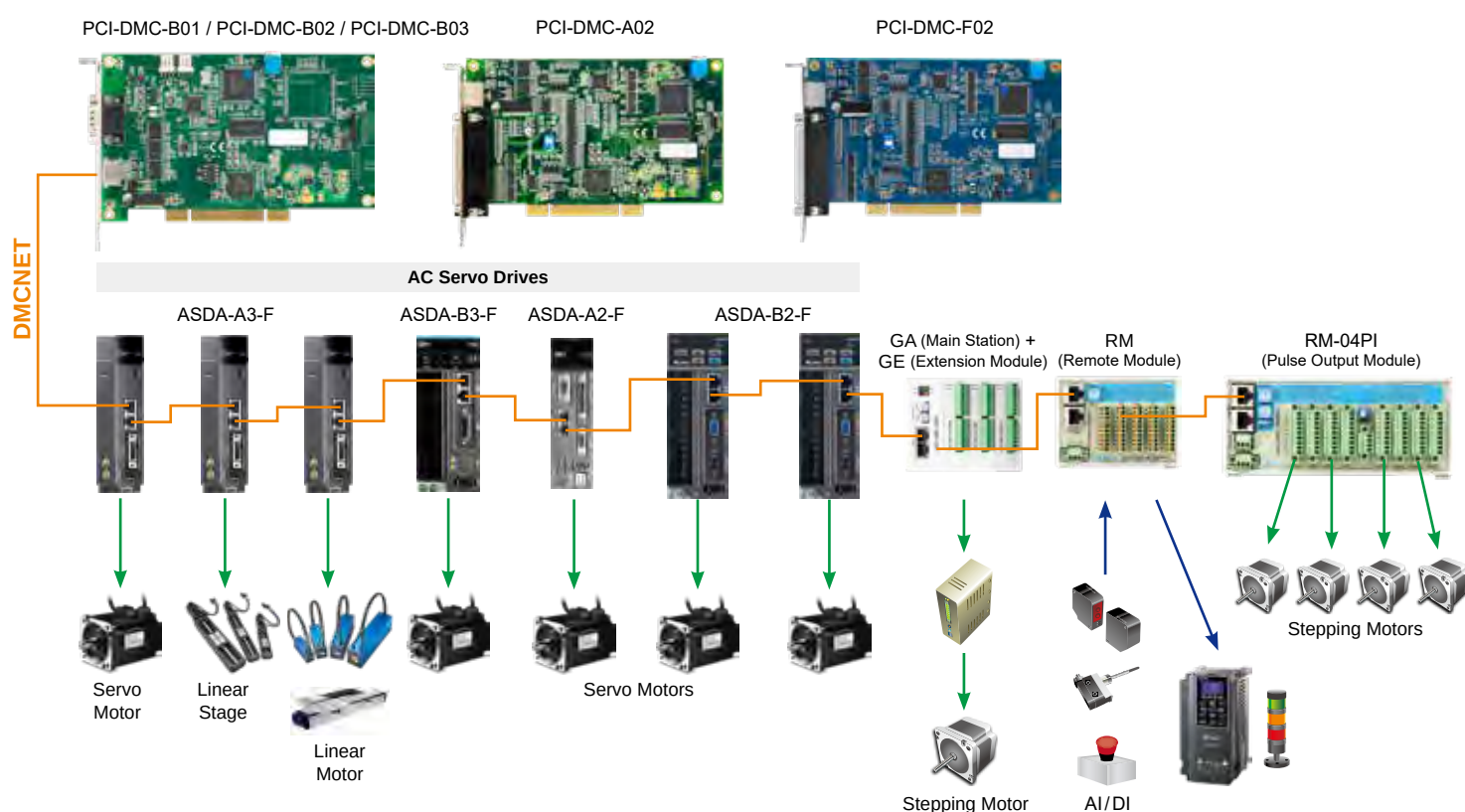


Three series of PCI motion control cards are available for Delta's DMCNET single-wire communication protocol:

- 12-axis motion control card with digital I/O interfaces: PCI-DMC-A02
- 6-axis motion control card with digital I/O interfaces: PCI-DMC-F02
- Motion control cards with pulse comparison & capture functions: PCI-DMC-B01, PCI-DMC-B02, PIC-DMC-B03

All series are able to connect to multiple servo systems, such as the ASDA-A3-F, ASDA-B3-F, ASDA-A2-F, ASDA-B2-F Series, or the ASDA-A2R Series with linear motors per user's requirements for high performance

## DMCNET System Configuration



## Applications

Integrated electronics applications, glue dispensing machines, woodworking machines, pipe bending machines, stone processing machines, aluminum curtain walls, flame cutting machines, ion cutting machines

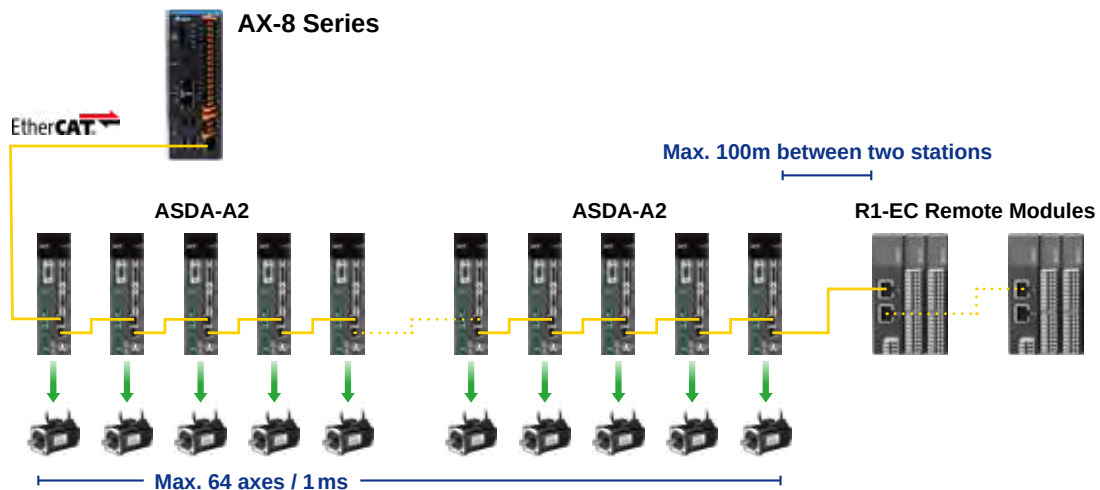
# CODESYS Motion Solution New

## PC-Based Motion Controller

### AX-8 Series

Supports EtherCAT and CODESYS-based programming software as a comprehensive and integrated motion control solution for various industrial applications

- Intel x86 CPU with fanless and compact design
- Provides low-voltage detection and data overwriting functions for PACs
- Supports EtherCAT, Modbus, and OPC UA protocols
- Supports 8 high-speed digital local inputs/outputs
- Synchronous servo control of up to 64 axes/1 ms
- Built-in security IC system for enhanced software and hardware security
- IEC 61131-3 compliant CODESYS software provides a standardized programming and controller development platform



## PLC-Based Motion Controller

### AX-3 Series

Provides a real-time and flexible motion solution for various applications with CODESYS-based program and EtherCAT communication

- AX-308E CPU supports up to 8 axes EtherCAT servos (Min. sync. time: 2 ms for 8 axes)
- AX-364EL CPU supports 64 positioning axes
- Supports PLC AS series' power, DIO, AIO and temperature expansion modules (Max. 32 modules)
- High performance: min. execution time of basic instruction is 5 ns
- Provides common instructions such as position, velocity, torque, multi-axis interpolation, E-gear, E-CAM, and more.
- Built-in 16 DI, 8 DO, incremental encoder (x2), SSI absolute encoder, RS-232/RS-485, Ethernet and EtherCAT ports

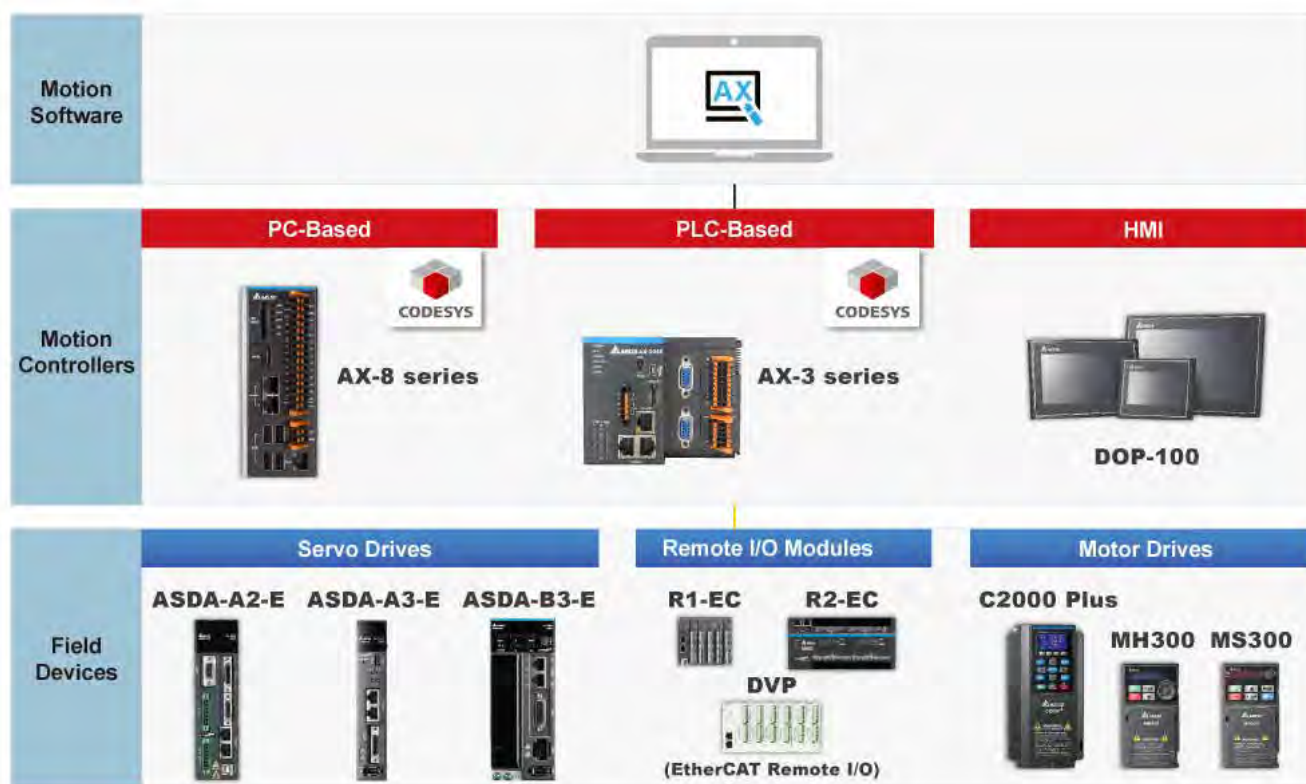




## Software - DIADesinger-AX

DIADesigner-AX is a programming platform compliant with IEC 61131-3 for Delta's PC-based motion controller AX Series. It provides a large number of application commands and a useful motion library. It has multiple built-in languages and enables easy and highly efficient development with its user-friendly interface.

- **Standardized programming**  
IEC 61131-3 compliant software provides a standardized programming and controller development platform
- **Unified integrated software**  
Programs all of Delta's automation products on a single platform to shorten development time and costs
- **Open and modular platform**  
Allows secondary development for customized functionalities and components with users' industry know-how
- **Single PLC/Motion platform**  
CODESYS runtime supports Windows, VxWork, and Linux operating systems to program PC-based or PLC-based controllers
- **Supports EtherCAT high-speed fieldbus**  
Highly efficient, precise and instant motion control enhances productivity
- **Tag sharing between HMI and controllers based on CODESYS**  
Easy and simple variable sharing saves editing time and labor
- **Supports diverse industry applications**  
Suitable for industrial robots, woodworking, printing and packaging applications



# Open CNC Solution New

## NC30EB

### Open-structured CNC Control System for Customization and Flexibility



#### Solution 1: Standard

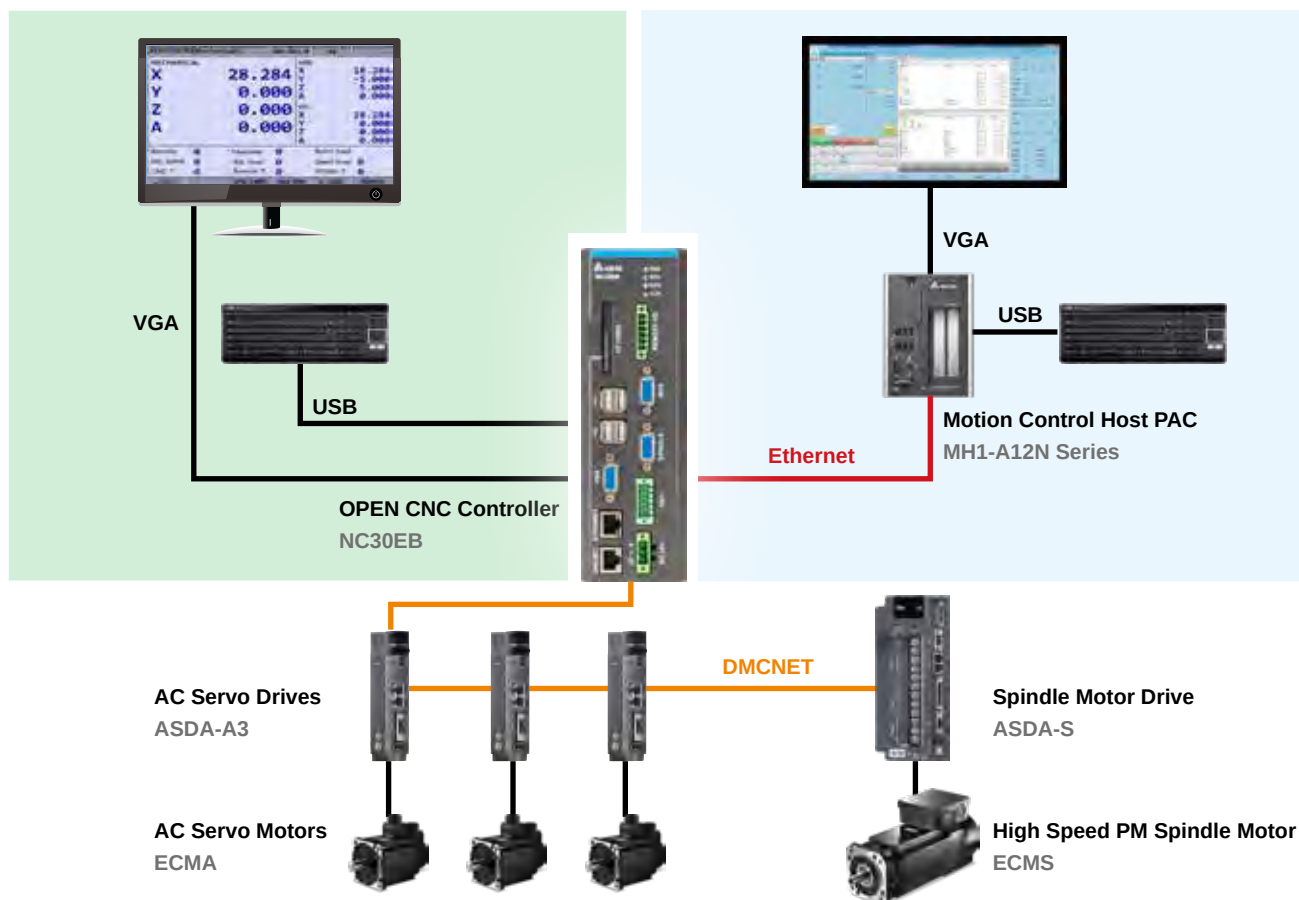
VGA output for external display with Delta's standard interface

- Provides new operating interface using the DOPSOFT software to program customized functions for flexible operation
- Bilingual CNC operation interface (Chinese, English)
- Embedded control system provides high efficiency
- Allows easy customization with accessories including a monitor and a keyboard
- Supports 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
- Reduces additional hardware cost for customers to focus more on software upgrades and better integration for higher operation performance



## Applications

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

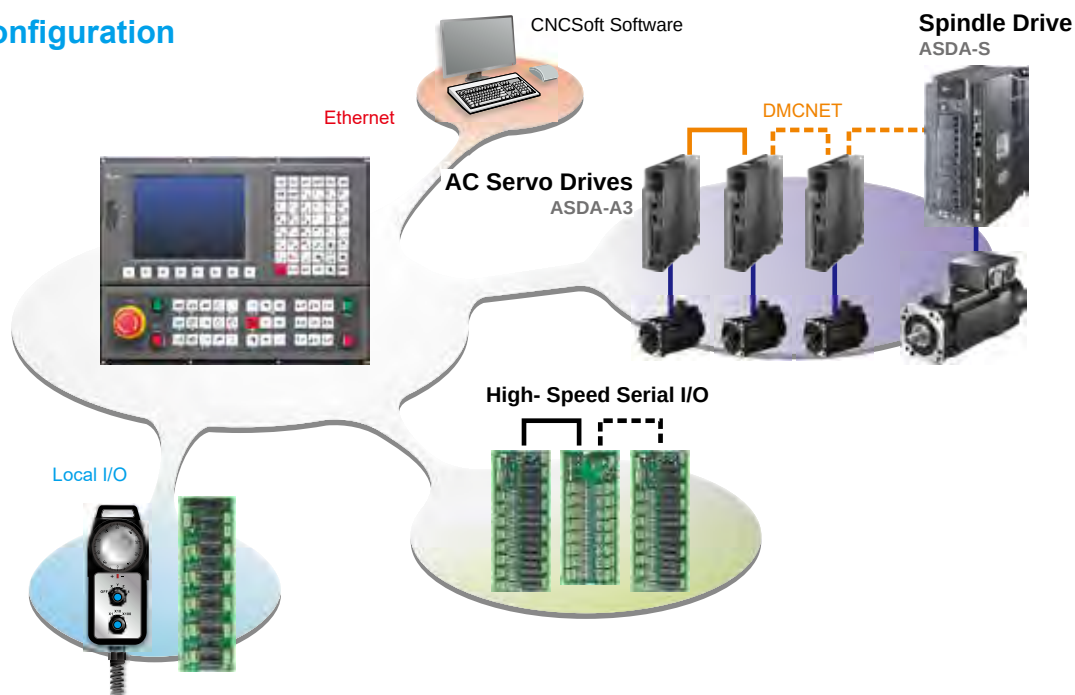
# CNC Solution

## Integrated Total Solution for the CNC Machine Tools Industry



- Built-in 32-bit high-speed and multi-task 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
- Provides new operating interface using the DOPSOFT software to program customized functions for flexible operation
- Built-in high-resolution encoder with an accuracy of 0.1um to enhance control and accuracy
- Capable of connecting serial digital I/O modules to greatly improve the extension capacity

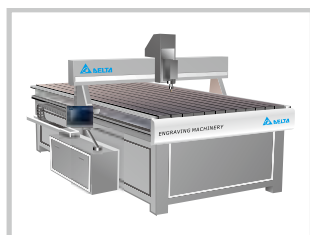
### System Configuration



### 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

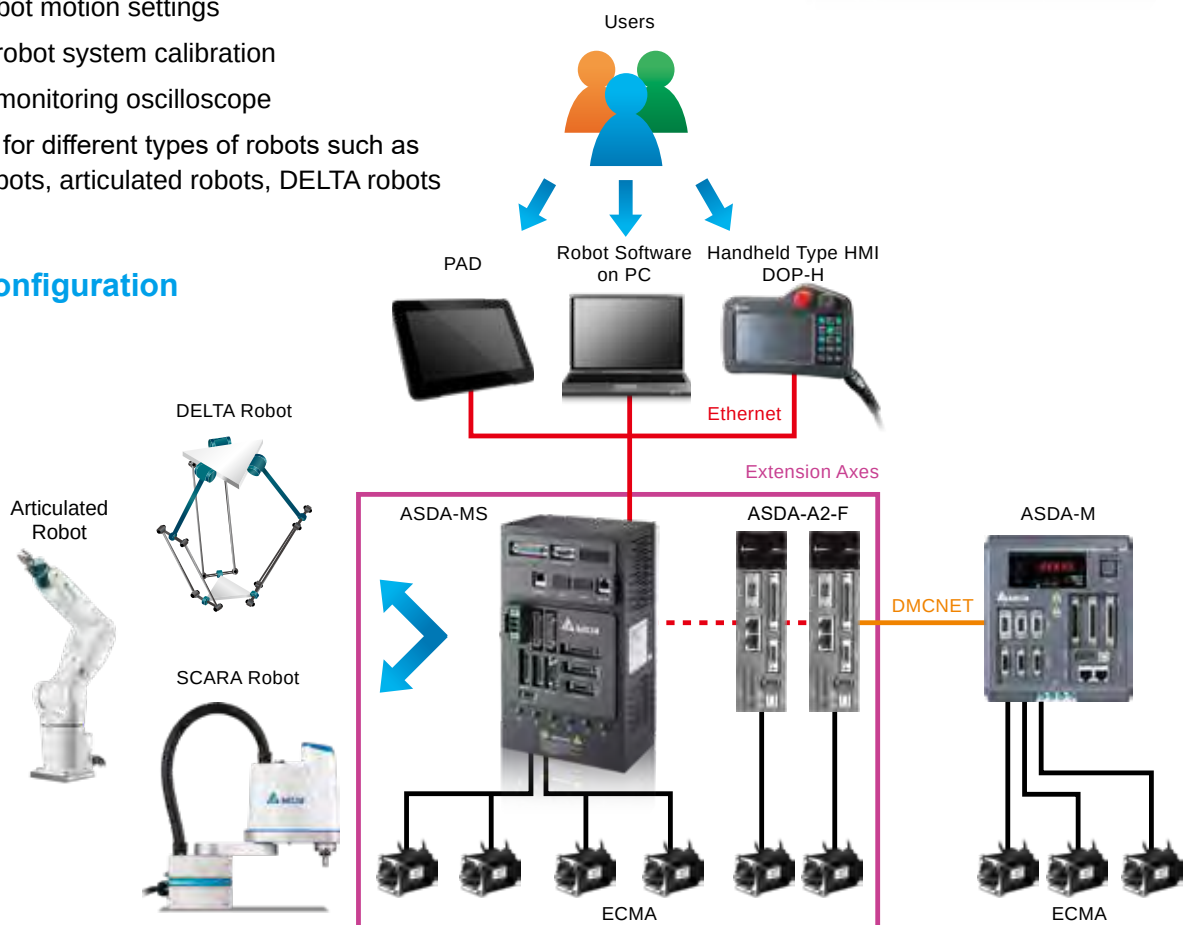
- Integrated servo drive and controller in one single unit for real-time motion control with high flexibility and reliability
- Various communication protocols
- Built-in with diverse robot control modules
- Up to 10-axis motion control: 4-axis robot + 6 external axes
- Supports 5 kinds of programming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



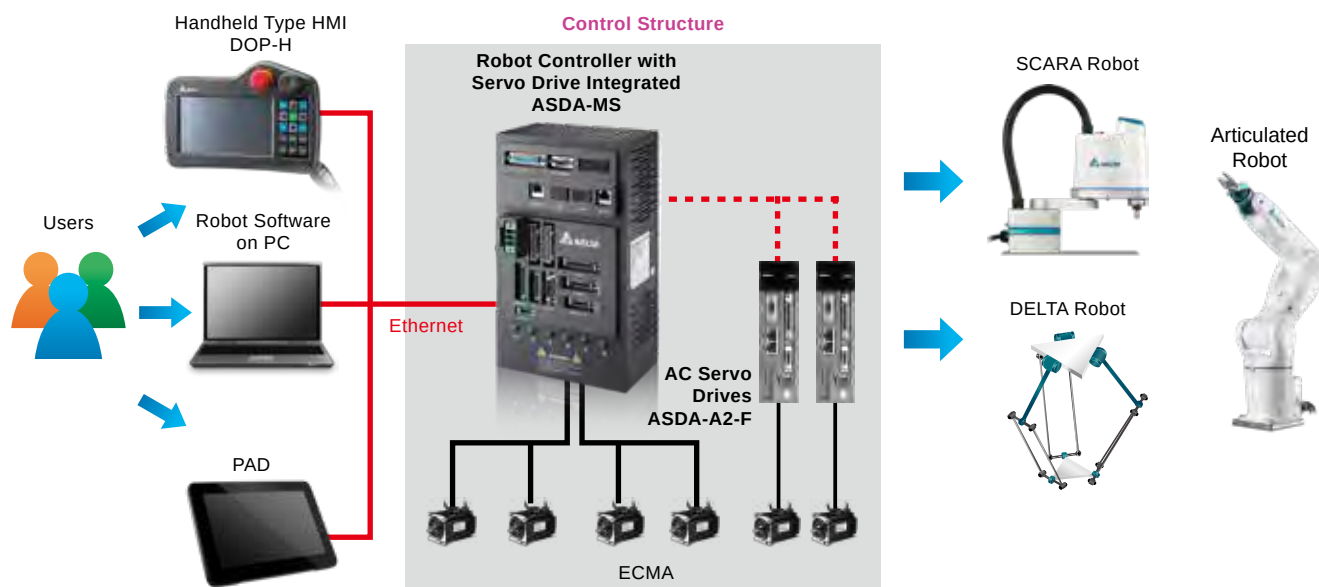
### System Configuration





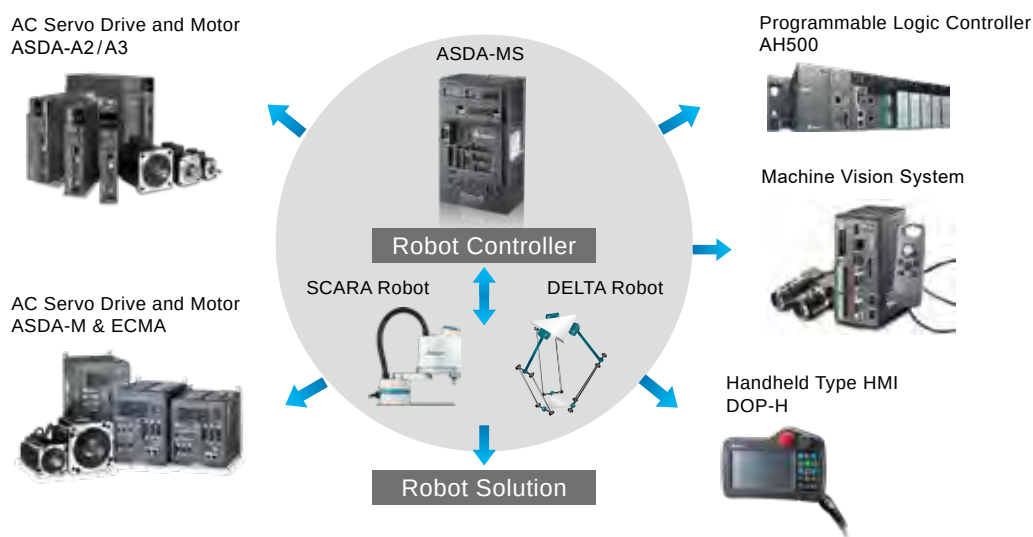
## All-in-One Robot Controller

- 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 and products such as Delta's linear motion products, 4-axis SCARA robots, DELTA robots, and the 2 axes extension via DMCNET for 6-axis articulated robots 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 robot and robot workstation applications



## Applications

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

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

# Controller with Human Machine Interface HMC

Optimum Combination of Controller and Display

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

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



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

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



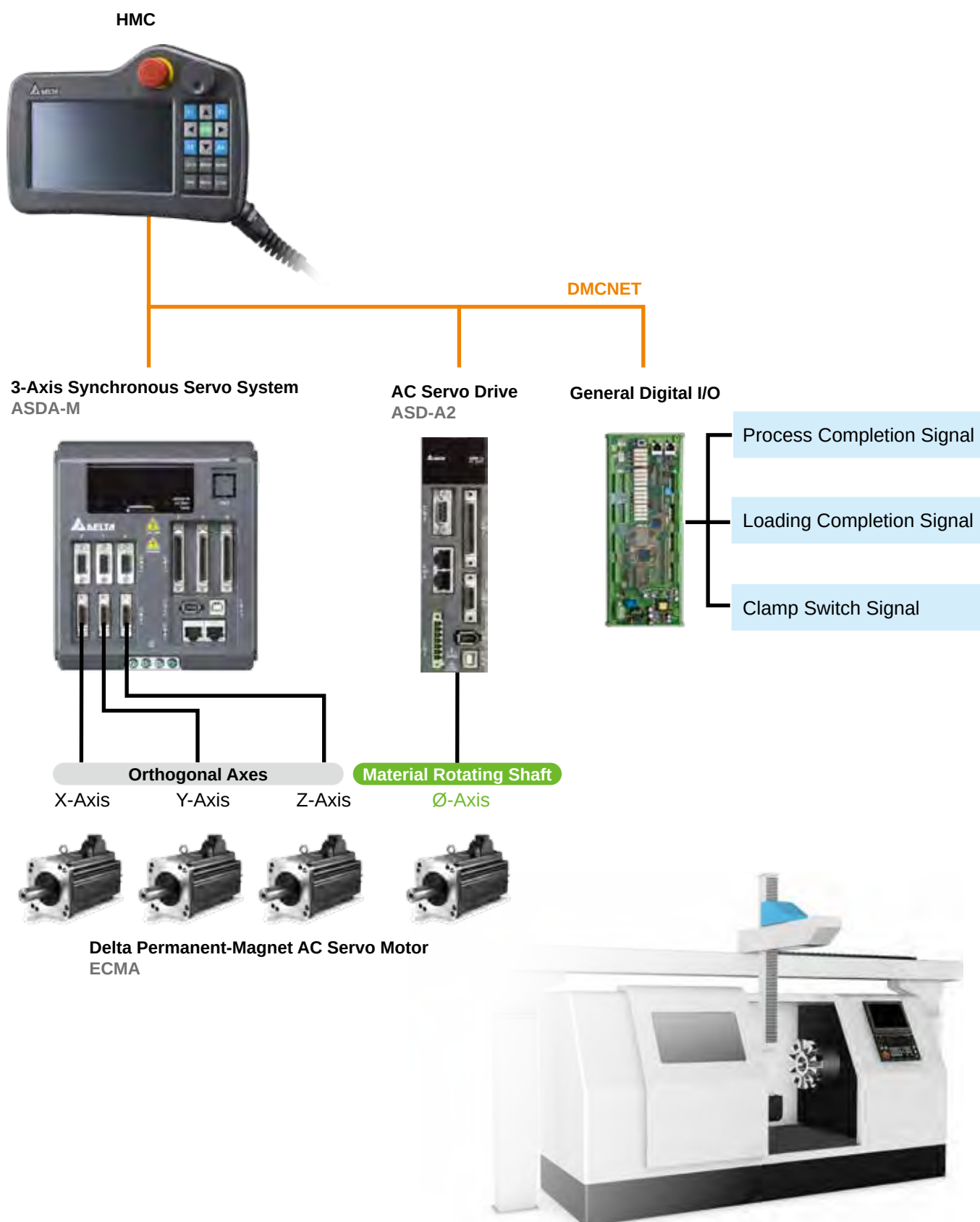
## 8-inch Controller with HMI HMC08-N500S52

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





## Robotic Loading / Unloading Control for Machine Tools



# Hot Swappable Mid-range PLC

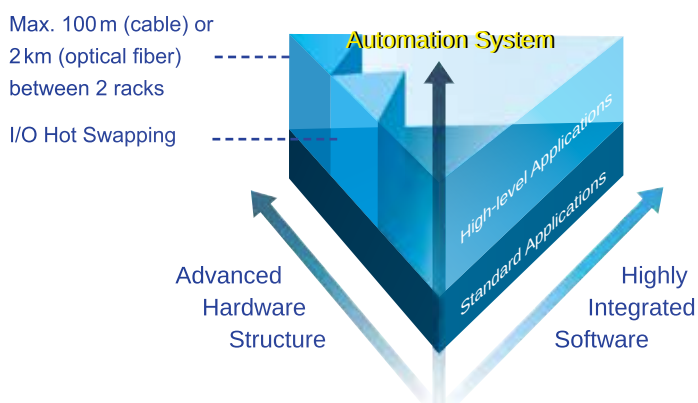
AH

The Smart Solution for High-end Machinery and System Integration



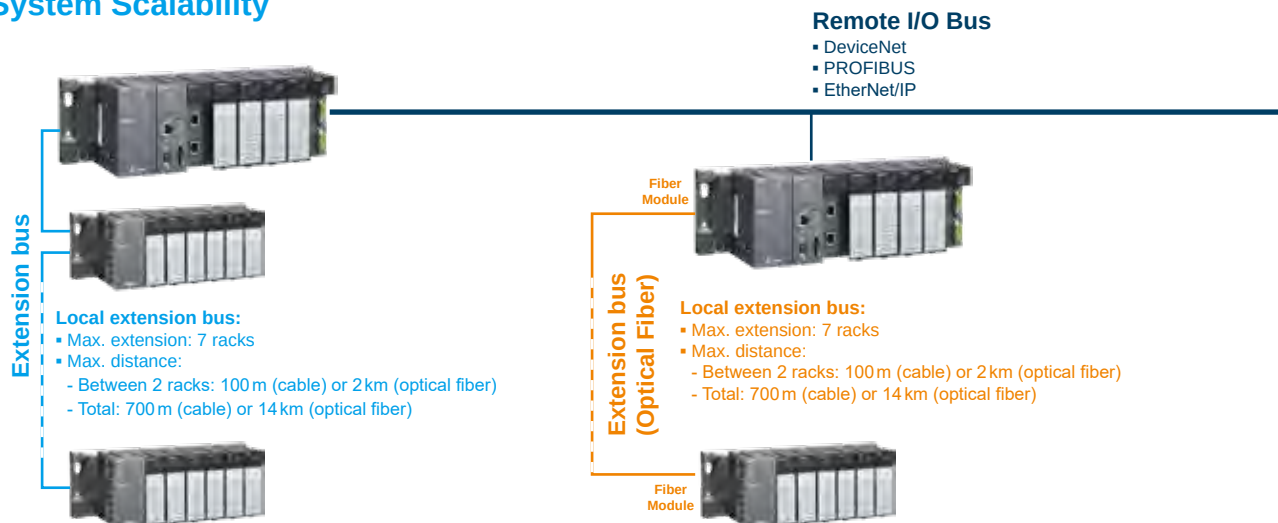
- 32-bit dual-core multitasking processor
- Excellent program execution speed (LD: 20 ns)
- Max. I/O:
  - DIO: Max. 4,352 points
  - AIO: Max. 544 channels
  - RIO: Max. 125,440 digital points/3,920 analog channels
- Program capacity: max. 1M steps (4 MB)
- Data register (D+L): 512k words
- CPU with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

## Modularized Hardware Structure and Highly Integrated Software



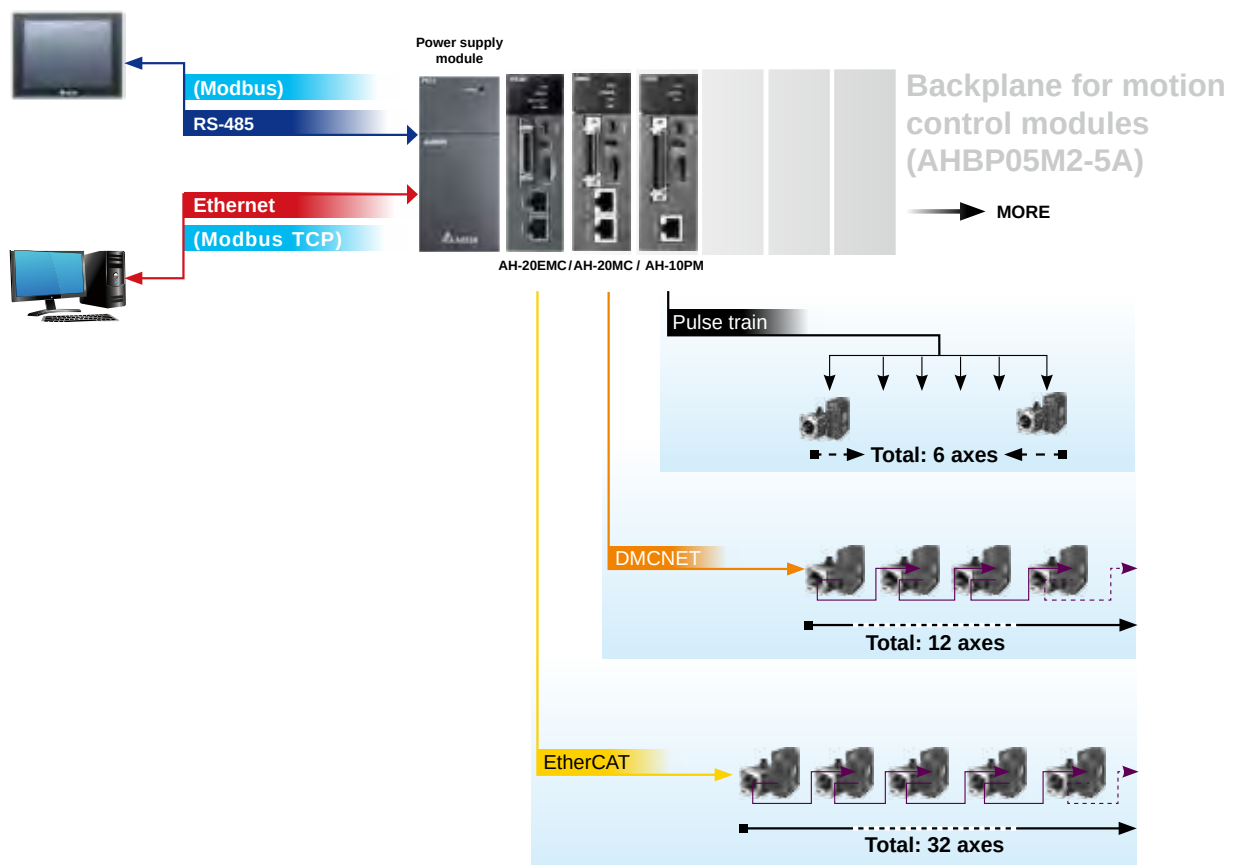
- Highly integrated programming software ISPSOFT: Graphical interface with 5 programming languages
- Enhanced flexibility: Max. 100 m (cable) or 2 km (optical fiber) between 2 local extension racks
- Redundant system and hot-swapping function ensure non-stop system operation for improved maintainability

## System Scalability



## Motion Control Structure

Example: AH20EMC



## Applications

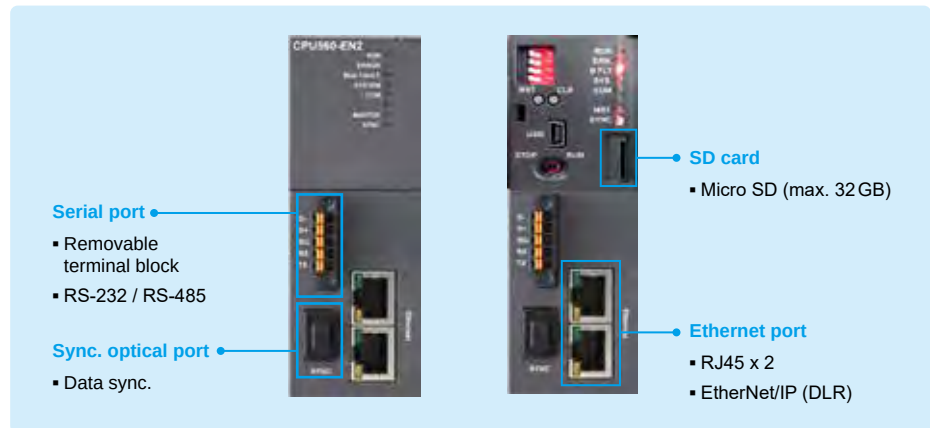
High-end industrial equipment: textile machines, packaging machines, injection and molding machines, electronics equipment, printing machines, paper making machines, warehousing management systems, and logistics management systems

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

## Redundant CPU

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

AHCPU560-EN2



## Redundant Backplane

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

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



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



## Redundant System

### Full Redundancy Structure

| Redundant CPU | Redundant Main Backplane | Redundant Power | Redundant Ext. Ports | Ring Topology |
|---------------|--------------------------|-----------------|----------------------|---------------|
|---------------|--------------------------|-----------------|----------------------|---------------|

### Modules

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

### Tasks

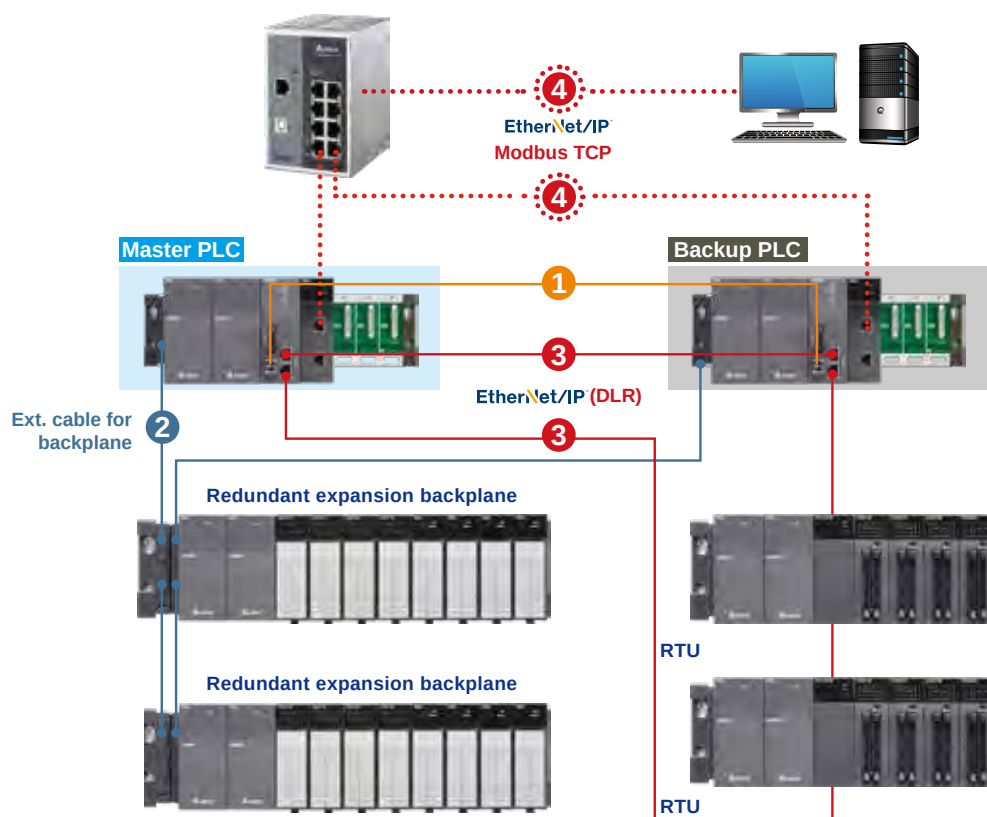
| Cyclic | Timer Interrupt |
|--------|-----------------|
|--------|-----------------|

CPU built-in sync. module

CPU switch-over time: 20 ms

RTU nodes for expansion backplanes

Standard backplanes available (under some conditions)



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

# Compact Modular Mid-range PLC

AS

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



- Max. I/O: 1,024 points
- Program capacity: 128k steps
- Data register: 60k words
- Max. extension ability: 32 modules
- 32-bit SoC (System on Chip) CPU for high-performance and high-speed computing
- CPU with built-in RS-485 port x 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 modules, serial communication modules, industrial bus modules
- PLC programming software (ISPSoft) for program editing, hardware and network configuration, system diagnosis and axis positioning control

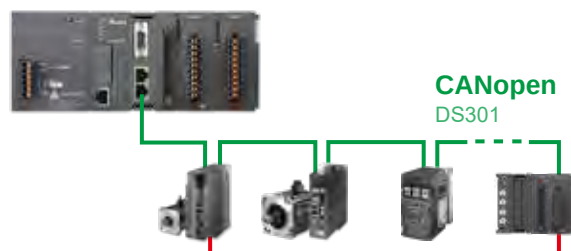
## Advanced CPU Performance

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

|                                      |              |
|--------------------------------------|--------------|
| LD instruction                       | 25 ns        |
| MOV instruction                      | 0.15 $\mu$ s |
| Floating point operation instruction | 1.6 $\mu$ s  |
| Trigonometric function instruction   | 3.5 $\mu$ s  |

## Positioning Control - Delta's CANopen Control

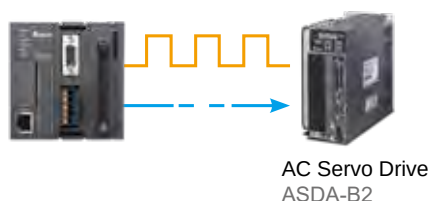
- AS200/300 supports up to 8 Delta servo drives and 8 AC motor drives (AS-FCOPM function card is needed for AS300)
- Fast positioning configuration in one initialization instruction without building a CANopen data exchange table
- Axis control by instructions for easy maintenance and high PLC program readability





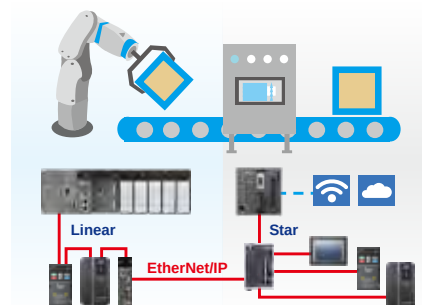
## Positioning Control - High-speed Pulse

- 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



## Flexible Network System Configuration

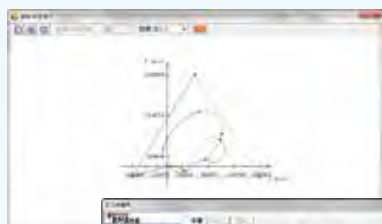
- Supports star, linear network topology for fast expansion and management on production lines
- Compatible with IT network; no independent network or IT technician required
- Matches with Delta's industrial Ethernet solutions to construct IoT for more automation application and industrial upgrades



## New Programming Software

### Various, Convenient Software Wizards for Effortless Planning

#### Positioning Planning Table

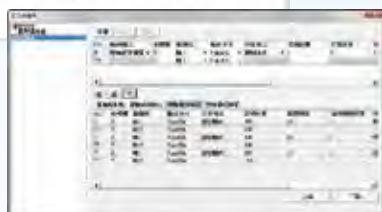


##### 2D simulation

Intuitive 2D track simulation for real-time path planning, no complicated calculation required

##### Path list

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



##### Axis parameter setting

Intuitive configuration interface for easy axis parameter setting

## 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:

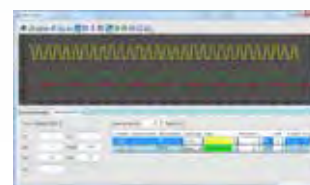
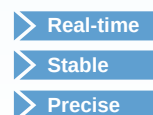
Supports a variety of sampling intervals, trigger modes, software settings, and hardware executions

#### 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



## Applications

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

# Compact Modular Motion Controller

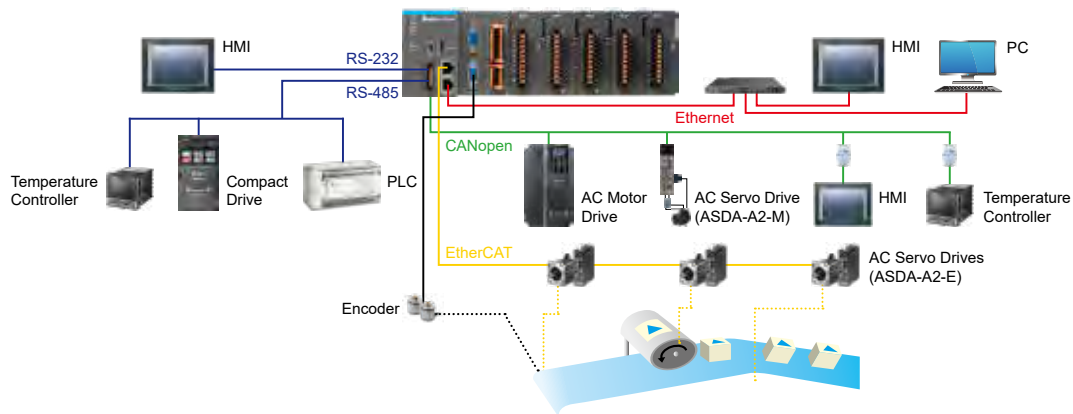
AS500 New

The Best Solution for OEM Equipment



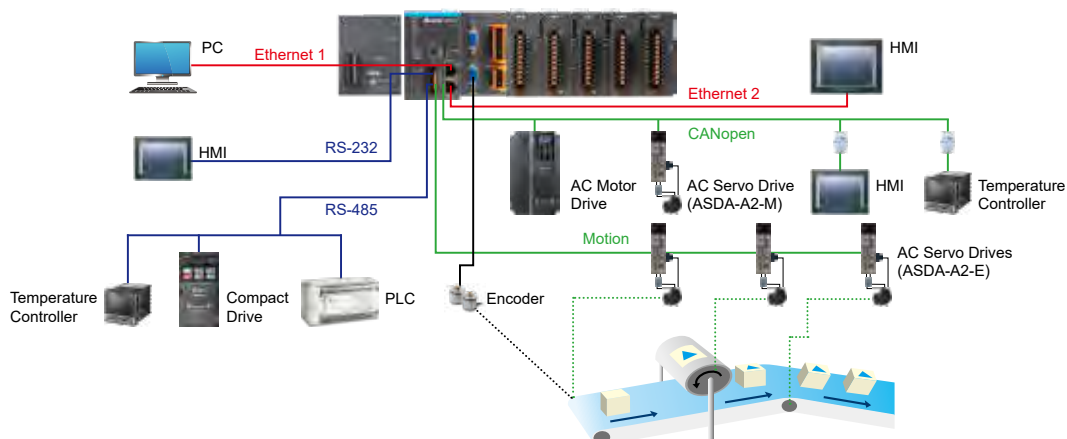
## EtherCAT Motion Control System

- AS516E CPU supports up to 16 axes Delta EtherCAT servo drives (min. sync time: 1 ms/16 axes)
- Supports AS power, DIO, AIO, temperature and load cell expansion modules (max. 32 modules)
- 1GHz processor provides high operation performance
- Provides various motion commands: position, velocity, torque, multi-axis interpolation, E-gear, E-CAM, G-code, and more
- Built-in 16 DI & 8 DO, incremental encoder x 2, SSI absolute encoder, RS-232/485, Ethernet, CANopen DS301 and EtherCAT interfaces



## CANopen Motion Control System

- AS524C CPU supports up to 24 axes Delta CANopen servo drives (min. sync time: 2 ms/4 axes)
- Supports AS power, DIO, AIO, temperature and load cell expansion modules (max. 32 modules)
- 1GHz processor provides high operation performance
- Provides various motion commands: position, velocity, torque, multi-axis interpolation, E-gear, E-CAM, G-code, and more
- Built-in 16 DI & 8 DO, 2 incremental encoders, SSI absolute encoder, RS-232/485, Ethernet x 2, CANopen DS301 and CANopen motion interfaces



# Compact Modular CODESYS Motion Controller

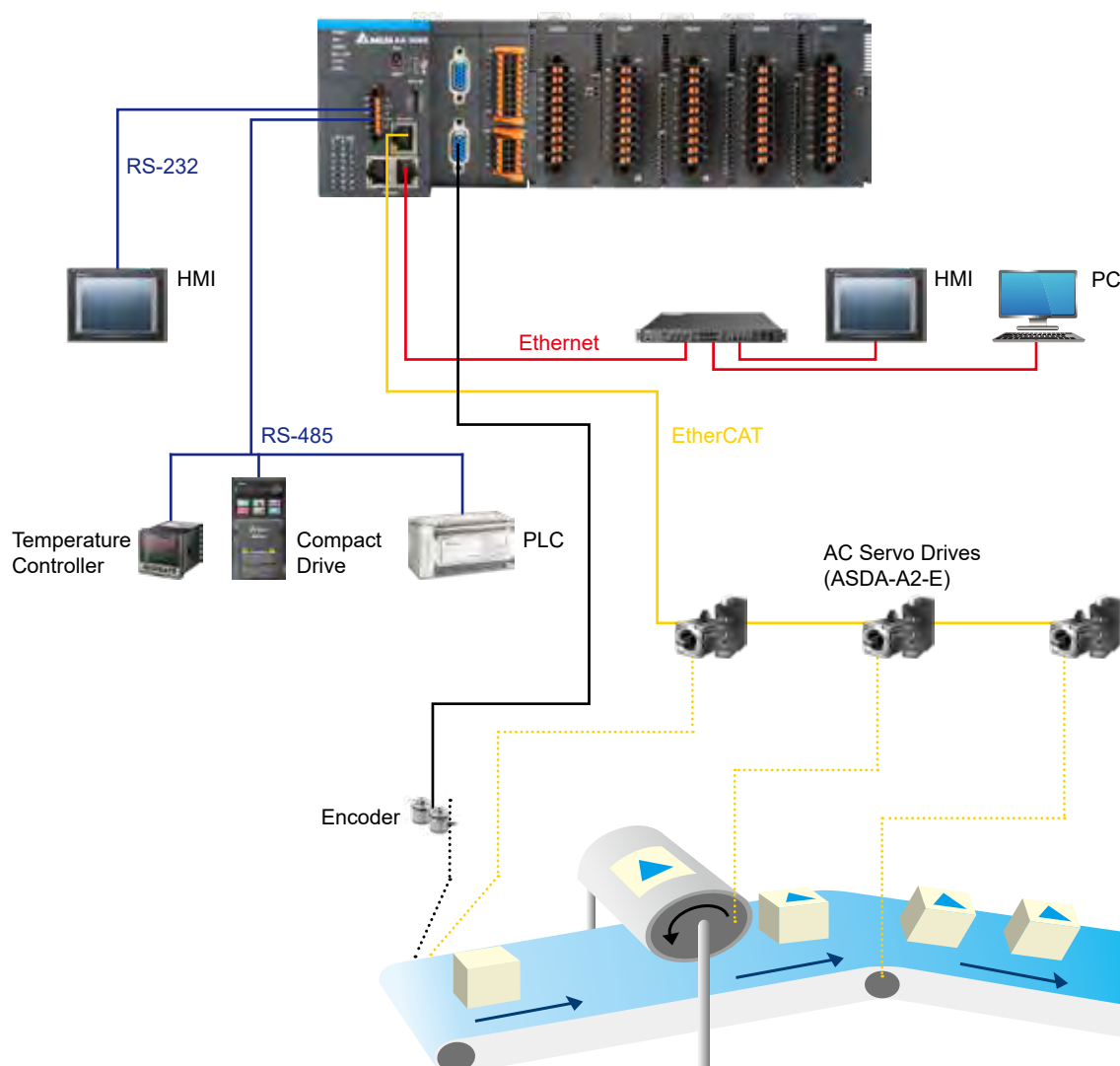
AX-3 New

Perfect Integration of High Performance,  
Flexibility and User-friendliness



## CODESYS EtherCAT Motion Control System

- AX-308E CPU supports up to 8 axes EtherCAT servo drives (min. sync time: 2 ms/8 axes)
- Supports AS power, DIO, AIO and temperature expansion modules (max. 32 modules)
- High performance, min. command execution time: 5 ns
- Various motion commands: position, velocity, torque, multi-axis interpolation, E-gear, E-CAM, and more
- Built-in 16 DI & 8 DO, incremental encoder x 2, SSI absolute encoder, RS-232/485, Ethernet and EtherCAT interfaces

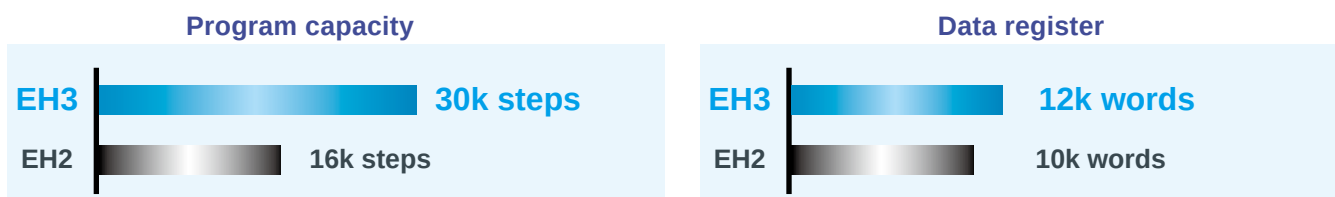


# High Performance PLC

## DVP-EH3

### Excellent for OEM Monitoring Solutions

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



### Excellent Motion Control

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

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

DVP-F232



DVP-F422



DVP-F485



- Ethernet Communication

DVP-FEN01



- Analog Input/Output

DVP-F2AD  
DVP-F2DA



# Standard PLC

DVP-ES3 New

The Most High-end DVP Series PLC –  
The Best Choice for Advanced Machines



## Outstanding Operation Performance

- Adopts the high performance processor of the Compact Modular Mid-range PLC AS Series
- Min. execution time of basic instruction: 25 ns

## Excellent Motion Control

- High speed counter: 200kHz x4 (A/B phase) or 200kHz x8 (single phase)
- High speed pulse out: 200kHz x4 (pulse + direction) or 200kHz x8 (pulse)
- 2-axis interpolation (linear and arc)
- Table structured position control function
- 8 axes CANopen point-to-point motion control (with Delta servo drives only)

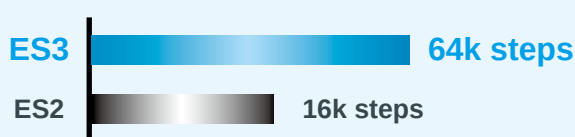
## Built-in More Communication Interfaces

- Supports USB for programming
- RS-485 x2: Modbus RTU/ASCII
- Ethernet:
  - Modbus TCP: 16/16 connections (Server/Client)
  - EtherNet/IP: 16/16 connections (TCP/CIP)
- CANopen: DS301

## Higher Specifications

- Program capacity: 64k steps
- Data capacity: 64k words
- Built-in 32 DIO points
- Supports micro SD cards

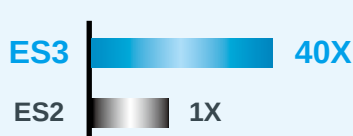
### Program Capacity



### Data Register



### Execution Speed



## Modules

### • Digital I/O Modules

#### Input Point Extension

DVP08XM211N  
DVP16XM211N



#### Output Point Extension

DVP08XN211R/T  
DVP16XN211R/T  
DVP24XN200R/T



#### Input/Output Point Extension

DVP08XP211R/T  
DVP16XP211R/T  
DVP24XP200R/T  
DVP32XP200R/T



### • Analog I/O Modules

#### Input Point Extension

DVP04AD-E2



#### Output Point Extension

DVP04DA-E2  
DVP02DA-E2



#### Input/Output Point Extension

DVP06XA-E2



### • Temperature Modules

DVP04PT-E2



DVP06PT-E2



DVP04TC-E2



### • Resolver Module

DVP10RC-E2



### • DVP-ES2 Series Extension Module + Cable

DVPAEXT01-E2





# Standard PLC / Analog I / O PLC

## DVP-ES2 / EX2

### Comprehensive Functions for General Applications

**Standard PLCs with integrated communication and highly efficient processing capabilities 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:
  - Built-in 12-bit 4 analog inputs / 2 analog outputs, can be matched with 14-bit analog I/O extension modules
  - Analog I/O and temperature model DVP30EX2 Series features built-in PID auto tuning and complete analog control functions
- Program capacity: 16k steps
- Data register: 10k words
- Max. execution speed of basic instructions: 0.35  $\mu$ s
- Highly efficient processing ability: 1k steps of programs can be processed within 1 ms
- 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 ensures program confidentiality and intellectual property



reddot design award  
winner 2010

# Network Type Advanced Slim PLC

## DVP-SE

**Complete network communication functions for advanced industrial applications**

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



# High Performance Slim PLC

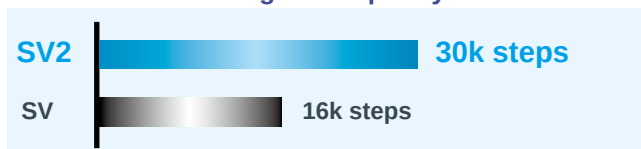
## DVP-SV2

### The Best Choice for Slim Type PLC

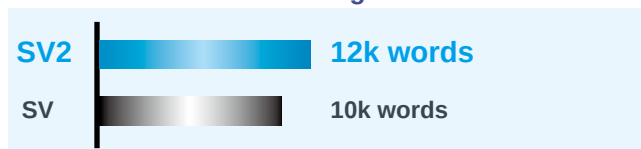
High-end model of DVP-S Series with larger program capacities and data registers for more demanding and complex applications



#### Program Capacity



#### Data Register



### Excellent Motion Control

- High-speed pulse output: 4 axes of 200 kHz pulse output
- Supports max. 4 high-speed counters (200 kHz)
- 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
- Provides 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 ensures program confidentiality and intellectual property

### Scalability

- Supports DVP-S Series modules (left-side and right-side)
- New Ethernet communication instructions (ETHRW) available

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

#### Network Modules

- DeviceNet Master  
DVDPNET-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 Type

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



## Advanced Slim PLC

### DVP-SA2

#### Advanced Type for High-speed Modules (Left-side)

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



## Analog I / O Slim PLC

### DVP-SX2

#### Analog Type with Highly Efficient PID Control Function

- Program capacity: 16k steps
- Data register: 10k words
- Max. execution speed of basic instructions: 0.35  $\mu$ s
- Built-in 4 analog inputs/2 analog outputs
- Supports 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)
- Supports DVP-S Series modules (left-side and right-side modules)
- Motion control functions:
  - 4 points of high-speed pulse output: 100 kHz/2 points, 10 kHz/2 points
  - 8 points of high-speed pulse input: 100 kHz/2 points, 10 kHz/6 points
  - Supports 2-axis linear and arc interpolation



# Multi-axis Motion Controller

DVP-10MC/15MC/50MC <sup>New</sup>

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

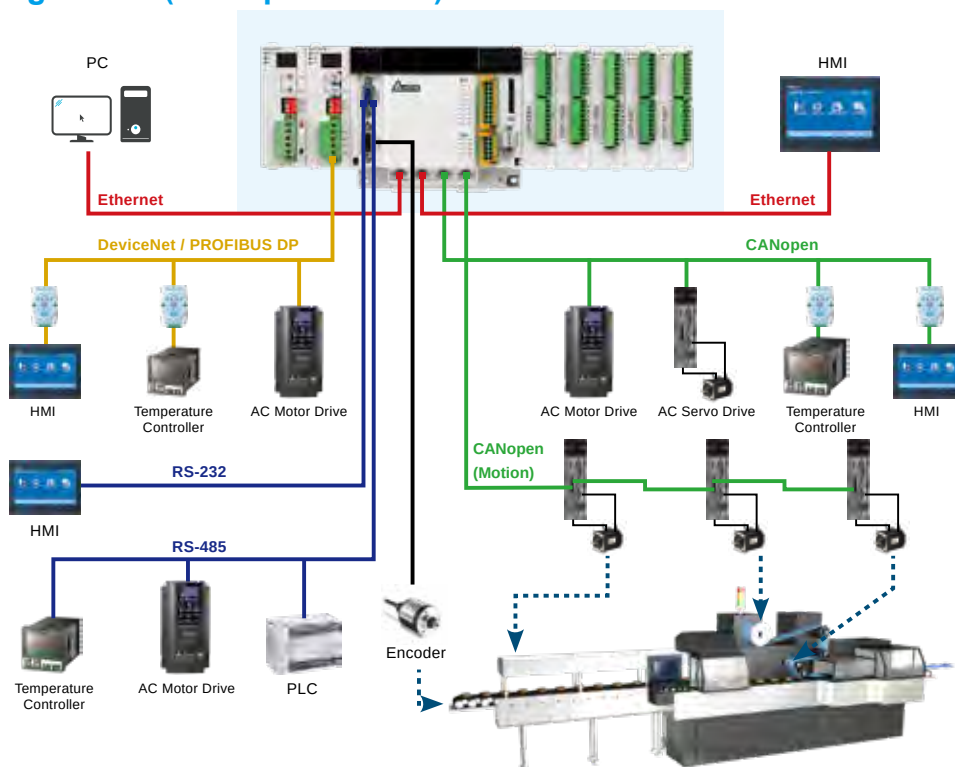


DVP-50MC

## 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
- Supports DVS-S Series modules (left-side and right-side modules) for multiple options
- Flexible industrial networking applications (DeviceNet Master/Slave, CANopen Master/Slave and PROFIBUS DP Slave modules)
- Provides 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, extension up to 256 I/O points
- Program capacity: 64k steps
- Data register: 10k words
- Execution speed LD: 0.1375  $\mu$ s, MOV: 2.1  $\mu$ s
- Built-in RS-232 and RS-485 ports
- 2/3/4/5/6 axes linear interpolation motion control
- Highly accurate PWM 200 kHz output, resolution 0.3%
- 8 groups of high-speed captures (mark correction, frequency measurement), comparative output, Mark / Mask function (for bag making)
- Supports 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, extension up to 512 I/O points
- Program capacity: 64k steps
- Data register: 10k words
- Built-in RS-232 and RS-485 ports
- Compatible with G-code / M-Code
- 3-axis linear/arc/helical interpolation
- Supports electronic cam (2,048 points) function for flying shear and rotary cut applications
- All models can be applied as motion controllers or extension modules
- Supports 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
  - Supports 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 Multimedia Type HMI

#### 12-inch Advanced Multimedia HMI

##### DOP-112MX

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



#### 15-inch Advanced Multimedia HMI

##### DOP-115MX

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



### Advanced Type HMI

#### 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
- Supports FTP/Email/VNC/Web monitor

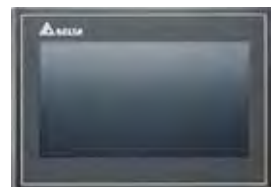




## 7-inch Advanced HMI

### DOP-107WV

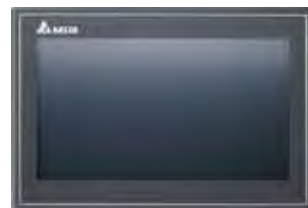
- 7" 65,536 colors TFT/Display resolution: 800 x 480
- Cortex-A8 800MHz CPU/512 MB RAM/256 MB ROM
- Built-in Ethernet
- 2 sets of COM ports/1 extension COM port
- Multilingual input
- USB host
- Supports FTP/Email/VNC/Web monitor



## 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 and supports SD cards
- 2 sets of COM ports/1 extension COM port
- USB host
- Supports FTP/Email/VNC/Web monitor



## 12-inch Advanced HMI

### DOP-112WX

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



## Advanced Type HMI

### 15-inch Advanced HMI

#### DOP-115WX

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



## Standard Ethernet Type HMI

### 7-inch Standard Ethernet HMI

#### DOP-107IV New

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



### 8-inch Standard Ethernet HMI

#### DOP-108IG New

- 8" 65,536 colors TFT/Display resolution: 800 x 600 pixels
- Cortex-A8 800MHz CPU/256 MB RAM/256 MB ROM
- Built-in Ethernet and supports SD cards
- 3 sets of COM ports/1 extension COM port
- USB host
- Supports FTP/Email/VNC/Web monitor



## 10-inch Standard Ethernet HMI

### DOP-110IG New

- 10" 65,536 colors TFT/Display resolution: 800 x 600 pixels
- Cortex-A8 800MHz CPU/256 MB RAM/256 MB ROM
- Built-in Ethernet and supports SD cards
- 3 sets of COM ports/1 extension COM port
- USB host
- Supports FTP/Email/VNC/Web monitor



## 10-inch Standard Ethernet HMI

### DOP-110IS New

- 10" 65,536 colors TFT/Display resolution: 1,024 x 600 pixels
- Cortex-A8 800MHz CPU/256 MB RAM/256 MB ROM
- Built-in Ethernet and supports SD cards
- 3 sets of COM ports/1 extension COM port
- USB host
- Supports FTP/Email/VNC/Web monitor



## 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
- Supports 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 and supports SD cards
- 2 sets of COM ports/1 extension COM port
- USB host
- Supports FTP/Email/VNC/Web monitor



## Standard Type HMI

### 5-inch Standard HMI

DOP-105CQ New

- 5.6" 65,536 colors TFT/Display resolution: 320 x 234 pixels
- Cortex-A8 800MHz CPU/256 MB RAM/256 MB ROM
- 2 sets of COM ports/1 extension COM port
- USB host



### 7-inch Standard HMI

DOP-107CV

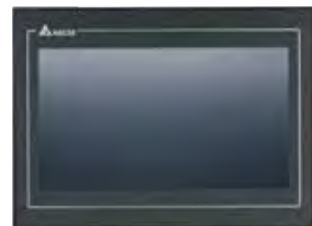
- 7" 65,536 colors TFT/Display resolution: 800 x 480
- Cortex-A8 800MHz CPU/256 MB RAM/256 MB ROM
- 2 sets of COM ports/1 extension COM port
- USB host



### 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



### 10-inch Standard HMI

DOP-110CG New

- 10.4" 65,536 colors TFT/Display resolution: 800 x 600 pixels
- Cortex-A8 800MHz CPU/256 MB RAM/256 MB ROM
- 2 sets of COM ports/1 extension COM port
- USB host



## Basic Ethernet Type HMI

### 7-inch Basic Ethernet HMI

DOP-107DV New

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



## Basic Type HMI

### 4.3-inch Basic HMI

DOP-103BQ

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



### 7-inch Basic HMI

DOP-107BV

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



# WinCE Human Machine Interface

## DOP-W

High Color, High Resolution Human Machine Interfaces

### 10-inch WinCE HMI

#### DOP-W105B

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





# Handheld Human Machine Interface

## DOP-H

### 7-inch Widescreen Handheld HMI

#### DOP-H07

- 7" 16:9 widescreen, 65,536 colors TFT
- Display Resolution: 800x480 pixels
- Supports SDHC cards
- 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 design: 750g
- Integrated style cables available (5m/10m)



# Touch / Text Panel Human Machine Interface

TP

## 4-Line Text Panel HMI

TP04G-AL-C / TP04G-AL2

- 4.1" STN-LCD
- User-defined function keys available
- RS-232/RS-422/RS-485 ports (TP04G-AL2)
- Password protection function
- User-defined boot screen
- 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
- Modbus ASCII/RTU modes
- Password protection function
- User-defined boot screen
- 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: 240x128 dots
- Built-in 1,024k bytes flash memory
- 24 user-defined function keys
- Built-in RS-232 and RS-422/RS-485 ports
- Recipes and macro functions

|                  |                     |
|------------------|---------------------|
| Dimensions       | 3.8" ( 83x41mm)     |
| Resolution       | 240 × 128           |
| Display Color    | Monochrome          |
| Flash Memory     | 1 MB                |
| 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

- Adopts the core of the 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
- 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 MB            |
| 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

- Adopts the CPU of the DVP-SS2 Series PLC:  
program capacity: 4k steps/D device: 5k words
- Provides 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 x 2
- 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 MB            |
| 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

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

|                  |                         |
|------------------|-------------------------|
| Dimensions       | 4.1" (101.8 × 35.24 mm) |
| Resolution       | 192 × 64                |
| Display Color    | Monochrome              |
| Flash Memory     | 1 MB                    |
| 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
- Electrical circuit protection



### 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 ferrous metal detection
- Electrical circuit protection
- IP67 and CE certification



## Laser Displacement New

### LD-N (Standard Type)

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







## Laser Displacement <sup>New</sup> LD-E (Long-range Type)

- 100~500 mm detection range
- 7 types of display settings
- DIO, AIO, and RS-485 communication interface
- 70~800  $\mu\text{m}$  repeatability
- IP67-rated protection
- Compact size of 25 x 44 x 24 mm for easy installation



## Area Sensor <sup>New</sup> AS-B Standard

- Aluminum case, robust 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, robust structure
- Fixed/floating mask
- Interlock/restart functions
- Measurement function
- Auto data upload
- Customized periodic optical axis intervals for fixed scanning

\* Note 1: TX cable (grey) and CX cable (blue)

Note 2: Successfully applied to package detection, measurement and deviation inspection in logistics industries.



## AS-E

- Aluminum case, robust structure
- Compact design: 17x15 mm
- Sensing distance: 3 m



## Applications

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

# Rotary Encoder

ES / EH / HS / HH

## Incremental

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

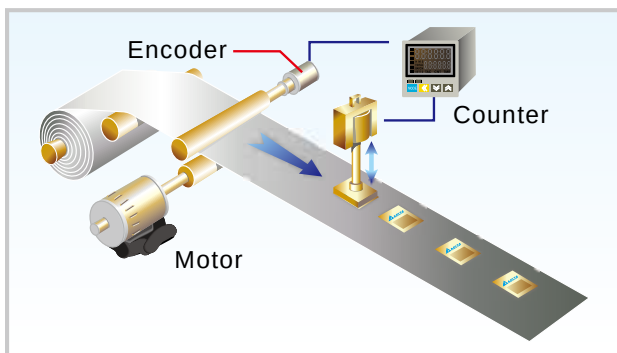


**Solid Mandrel**

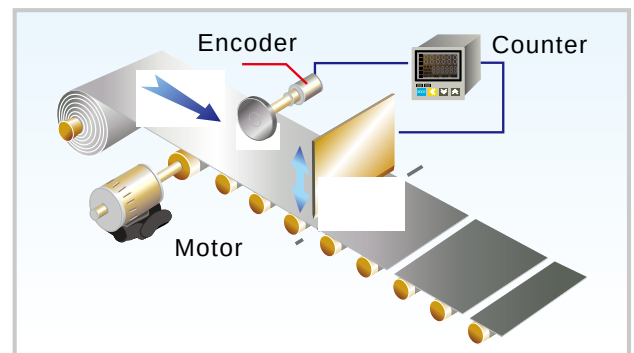
ES5 / ES3 (Optical)  
HS5 / HS3 (Magnetic)

**Hollow Mandrel**

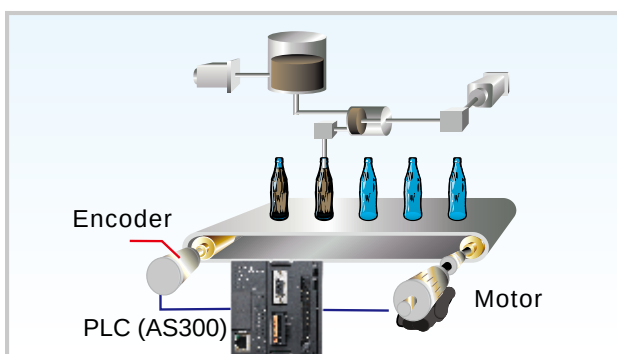
EH5 / EH3 (Optical)  
HH5 / HH3 (Magnetic) coming soon



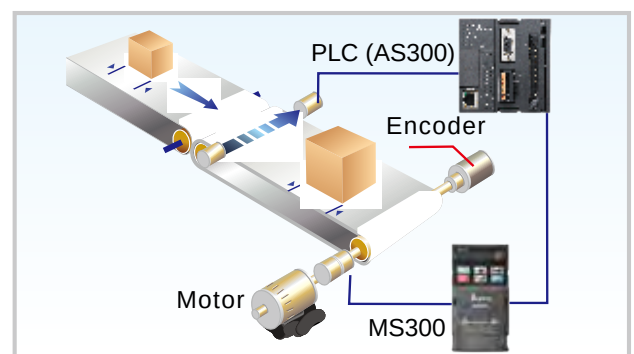
**Label Printing Machine**



**Cutting Machine**



**Bottling Machine**



**Testing/Inspection Machine**

## Applications

Label printing machines, testing/inspection machines, elevators, bottling machines, cutting machines, elevator door



# Handheld Barcode Scanner

DAH1000S/DAH2000H New

## Wide Target Range, Fast and Reliable Capturing

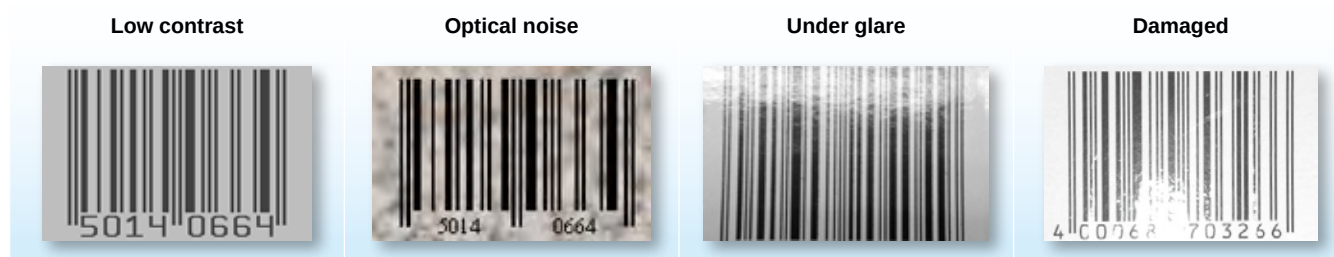
The DAH Series adopts a high-end decoding algorithm to read barcodes quickly, and can easily and stably identify 1D and 2D barcodes within the range of 5 to 25 cm. It caters to various industrial barcode scanning application requirements.

- High-speed code capturing without precise aiming
- Quick and precise barcode reading under low contrast, optical noise, uneven exposure or damaged conditions
- Easy commands for users to set up:
  - Manual adjustment of illumination under various environment conditions
  - Single or multiple trigger modes
  - Barcode type selection based on user's demands
  - User-definable data export of scanned codes for flexible usage
- Robust design: drop impact resistance at 1 m high
- No detachable components, saving maintenance costs

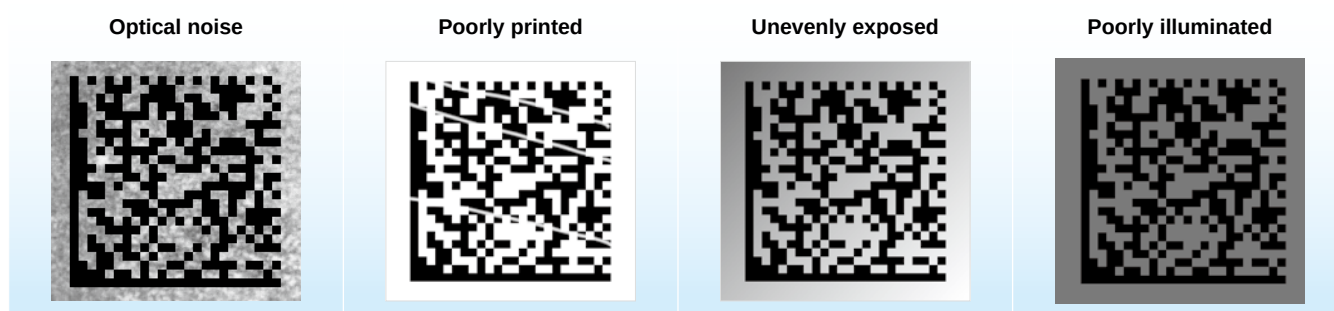


## Advanced Decode Algorithm for Excellent Reading Performance

### 1D Barcodes



### 2D Barcodes



## Applications

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

# Fixed-mount Barcode Scanner

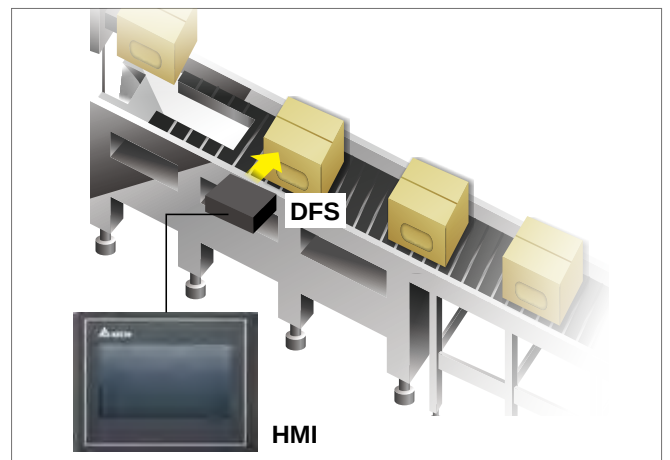
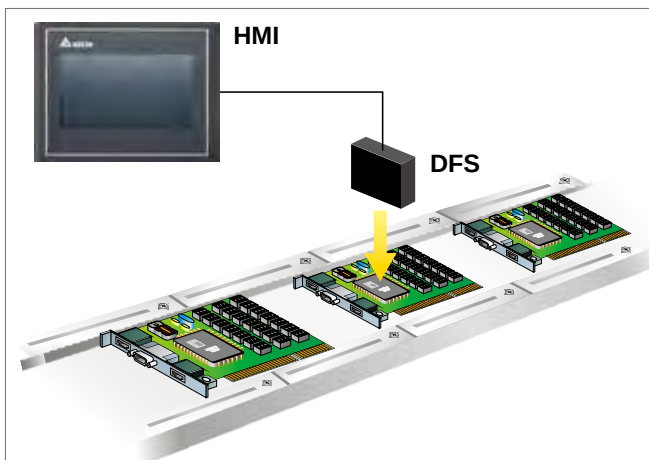
DFS131/DFS150 New

The DFS Series adopts built-in LED indicators and a CMOS sensor to ensure effective auto barcode detection under any lighting conditions when objects are passed through a scanning area. 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 DFS 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 a CMOS sensor ensures valid reading under any lighting conditions
- Effective auto detection of barcodes attached to products or components
- Seamless integration with conveyors for fully automatic barcode reading



## System Structure



## Applications



Retail



Logistics



Manufacturing



Medical Service

# Vision Sensor

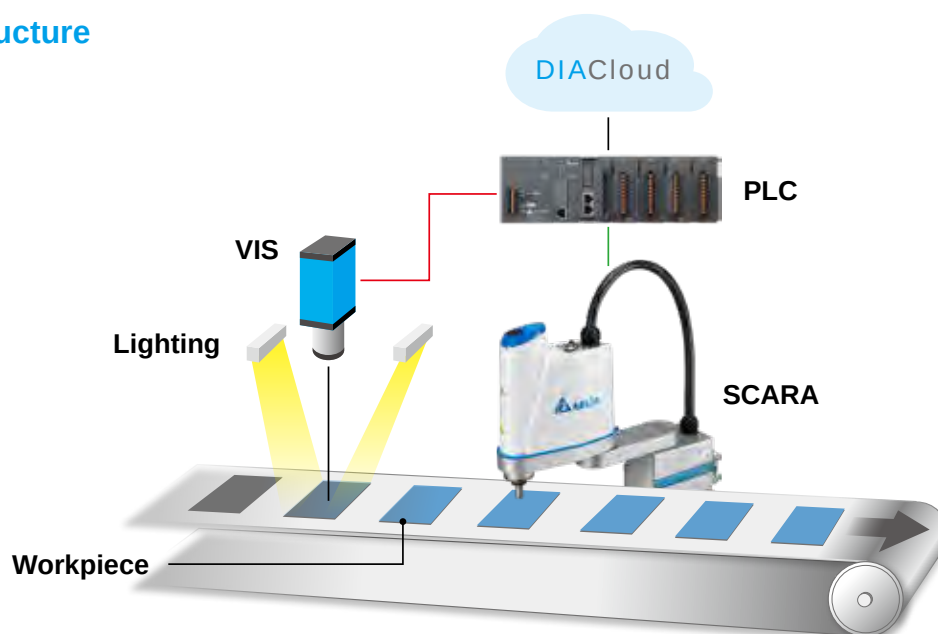
## VIS

The VIS Series is built with a CMOS sensor and LED lighting for sensing under poor illumination. Users can set up programs easily in the full-window interface for object inspection and multi-barcode reading applications. The VIS Series can be implemented on production lines for fully automated inspection and high production efficiency.

- Advanced embedded system for high-speed inspections
- Compact size for flexible installation
- User-friendly interface that supports program setup via browsers for simple and rapid device adjustment
- Built-in LED lighting, no need for an additional lighting device



## System Structure



## Applications

Automated quality inspection for packaging, electronics manufacturing and product assembly



Barcode Reading



Quality Assurance



Object Inspection

# Multi-Loop Modular Temperature Controller New

DTM

## Quick Start and User-friendly Interface for Settings

- Modular design for easy wiring
- Various extension modules for a wide range of applications
- Data collection by CPU for higher data exchange efficiency
- Supports RS-485 and Ethernet communication, and multi-point temperature control (64 points with host group / > 1,000 points with RS-485 or Ethernet)
- User-defined communication addresses
- Complete isolation between channels



## Module Introduction

### CPUs

#### RS-485 Type

DTMR08/DTMR04



- Communication: RS-485
- Supports up to 7 measurement modules + 8 I/O modules
- Temperature control points: 4 or 8
- Dimensions: 7 (W) X 11.3 (H) X 8 (D) cm

#### Ethernet Type

DTME08/DTME04



- Communication: RS-485 + Ethernet
- Supports up to 7 measurement modules + 8 I/O modules
- Temperature control points: 4 or 8
- Dimensions: 7 (W) X 11.3 (H) X 8 (D) cm

### Measurement Extension Modules

DTMN08/DTMN04/DTMN02(-V,-R,-C,-L)



- Communication: N/A
  - Temperature control points: 4 or 8
  - Dimensions: 7 (W) X 11.3 (H) X 8 (D) cm
- \* The output extension cassette is not included for all measurement modules.

### I/O Extension Modules

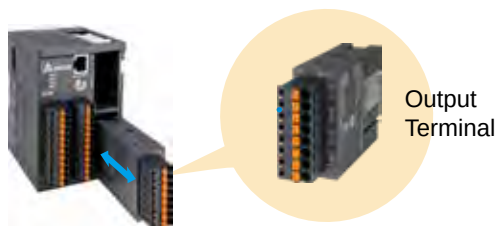


- Model / Channels
  - DTM-DOV / 8CH, 0~12V pulse voltage
  - DTM-DOR / 8CH, 2A relay contact
  - DTM-DOC / 8CH, 4~20mA output
  - DTM-DOL / 8CH, 0~10V output
  - DTM-CT030/8CH, current transformer (CT) (optional)
- Dimensions: 3 (W) X 11.3 (H) X 8 (D) cm

### Output Extension Cassettes

- Model / Channels
  - DTM-BDV / 4CH, 0~12V pulse voltage
  - DTM-BDR / 4CH, 2A relay contact
  - DTM-BDC / 4CH, 4~20mA output
  - DTM-BDL / 4CH, 0~10V output
- Dimensions: 2.5 (W) X 4.8 (H) X 7.7 (D) cm

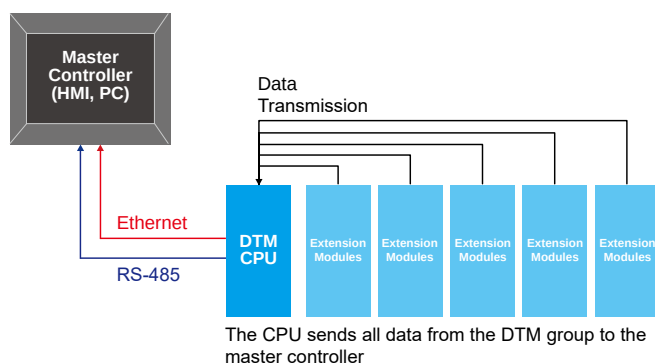
\* Please refer to the picture on the right for installation





## Data Collection by CPU

The DTM CPU collects data from all extension modules and uploads to the host controller immediately for higher communication efficiency



## User-Defined Communication Address

Flexible operation interface; allows user-defined communication addresses and easy access to parameters for higher communication efficiency

**User-defined functions:**  
Only CUP IDs are available for data collection

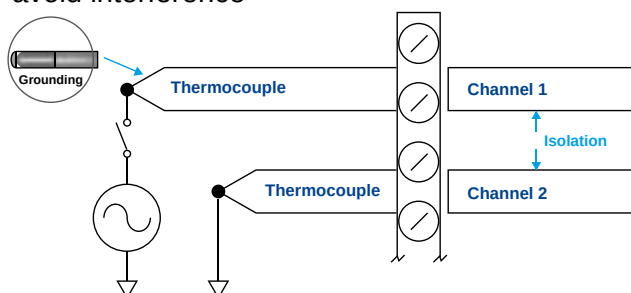
**Create parameter groups:**  
Collects and manages parameter groups by creating parameters in corresponding group addresses



\*Please download the software from Delta's website. The interface could be updated in new versions. Delta reserves the right to make modifications at any time without prior notice.

## Complete Isolation Between Channels

- Complete isolation between channels prevents electricity leakage of the heating device and damage to the electric circuit of the thermocouple input channels
- 8 sets of input channels are completely isolated to ensure a stable measurement signal and avoid interference



## Multi-Point Temperature Control via RS-485 and Ethernet

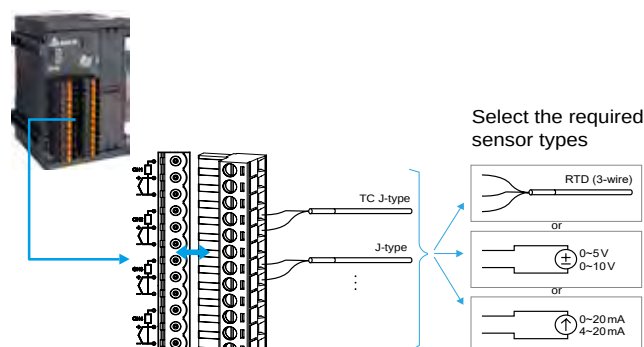
### 1. Multi-point control

- 1 CPU controls up to 8 points;  
1 CPU group controls up to 64 points
- DTM CPU provides 8 sets of sensor inputs to control 8 points simultaneously
- 1 CPU supports up to 7 measurement modules and 8 I/O modules as a group



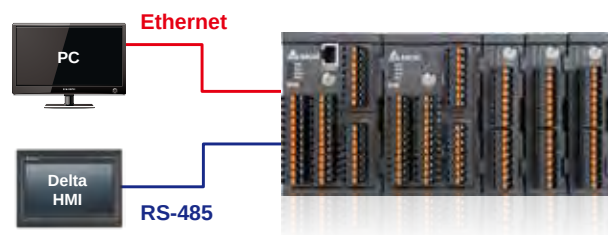
### 2. Various input channels

- A single channel supports analog voltage, analog current, thermocouple and platinum RTD input
- Allows users to select the sensor type for each channel separately



### 3. RS-485 and Ethernet introduction

- Ethernet/IP communication
- RS-485:
  - Max. Baud rate 115,200 bps
  - Supports ASCII and RTU
  - Offers external switches for communication protocol and address setup, easy to install and maintain



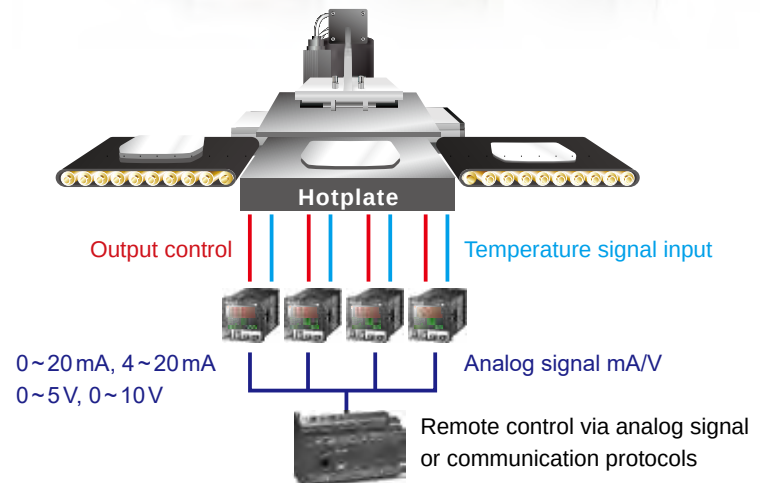
# Advanced Intelligent Temperature Controller DT3

High Speed, High Precision, High Performance  
Multifunction Temperature Controller



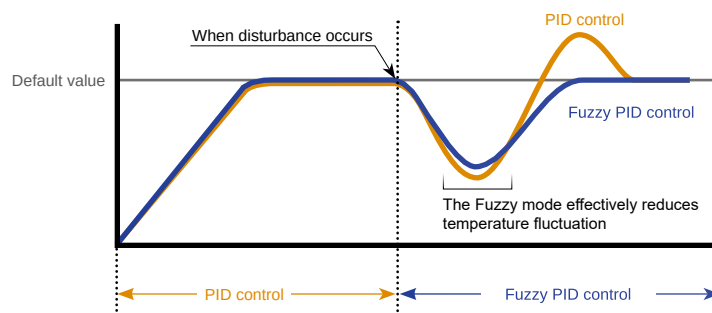
## Remote Control

Temperature settings via  
analog output of host controller



## Various Control Modes

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



## Applications

Solar panel manufacturing, food and beverage packaging, pharmaceuticals, semiconductors, rubber and plastics, high-tech electronics industries, HVAC



## User-defined Function Keys

- Control modes selection
- Alarm clearing
- Controller ON/OFF
- PID activation
- Menu setting & saving
- Process control ON/OFF



## Large Tri-color LCD Display



## Heater Disconnection Detection

Measurable up to 100A

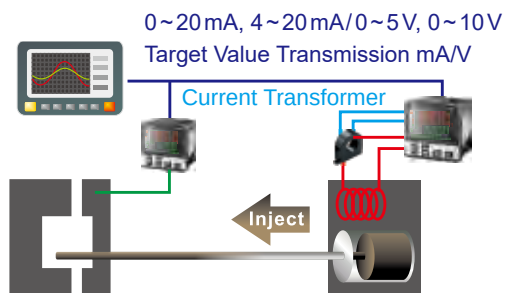


## Point-to-Point Control (Proportional Output mA)

Sets the target value by point-to-point control

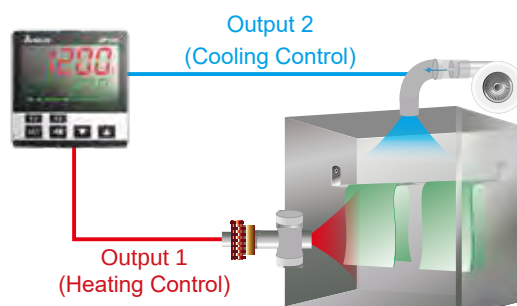


## Retransmission Output



## Dual-output Control

- Two outputs for rapid heating/cooling to achieve a designated temperature
- AT function is used to automatically calculate two PID parameters, one for heating and the other 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:  
0~5 V, 0~10 V, 0~20 mA, 4~20 mA, 0~50 mA

## Power Output

Relay / Current 4~20 mA / pulse voltage /  
Analog voltage 0~10 V

## Power Input

AC 100~240 V, 50/60 Hz, AC/DC 24 V ± 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 (supports max. 8 sets of inputs)
- Platinum resistance: Pt100, JPt100 (supports max. 6 sets of inputs)
- 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  $\pm$  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 24V $\pm$ 10%
- Thermocouple: K, J, T, E, N, R, S, B, L, U, TXK
- Platinum resistance: Pt100, JPt100
- Analog input: 0~5V, 0~10V, 0~20mA, 4~20mA, 0~50mA
- Output: Relay, current 4~20mA, pulse voltage, analog voltage 0~10V
- Control mode: ON-OFF, PID, manual, PID process control
- Built-in Modbus communication
- 2 sets of alarm outputs, 18 alarm modes
- Certifications: CE, UL



## Valve Controller DTV

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



## Multi-Channel Modular Temperature Controller DTE

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



# Standard Multifunction Pressure Sensor

## DPA

### High-Precision Pressure Sensor with Comprehensive Functions

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



# Basic Multifunction Pressure Sensor

## DPB

### Miniature Pressure Sensor for Easy Integration and Cost Savings

- Measurement range:
  - DPB01: -100 kPa~100 kPa
  - DPB10: -100 kPa~1,000 kPa
- Various unit conversions
- Response time setup for 10 sets of outputs
- Various output modes
- Tri-color display
- Fast zeroing/reset
- Safety control function
- Simple code display



## Applications

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



## Flow Switch New

DFM

### High-precision and Multiple Air Flow Range

- Flow range: 2~200 L/min., 0.5~50 L/min.
- Bidirectional flow 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
- Supports analog outputs



### Applications

Food and beverage packaging, electronics manufacturing, rubber and plastic welding, Laser Beam Machining (LBM), air compressors (in factories and others), and nitrogen generators

## Timer / Counter / Tachometer

CTA

### All-in-One Device

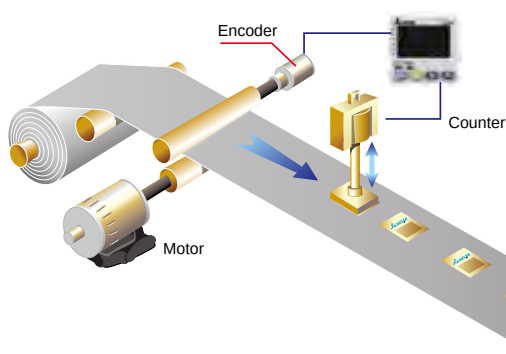
- Power input: AC 100~240 V, 50/60 Hz, DC 24 V  $\pm$  10%
- Simultaneous counting and timing in the mixed mode
- 6-digit LCD display
- Max. counting speed: 10 Kpps
- NPN or PNP input signals
- Pre-scale function
- Counting modes: 1-stage, 2-stage, batch, total, dual
- Modbus communication (optional)



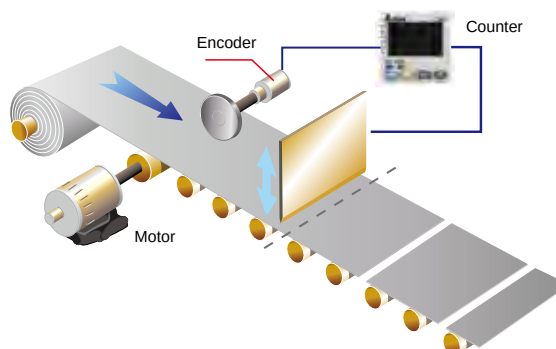
### Applications

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

#### Label Printing Machine



#### Fixed Length Cutting Machine





# Power Meter

## DPM

### Highly Accurate, Reliable Power Monitoring Solution

The DPM Series precisely measures parameters of electrical energy and power quality including power factors, harmonics, and current/voltage unbalance. This series also features a variety of communication protocols for easy integration with critical power systems and monitoring functions to provide power data, off-limit alarms, and history logs.

- Precise measurement of bidirectional energy and electrical parameters; compliant with IEC 62053-22
- Supports Modbus protocol for communication. Easy integration with system software
- Various models for selection based on installation types and function levels to fulfill different requirements and purposes in energy management

## Panel Mounting Type

### DPM-C Series

- Suitable for applications in general power systems
- Large LCD displays power data in real time
- A variety of communication protocols for easy integration
- Various power monitoring functions for different applications

#### Applications

Distribution boards, electrical rooms, factory/building energy management systems



## DIN-Rail Mounting Type

### DPM-D Series

- Easy installation and integration for various equipment
- Applicable to general energy management systems
- Multiple functions of energy measurement for different applications

#### Applications

High power-consuming equipment, electrical equipment cabinets, enclosures



## Multi-loop Type

### DPM-M Series

- Multiple and selective circuit monitoring reduces the use of power meters in large-scale areas
- Suitable for applications with a great many power circuits to save cost
- AC/DC measurement

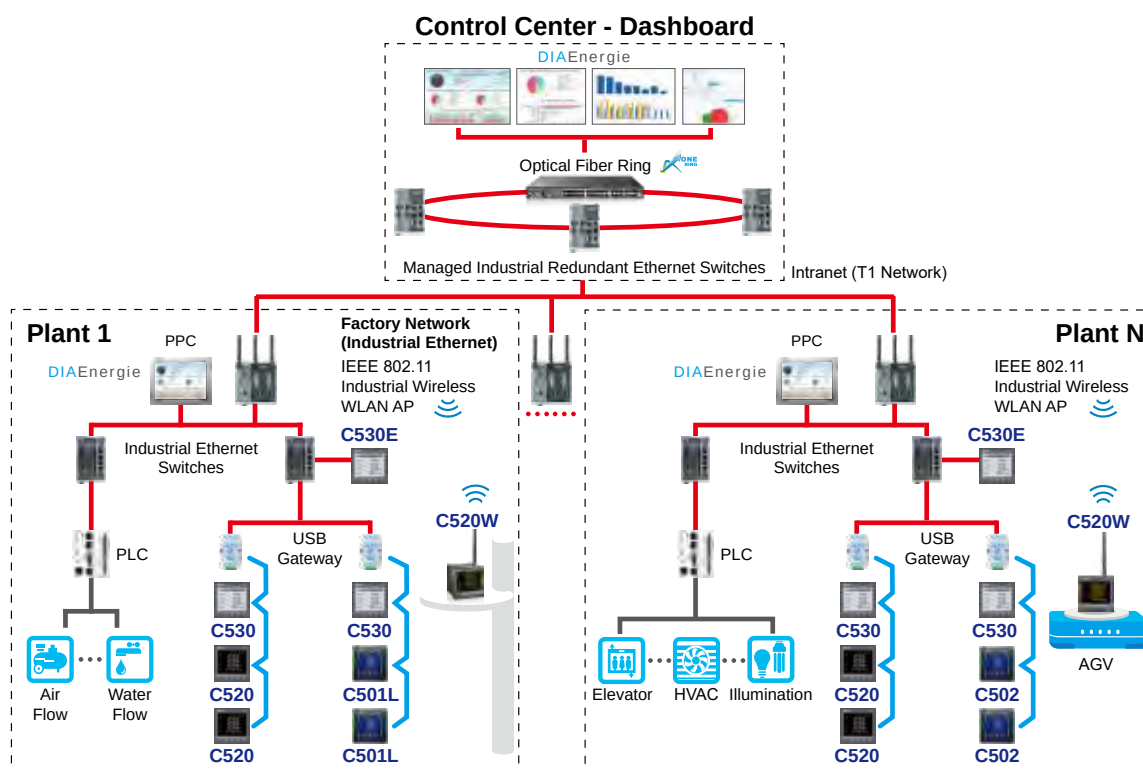
#### Applications

Shopping malls, dormitories, telecommunication systems

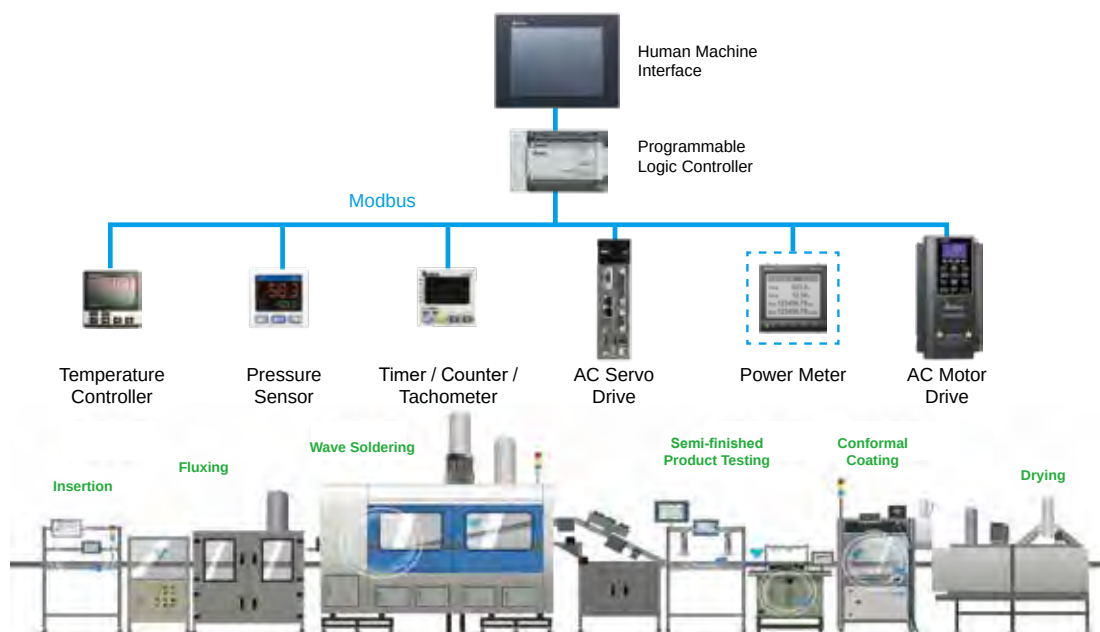




## Cross-Factory Energy Management and Integrated Applications



## Factory Automation - Energy Consumption Analysis of Production Lines



# Machine Vision System New

DMV3000G

## Smart Machine Vision System with a User-friendly Interface

- Supports two color / monochrome GigE industrial cameras for simultaneous multi-task detection
- Smart and easy setup allows quick inspection project building
- Enhanced inspection speed to increase production efficiency and save cost
- Multiple built-in image inspection tools, saving program development and editing time
- Ethernet, RS-232, RS-485 interfaces for data output
- Compliant with high industrial standards; higher stability than home edition PC-based systems
- Built-in communication system connected by PLC, no need for extra programming



## Camera Specifications

| Resolution | Level        | Frame Rate | Pixel Dimensions<br>(Horizontal / Vertical) | Sensor Size (mm)<br>(Horizontal / Vertical) | Pixel Size | Lens Mount |
|------------|--------------|------------|---------------------------------------------|---------------------------------------------|------------|------------|
| 0.3M       | Mono / Color | 180 fps    | 640 × 480                                   | 1/3.6"<br>(3 × 2.3)                         | 4.8 μm     | C mount    |
| 2M         | Mono / Color | 50 fps     | 1,600 × 1,200                               | 1/1.8"<br>(7.5 × 5.6)                       | 4.7 μm     | C mount    |

## Applications

Inspection for mobile phone lens quality, disposable coffee filters, and others on automation production lines in logistics, food and beverage packaging, electronics, printing industries, motion control guidance, paper cup inspection



# Machine Vision System

## DMV2000

### Multi-task Operation for High-speed Inspection Applications

- Multiple cameras work synchronously in parallel processes to enhance efficiency and save development costs
- User-friendly operation interface
- Smart operation process and interface for faster programming
- Built-in multi-functional developing tools
- Superior hardware specifications compared with same grade products, achieving high-speed processing
- High-speed cameras with Camera Link 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
- Provides 2 types of controllers which support 2 or 4 cameras



### High-speed Cameras with Camera Link Interface

Supports maximum 12M pixels in gray scale using standard Camera Link cameras

| Resolution                                  |       | 0.3M      | 2M            | 4M            | 5M            | 12M           |
|---------------------------------------------|-------|-----------|---------------|---------------|---------------|---------------|
| Level                                       | Mono  | √         | √             | √             | √             | √             |
|                                             | Color | √         | √             | √             | √             | √             |
| Frame Rate                                  |       | 480 fps   | 295 fps       | 159 fps       | 35 fps        | 50 fps        |
| Pixel Dimensions<br>(Horizontal x Vertical) |       | 640 × 480 | 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<br>(Horizontal x Vertical)       |       | 7.4 μm    | 5.5 μm        | 5.5 μm        | 3.45 μm       | 5.5 μm        |
| Lens Mount                                  |       | C mount   | C mount       | C mount       | C mount       | M42           |

### Applications

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



# Machine Vision System

DMV1000

Basic and Easy-to-use Machine Vision System



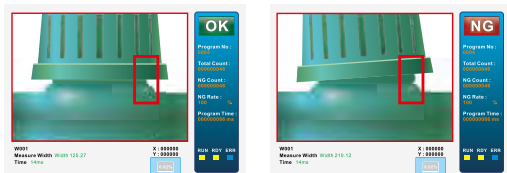
- User-friendly operation interface for quick system setup
- Flowchart programming interface saves development time
- Built-in multi-functional developing tools save users from complex programming
- Offers versatile digital I/O terminals
- Compact and light, saves wiring and space
- Hardware specification meets high-speed processing requirements and offers exceptional performance better than competing products
- Standard FireWire (IEEE 1394) 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 cards
- 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

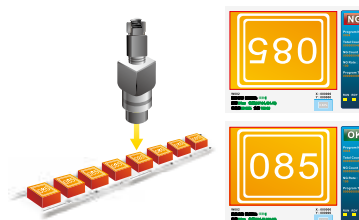
### • Bottle Cap Position Identification

Identifies the bottle capping position



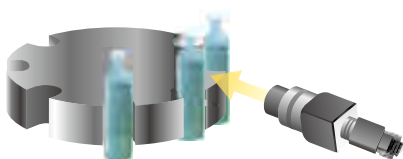
### • Direction Identification

Inspects the direction of workpieces conveyed on a production line



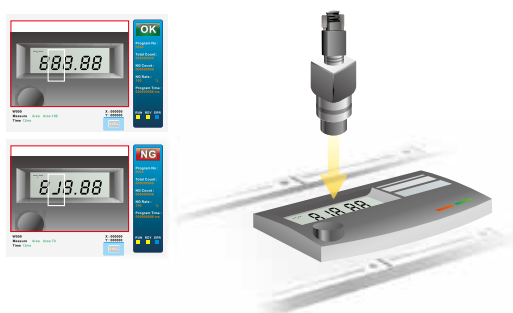
### • Beverage Packing Inspection

Inspects the liquid level of each bottle



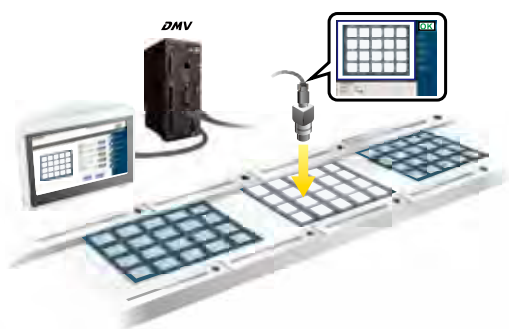
### • Character Inspection

Inspects the characters on electronic devices



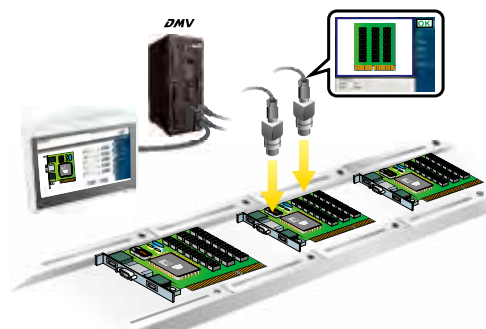
### • Luminance Inspection

Inspects LED luminance automatically



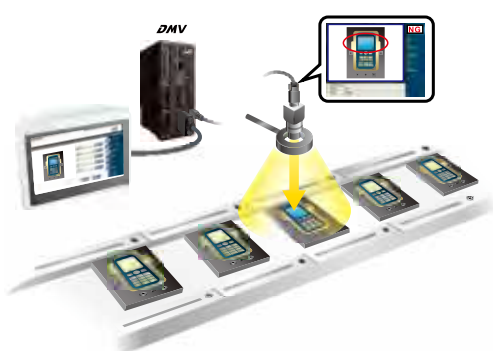
### • Position Identification

Inspects the position of IC components on PCBs



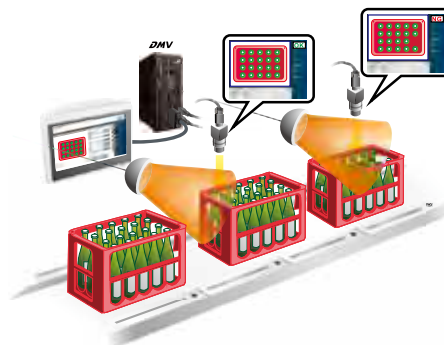
### • Module Inspection

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

## DIN Rail Models

CliQ, CliQ II, CliQ III, CliQ M, CliQ VA, Lyte, LyteII

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

| CliQ M                                                                             | Model Name     | Output Voltage  | Output Power |
|------------------------------------------------------------------------------------|----------------|-----------------|--------------|
|  | DRM-24V80W1PN  | 24 V            | 81.6 W       |
|                                                                                    | DRM-24V120W1PN |                 | 120 W        |
|                                                                                    | DRM-24V240W1PN |                 | 240 W        |
|                                                                                    | DRM-24V480W1PN |                 | 480 W        |
|                                                                                    | DRM-24V960W1PN |                 | 960 W        |
|                                                                                    | DRM-24V480W1SN |                 | 480 W        |
|                                                                                    | DRM-24V480W3PN | 24 V<br>3-Phase | 480 W        |
|                                                                                    | DRM-24V960W3PN |                 | 960 W        |

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

| CliQ VA                                                                              | Model Name     | Output Voltage | Output Power |
|--------------------------------------------------------------------------------------|----------------|----------------|--------------|
|  | DRV-24V120W1PN | 24 V           | 120 W        |
|                                                                                      | DRV-24V240W1PN |                | 240 W        |
|                                                                                      | DRV-24V480W1PN |                | 480 W        |

| Lyte                                                                                 | Model Name     | Output Voltage | Output Power |
|--------------------------------------------------------------------------------------|----------------|----------------|--------------|
|  | DRL-12V75W1AA  | 12 V           | 75 W         |
|                                                                                      | DRL-24V75W1AA  | 24 V           | 75 W         |
|                                                                                      | DRL-24V120W1AA |                | 120 W        |
|                                                                                      | DRL-24V240W1AA |                | 240 W        |
|                                                                                      | DRL-24V480W1AA |                | 480 W        |
|                                                                                      | DRL-48V75W1AA  | 48 V           | 75.36 W      |
|                                                                                      | DRL-48V120W1AA |                | 120 W        |

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

| Lyte II                                                                             | Model Name     | Output Voltage | Output Power |
|-------------------------------------------------------------------------------------|----------------|----------------|--------------|
|  | DRL-12V120W1EN | 12 V           | 120 W        |
|                                                                                     | DRL-12V240W1EN |                | 240 W        |
|                                                                                     | DRL-24V120W1EN | 24 V           | 120 W        |
|                                                                                     | DRL-24V240W1EN |                | 240 W        |
|                                                                                     | DRL-48V120W1EN | 48 V           | 120 W        |
|                                                                                     | DRL-48V240W1EN |                | 240 W        |



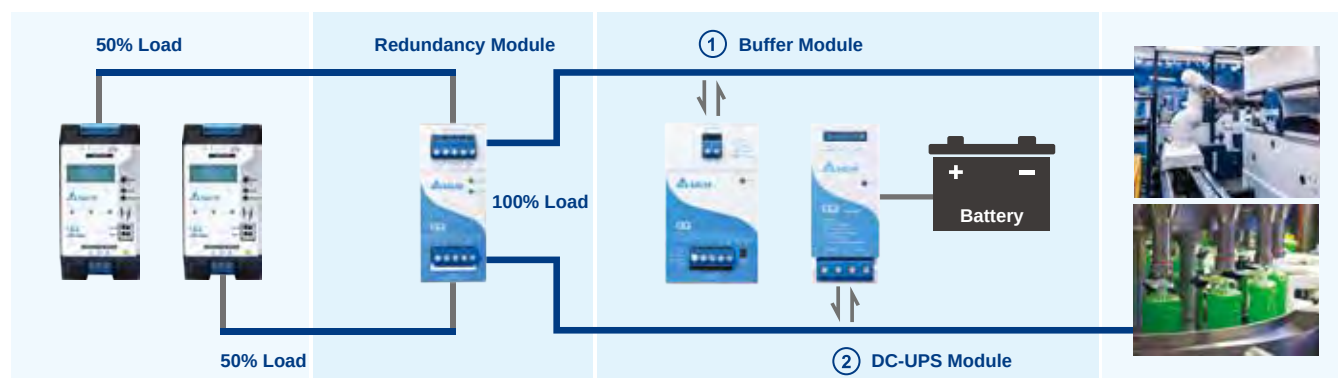
## DIN Rail Models

### Chrome, Sync, DVP, Modules

| Chrome                                                                              | Model Name     | Output Voltage | Output Power |
|-------------------------------------------------------------------------------------|----------------|----------------|--------------|
|    | DRC-5V10W1AZ   | 5V             | 7.5W         |
|                                                                                     | DRC-12V10W1AZ  | 12V            | 10W          |
|                                                                                     | DRC-12V30W1AZ  |                | 25.2W        |
|                                                                                     | DRC-12V60W1AZ  |                | 54W          |
|                                                                                     | DRC-12V60W1CZ  |                | 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        |

| Redundancy Module                                                                   | Model Name    | Output Voltage | Output Power |
|-------------------------------------------------------------------------------------|---------------|----------------|--------------|
|    | DRR-20N       | 24V            | 20A          |
|                                                                                     | DRR-40N       |                | 40A          |
| DC-UPS Module                                                                       | Model Name    | Output Voltage | Output Power |
|    | DRU-24V40ABN  | 24V            | 40A          |
|                                                                                     | DRU-24V10ACZ  |                | 10A          |
| Buffer Module                                                                       | Model Name    | Output Voltage | Output Power |
|   | DRB-24V020ABN | 24V            | 20A          |
|                                                                                     | DRB-24V040ABN |                | 40A          |
| DVP                                                                                 | Model Name    | Output Voltage | Output Power |
|  | DVP-PS01      | 24V            | 24W          |
|                                                                                     | DVP-PS02      |                | 48W          |
|                                                                                     | DVP-PS03      |                | 120W         |

## DIN Rail Power Management



Industrial Power Supplies

Redundancy Module N+1 can be added to protect against system shutdown

1. Buffer Module allows a system to continue running even during sudden power sources disruption lasting from milliseconds to seconds
2. DC-UPS (Uninterruptible Power Supply) Module allows a system to continue running even during sudden power sources disruption lasting from minutes to hours

## Panel Mount Models

PMC, PMF, PMH, PMR, PMT, PMU

| PMC                                                                                 | Model Name     | Output Voltage | Output Power |
|-------------------------------------------------------------------------------------|----------------|----------------|--------------|
|    | PMC-05V015W1AA | 5V             | 15 W         |
|                                                                                     | PMC-05V035W1AA |                | 35 W         |
|                                                                                     | PMC-05V050W1AA |                | 50 W         |
|                                                                                     | PMC-12V035W1AA | 12V            | 35 W         |
|                                                                                     | PMC-12V050W1AA |                | 50 W         |
|                                                                                     | PMC-12V060W1NA |                | 60 W         |
|                                                                                     | PMC-12V100W1AA |                | 100 W        |
|                                                                                     | PMC-12V150W1BA |                | 150 W        |
|                                                                                     | PMC-12V600W1BA |                | 600 W        |
|                                                                                     | PMC-24V035W1AA | 24 V           | 35 W         |
|                                                                                     | PMC-24V050W1AA |                | 50 W         |
|                                                                                     | PMC-24V075W1AA |                | 75 W         |
|                                                                                     | PMC-24V100W1AA |                | 100 W        |
|                                                                                     | PMC-24V150W1AA |                | 150 W        |
|                                                                                     | PMC-24V150W2AA |                | 150 W        |
|                                                                                     | PMC-24V150W1BA |                | 150 W        |
|                                                                                     | PMC-24V300W1BA |                | 300 W        |
|                                                                                     | PMC-24V600W1BA |                | 600 W        |
|                                                                                     | PMC-24V600W1RW |                | 600 W        |
|                                                                                     | PMC-DSPV100W1A | 24 V/5V        | 100 W        |
|                                                                                     | PMC-48V150W1BA | 48V            | 150 W        |
|                                                                                     | PMC-48V600W1BA |                | 600 W        |
| PMF                                                                                 | Model Name     | Output Voltage | Output Power |
|  | PMF-4V320WCGB  | 4.2 V          | 231 W        |
|                                                                                     | PMF-5V320WCGB  | 5 V            | 275 W        |
|                                                                                     | PMF-24V200WCGB | 24 V           | 201.6 W      |
|                                                                                     | PMF-24V240WCGB |                | 240 W        |
|                                                                                     | PMF-24V320WCGB |                | 320 W        |
| PMH                                                                                 | Model Name     | Output Voltage | Output Power |
|  | PMH-12V100WCLS | 12V            | 100 W        |
|                                                                                     | PMH-12V100WCMS |                | 100 W        |
|                                                                                     | PMH-24V50WCAA  | 24 V           | 50 W         |
|                                                                                     | PMH-24V100WCAA |                | 100 W        |
|                                                                                     | PMH-24V100WCCA |                | 100 W        |
|                                                                                     | PMH-24V100WCLS |                | 100 W        |
|                                                                                     | PMH-24V100WCMS |                | 91.2 W       |
|                                                                                     | PMH-24V100WCNS |                | 91.2 W       |
|                                                                                     | PMH-24V150WCBA |                | 150 W        |
|                                                                                     | PMH-24V150WCDA |                | 150 W        |
|                                                                                     | PMH-24V150WCLS |                | 150 W        |
|                                                                                     | PMH-24V200WCBA |                | 200 W        |
| PMR                                                                                 | Model Name     | Output Voltage | Output Power |
|  | PMR-4V320WCAA  | 4.2 V          | 252 W        |
|                                                                                     | PMR-4V320WDAA  |                | 252 W        |
|                                                                                     | PMR-4V320WDGA  |                | 252 W        |
|                                                                                     | PMR-4V320WDBA  |                | 252 W        |
|                                                                                     | PMR-4V320WDCA  |                | 252 W        |
|                                                                                     | PMR-5V320WCAA  | 5 V            | 300 W        |
|                                                                                     | PMR-5V320WDAA  |                | 300 W        |
|                                                                                     | PMR-5V320WDGA  |                | 300 W        |
|                                                                                     | PMR-5V320WDBA  |                | 300 W        |
|                                                                                     | PMR-5V320WDCA  |                | 300 W        |
| PMU                                                                                 | Model Name     | Output Voltage | Output Power |
|  | PMU-13V155WCBA | 13.8 V         | 151 W        |
|                                                                                     | PMU-13V155WCCA | 27.6 V         | 151 W        |
|                                                                                     | PMU-27V155WCBA |                | 151 W        |
|                                                                                     | PMU-27V155WCCA |                | 151 W        |

| PMT                                                                                  | Model Name     | Output Voltage | Output Power |
|--------------------------------------------------------------------------------------|----------------|----------------|--------------|
|    | PMT-4V350W1AM  | 4.2 V          | 252 W        |
|                                                                                      | PMT-5V35W1AA   | 5 V            | 35 W         |
|                                                                                      | PMT-5V50W1AA   |                | 50 W         |
|                                                                                      | PMT-5V350W1AM  |                | 300 W        |
|                                                                                      | PMT-12V35W1AA  | 12 V           | 35 W         |
|                                                                                      | PMT-12V50W1AA  |                | 50 W         |
|                                                                                      | PMT-12V100W1AA |                | 102 W        |
|                                                                                      | PMT-12V150W1AA |                | 150 W        |
|                                                                                      | PMT-12V350W1AR |                | 348 W        |
|                                                                                      | PMT-15V50W1AA  | 15 V           | 51 W         |
|                                                                                      | PMT-24V35W1AA  | 24 V           | 35 W         |
|                                                                                      | PMT-24V50W1AA  |                | 50 W         |
|                                                                                      | PMT-24V100W1AA |                | 108 W        |
|                                                                                      | PMT-24V150W1AA |                | 156 W        |
|                                                                                      | PMT-24V200W1AM |                | 211.2 W      |
|                                                                                      | PMT-24V350W1AG |                | 350.4 W      |
|                                                                                      | PMT-24V350W1AM |                | 350.4 W      |
|                                                                                      | PMT-24V350W1AK |                | 350.4 W      |
|                                                                                      | PMT-24V350W1AR |                | 350.4 W      |
|                                                                                      | PMT-36V350W1AR | 36 V           | 349.2 W      |
|                                                                                      | PMT-48V150W1AA | 48 V           | 158.4 W      |
|                                                                                      | PMT-48V350W1AR | 48 V           | 350 W        |
|                                                                                      | PMT-D1V100W1AA |                | 100 W        |
|                                                                                      | PMT-D2V100W1AA | 24 V/5V        | 100 W        |
| PMT2                                                                                 | Model Name     | Output Voltage | Output Power |
|  | PMT-12V35W2BA  | 12 V           | 36 W         |
|                                                                                      | PMT-12V50W2BA  |                | 50.4 W       |
|                                                                                      | PMT-12V75W2BA  |                | 72 W         |
|                                                                                      | PMT-12V100W2BA |                | 102 W        |
|                                                                                      | PMT-12V150W2BA |                | 150 W        |
|                                                                                      | PMT-12V350W2BM | 15 V           | 348 W        |
|                                                                                      | PMT-12V350W2BR |                | 348 W        |
|                                                                                      | PMT-15V35W2BA  |                | 36 W         |
|                                                                                      | PMT-15V50W2BA  |                | 51 W         |
|                                                                                      | PMT-15V75W2BA  |                | 75 W         |
|                                                                                      | PMT-15V100W2BA |                | 105 W        |
|                                                                                      | PMT-15V150W2BA | 24 V           | 150 W        |
|                                                                                      | PMT-24V35W2BA  |                | 36 W         |
|                                                                                      | PMT-24V50W2BA  |                | 52.8 W       |
|                                                                                      | PMT-24V75W2BA  |                | 76.8 W       |
|                                                                                      | PMT-24V100W2BA |                | 108 W        |
|                                                                                      | PMT-24V150W2BA |                | 150 W        |
|                                                                                      | PMT-24V350W2BM | 30 V           | 350.5 W      |
|                                                                                      | PMT-24V350W2BR |                | 350.5 W      |
|                                                                                      | PMT-30V35W2BA  |                | 36 W         |
|                                                                                      | PMT-30V50W2BA  |                | 57 W         |
|                                                                                      | PMT-30V75W2BA  |                | 75 W         |
|                                                                                      | PMT-30V100W2BA |                | 105 W        |
|                                                                                      | PMT-30V150W2BA | 36 V           | 150 W        |
|                                                                                      | PMT-36V35W2BA  |                | 36 W         |
|                                                                                      | PMT-36V50W2BA  |                | 52.2 W       |
|                                                                                      | PMT-36V75W2BA  |                | 76.6 W       |
|                                                                                      | PMT-36V100WBA  |                | 100.8 W      |
|                                                                                      | PMT-36V150W2BA | 48 V           | 154.8 W      |
|                                                                                      | PMT-36V350W2BR |                | 349.2 W      |
|                                                                                      | PMT-48V35W2BA  |                | 38.4 W       |
|                                                                                      | PMT-48V50W2BA  |                | 52.8 W       |
|                                                                                      | PMT-48V75W2BA  |                | 76.8 W       |
|                                                                                      | PMT-48V100W2BA |                | 110.4 W      |
|                                                                                      | PMT-48V150W2BA | 12 V/5V        | 158.4 W      |
|                                                                                      | PMT-48V350W2BR |                | 350 W        |
|                                                                                      | PMT-D1V75W2BA  |                | 73 W         |
|                                                                                      | PMT-D2V75W2BA  | 24 V/5V        | 75.4 W       |

## Open Frame Models

### PJ, PJB, PJH, PJT, PJU, PJL

| 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  | 24V                                           | 150W         |
|                                                                                     | PJ-48V50WBNA   |                                               | 52.8W        |
| PJB                                                                                 | Model Name     | Output Voltage                                | Output Power |
|   | PJB-24V100WBNA | 24V                                           | 103.2W       |
|                                                                                     | PJB-24V150WBNA |                                               | 151.2W       |
|                                                                                     | PJB-24V240WBNA |                                               | 240W         |
|                                                                                     | PJB-24V300WBNA |                                               | 300W         |
| PJH                                                                                 | Model Name     | Output Voltage                                | Output Power |
|  | PJH-24V300WBBA | V <sub>I</sub> : 24V<br>V <sub>SB</sub> : 5V  | 300W         |
|                                                                                     | PJH-24V300WBBA | V <sub>I</sub> : 24V<br>V <sub>SB</sub> : 12V | 300W         |
|                                                                                     | PJH-36V300WBBA | V <sub>I</sub> : 36V<br>V <sub>SB</sub> : 5V  | 300W         |
|                                                                                     | PJH-36V300WBBA | V <sub>I</sub> : 36V<br>V <sub>SB</sub> : 12V | 300W         |

| PJT                                                                                  | Model Name     | Output Voltage                                | Output Power                            |
|--------------------------------------------------------------------------------------|----------------|-----------------------------------------------|-----------------------------------------|
|    | PJT-12V40WBAA  | 12V                                           | 40W                                     |
|                                                                                      | PJT-12V65WBAA  |                                               | 60W                                     |
|                                                                                      | PJT-12V100WBAA |                                               | 100W                                    |
|                                                                                      | PJT-12V100WBBA |                                               | 80W <sup>A)</sup><br>100W <sup>B)</sup> |
|                                                                                      | PJT-15V40WBAA  | 15V                                           | 40W                                     |
|                                                                                      | PJT-15V65WBAA  |                                               | 63W                                     |
|                                                                                      | PJT-15V100WBAA |                                               | 100W                                    |
|                                                                                      | PJT-15V100WBBA |                                               | 80W <sup>A)</sup><br>100W <sup>B)</sup> |
|                                                                                      | PJT-18V40WBAA  | 18V                                           | 40W                                     |
|                                                                                      | PJT-18V65WBAA  |                                               | 65W                                     |
|                                                                                      | PJT-18V100WBAA |                                               | 100W                                    |
|                                                                                      | PJT-18V100WBBA |                                               | 80W <sup>A)</sup><br>100W <sup>B)</sup> |
|                                                                                      | PJT-24V40WBAA  | 24V                                           | 40W                                     |
|                                                                                      | PJT-24V65WBAA  |                                               | 65W                                     |
|                                                                                      | PJT-24V100WBAA |                                               | 100W                                    |
|                                                                                      | PJT-24V100WBBA |                                               | 80W <sup>A)</sup><br>100W <sup>B)</sup> |
|                                                                                      | PJT-27V150WBNA | V <sub>I</sub> : 27V<br>V <sub>SB</sub> : 12V | 150W                                    |
| PJU                                                                                  | Model Name     | Output Voltage                                | Output Power                            |
|  | PJU-13V60WCAA  | V <sub>I</sub> : 13.8V                        | 60W                                     |
|                                                                                      | PJU-13V60WCBA  | B*: 13.6V                                     | 60W                                     |
|                                                                                      | PJU-27V60WCAA  | V <sub>I</sub> : 27.6V                        | 60W                                     |
|                                                                                      | PJU-27V60WCBA  | B*: 12.4V                                     | 60W                                     |
| PJL                                                                                  | Model Name     | Output Voltage                                | Output Power                            |
|  | PJL-48V200WBBA | 48V                                           | 200W                                    |
|                                                                                      | PJL-48V400WBBA |                                               | 400W                                    |
|                                                                                      | PJL-48V600WLAA |                                               | 600W                                    |

A) Convection  
B) Forced Cooling

## Applicable Series



### Building Automation

- Escalators & Elevators
- CCTV Surveillance
- HVAC Control

CliQ III, Lyte, Lyte II, Chrome, Sync, PMT, PMT2, PMC, PMH, PMU, PJT, PJ, PJB



### Machine Automation

- Robotic Arms
- Injection Molding Machines

CliQ, CliQ II, CliQ III, CliQ M, CliQ VA, Lyte, Lyte II, Chrome, Sync, PMT, PMT2, PMC, PMF, PMU, PJT, PJ, PJB



### Renewable Energy

- Wind Turbines
- Solar Tracker Systems

CliQ, CliQ II, CliQ III, CliQ M, CliQ VA, Lyte, Lyte II, PMC



### Process Automation

- Petrochemicals Plants
- Wastewater Treatment
- Oil Refinery

CliQ, CliQ II, CliQ III, CliQ M, CliQ VA, Lyte, Lyte II, Chrome, Sync, PMT, PMT2, PMC, PMF, PMU



### Test & Measurement

- Spectrum Analyzers
- AC Power Sources
- Oscillators

Chrome, Sync, PMT, PMT2, PMC, PJT, PJ, PJB



### Factory Automation

- Packaging Machines
- Wave Soldering Machines
- Conveyor Systems

CliQ, CliQ II, CliQ III, CliQ M, CliQ VA, Lyte, Lyte II, Chrome, Sync, PMT, PMT2, PMC, PMF, PMU, PJT, PJ, PJB



### LED Lighting

- Stage Lighting
- Digital Signage Solutions

PMT, PMC, PMF, PMR, PJL



### Food & Beverage

- Coffee Machines
- Vending Machines
- Self-service Kiosks (SSKs)

PMT, PMT2, PMC, PMH, PMF, PJT, PJ, PJB, PJH, PJU

# Industrial Ethernet & IIoT Solution

State-of-the-art Industrial Networking for Smart Industry

## Layer 3 Managed Switch

### DVS-G928W01

- 28-Port full GbE (10GbE optional), modular design for flexible configuration
- Layer 3 routing functions (RIP & VRRP) 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 large network and neighboring node discovery
- EtherNet/IP and Modbus TCP protocols that facilitate the remote management by SCADA and other industrial devices
- Adopts high-end proprietary redundancy technologies ONE RING & ONE CHAIN for quick self-recovery within 30 ms from network disconnection
- Enhanced network security with IEEE 802.1X, TACACS+, SSH, HTTPS and SNMP v3
- IEEE 1588v2 PTP (Precision Time Protocol) for precise time synchronization and calibration for network equipment
- Loopback-detection to avoid broadcast storms by automatically shutting down the ports over a switching loop
- Cable diagnostic to auto-detect the twisted-pair cabling quality and report cabling issues regularly
- Auto alarm notifications by emails, relay, Syslog & SNMP trap
- Compatible with various industrial protocols, including EtherNet/IP, PROFINET, CC-LINK IE and DNP 3.0
- 100~240 V<sub>AC</sub> and 125~370 V<sub>DC</sub> wide-range redundant power input
- IP30 metal case, -40°C~85°C operating temperature
- Electrical substation: IEC 61850-3, IEEE 1613
- Rail traffic: EN 50121-4
- Certification: 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



- 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 for large network and neighboring node discovery
- Modbus TCP and EtherNet/IP protocols that facilitate remote management by SCADA and other industrial devices
- Adopts high-end proprietary redundancy technologies ONE RING & ONE CHAIN for quick self-recovery within 20ms from network disconnection
- 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 alarm notifications by emails, DI, relay, syslog & SNMP trap
- Compatible with various industrial protocols, including EtherNet/IP, PROFINET, CC-LINK IE and DNP 3.0
- 85~264V<sub>AC</sub> and 88~370V<sub>DC</sub> wide-range redundant power input
- IP40 metal case, -40°C~70°C operating temperature
- Certification: UL 60950-1, IEC 60950-1, CCC, CE, FCC and RCM

## DVS-G116 New



- 12-Port GbE + 4-Port GbE SFP, designed for backbone networks in IIoT application. Full Gigabit Ethernet configuration.
- Complete L2 network management functions: Q-in-Q VLAN, QoS, LACP, IGMP & SNMP v1/v2c/v3
- IPv6 address for large network and neighboring node discovery
- Modbus TCP and EtherNet/IP protocols that facilitate remote management by SCADA and other industrial devices
- Delta network redundancy technology continues to evolve and optimize all the time; adopts high-end proprietary redundancy technologies ONE RING & ONE CHAIN for quick self-recovery within 10ms from network disconnection
- 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
- DDM diagnosis function by SFP fiber module
- Auto alarm notifications by emails, DI, relay, syslog & SNMP trap
- Compatible with various industrial protocols, including EtherNet/IP, PROFINET, CC-LINK IE and DNP 3.0
- IP40 metal case, -40°C~75°C wide operating temperature
- Certification: UL 61010, IEC 62368-1, CE, FCC and RCM



## DVS-G112 New



- 8-Port GbE + 4-Port GbE SFP, designed for backbone networks in IIoT applications; full Gigabit Ethernet configuration
- Complete L2 network management functions: Q-in-Q VLAN, QoS, LACP, IGMP & SNMP v1/v2c/v3
- IPv6 address for large network and neighboring node discovery
- Modbus TCP and EtherNet/IP protocols that facilitate remote management by SCADA and other industrial devices
- Delta network redundancy technology continues to evolve and optimize all the time; adopts high-end proprietary redundancy technologies ONE RING & ONE CHAIN for quick self-recovery within 10 ms from network disconnection
- 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
- DDM diagnosis function by SFP fiber module
- Auto alarm notifications by emails, DI, relay, syslog & SNMP trap
- Compatible with various industrial protocols, including EtherNet/IP, PROFINET, CC-LINK IE and DNP 3.0
- IP40 metal case, -40°C~75°C wide operating temperature
- Certification: UL 61010, IEC 62368-1, CE, FCC and RCM

## DVS-G106 New



- 4-Port GbE + 2-Port GbE SFP, designed for backbone networks in IIoT applications; full Gigabit Ethernet configuration
- Complete L2 network management functions: Q-in-Q VLAN, QoS, LACP, IGMP & SNMP v1/v2c/v3
- IPv6 address for large network and neighboring node discovery
- Modbus TCP and EtherNet/IP protocols that facilitate remote management by SCADA and other industrial devices
- Delta network redundancy technology continues to evolve and optimize all the time; adopts high-end proprietary redundancy technologies ONE RING & ONE CHAIN for quick self-recovery within 10 ms from network disconnection
- 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
- DDM diagnosis function by SFP fiber module
- Auto alarm notifications by emails, DI, relay, syslog & SNMP trap
- Compatible with various industrial protocols, including EtherNet/IP, PROFINET, CC-LINK IE and DNP 3.0
- IP40 metal case, -40°C~75°C wide operating temperature
- Certification: UL 61010, IEC 62368-1, 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 for large network and neighboring node discovery
- Modbus TCP and EtherNet/IP protocols that facilitate remote management by SCADA and other industrial devices
- Adopts high-end proprietary redundancy technologies ONE RING & ONE CHAIN for quick self-recovery within 20 ms from network disconnection
- Loopback-detection to avoid broadcast storms by automatically shutting down the ports over a switching loop
- DDM diagnosis function by SFP fiber module
- Auto alarm notifications by emails, DI, relay, syslog & SNMP trap
- IP40 metal case, -40°C~75°C operating temperature
- Certification: UL 508, IEC 61131-2, CE, FCC and RCM



## 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 for large network and neighboring node discovery
- Modbus TCP and EtherNet/IP protocols that facilitate remote management by SCADA and other industrial devices
- Adopts high-end proprietary redundancy technologies ONE RING & ONE CHAIN for quick self-recovery within 20 ms from network disconnection
- Loopback-detection to avoid broadcast storms by automatically shutting down the ports over a switching loop
- Auto alarm notifications by emails, DI, relay, syslog & SNMP trap
- IP40 metal case, -40°C~75°C operating temperature
- Certification: 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 for large network and neighboring node discovery
- Modbus TCP and EtherNet/IP protocols that facilitate remote management by SCADA and other industrial devices
- Adopts high-end proprietary redundancy technologies ONE RING & ONE CHAIN for quick self-recovery within 20 ms from network disconnection
- Loopback-detection to avoid broadcast storms by automatically shutting down the ports over a switching loop
- DDM diagnosis function by SFP fiber module
- Auto alarm notifications by emails, DI, relay, syslog & SNMP trap
- IP40 metal case, -40°C~75°C operating temperature
- Certification: UL 508, IEC 61131-2, CE, FCC and RCM



## DVS-103 New

- 3-Port 10/100Base-T(X) Ethernet switch for EtherNet/IP DLR specifically
- EtherNet/IP protocol
- DLR (device-level ring) technology, self-healing recovery time < 3 ms (less than 50 nodes)
- Design with DI and DO to automate alarms
- IP40 metal case, -20°C~70°C operating temperature
- Certification: UL 61010, IEC 62368-1, 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 30W 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 for large network and neighboring node 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 alarm notifications by emails, relay, syslog & SNMP trap
- IP30 metal case, -40°C~70°C operating temperature
- Certification: CE, FCC and RCM



## Unmanaged Switch

### DVS-G008W01 New

- 8-Port GbE
- Transparent transmission of VLAN tagged packets
- Auto alarm notifications by relay output for power failure
- 12~48V<sub>DC</sub> redundant terminal block power input with 10~24V<sub>AC</sub>
- IP30 metal case, -40°C~75°C operating temperature
- Certification : UL 61010, EN 62368-1, CE, FCC and RCM



### DVS-G005I00A

- 5-Port GbE
- IEEE 802.1p based QoS for packet forwarding precedence
- Built-in broadcast storm protection
- Transparent transmission of VLAN tagged packets
- Jumbo packet transmission: up to 9,216 Bytes
- IEEE Green Ethernet for power savings
- IP40 metal case, -10°C~60°C operating temperature
- Certification: 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
- IEEE 802.1p based QoS for packet forwarding precedence
- Built-in broadcast storm protection
- Transparent transmission of VLAN tagged packets
- Auto alarm notification by relay output for link-down and power failure
- With a terminal block for 12~48 V<sub>DC</sub> redundant power input
- IP40 metal case, -40°C~75°C operating temperature
- Certification: UL 508, IEC 61131-2, CE, FCC and RCM



## DVS-G005I00C New

- 5-Port GbE
- Jumbo frame size up to 10k Bytes
- With a terminal block for 12~48 V<sub>DC</sub> redundant power input
- IP40 PC case, -20°C~70°C operating temperature
- Certification: UL 61010, IEC 62368-1, CE, FCC and RCM



## DVS-008W00-M12 New

- 8-Port 10/100Base-T(X) M12, ensures robust and tight connection
- Strong 5g resistance to extreme vibration environments
- IP67-rated waterproof and dustproof metal housing to prevent penetrating water and micro dust ingress
- Transparent transmission of VLAN tagged packets
- 12~48 V<sub>DC</sub> redundant power input
- -40°C~75°C wide operating temperature
- Certification: UL 61010, EN 62368-1, CE, FCC and RCM



## PoE+ Unmanaged Switch

### DVS-G408W01

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



## Ethernet-to-Fiber Media Converter

### DVS-G002I00-TF New

- 1-Port 100/1000Base-T to 100/1000Base-SFP
- Jumbo frame size up to 10k Bytes
- Supports Link Fault Pass-Through (LFP)
- With a terminal block for 12~ 48 V<sub>DC</sub> redundant power input
- IP40 PC case, -20°C~70°C operating temperature
- Certification: UL 61010, IEC 62368-1, CE, FCC and RCM



## SFP Fiber Transceiver

### LCP-GbE

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



### LCP-1FE

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



## PoE+ Splitter

### DVS-G401

- 1-Port GbE for PoE+ data / power input and 1-Port GbE for data output
- All ports compliant with IEEE 802.3at and IEEE 802.3af standards, each provides 30 W power supply
- Intelligent PoE input overvoltage protection
- Power output up to 27 W
- IP30 metal case, -20°C~70°C operating temperature
- Certification: CE, FCC and RCM



## PoE+ Injector

### DVS-G402

- 2-Port GbE for PoE+ data / power output and 2-Port GbE for data input
- All ports compliant with IEEE 802.3at and IEEE 802.3af standards, each provides 30W power supply
- Intelligent PoE output overvoltage protection
- Built-in 12V<sub>DC</sub> power booster for flexible PoE deployment
- IP30 metal case, -20°C ~ 70°C operating temperature
- Certification: 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
- Supports 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
- Modbus TCP protocol that facilitates the remote management by SCADA and other industrial devices
- Auto alarm notification by emails, DI, relay, Syslog and SNMP trap
- IP40 metal case, -40°C ~ 75°C operating temperature
- Certification: UL 508, IEC 61131-2, CE, FCC, RCM, BSMI, SRRC and NCC



## DVW-W01I2-E1 New

- Complete transmission interface: 1-Port GbE + 1-Port RS-232 + 1-Port RS-485
- Compliant with IEEE 802.11ac wireless technology for up to 866 Mbps data transmission rate
- Proprietary ONE ROAMING high-end fast roaming technology with seamless switch (< 150ms) among APs
- Multiple wireless modes: AP, Client, repeater
- Supports serial device servers and Modbus gateways
- Wireless QoS (IEEE 802.11e, WMM) for video packet transmission precedence
- Enhanced wireless security: WPA-PSK / WPA2-PSK (TKIP/AES)
- Modbus TCP protocol that facilitates remote management by SCADA and other industrial devices
- Auto alarm notification by emails, DI and relay
- IP40 metal case, -10°C ~ 60°C operating temperature
- Certification: UL 61010, IEC 62368-1, CE, FCC, RCM, SRRC and NCC





## High-gain Antenna

### DVW-ANT

- Supports 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
- -30°C ~ 60°C operating temperature



## Industrial 4G / WAN Cloud Router

### DX-3021L9 New

- 4-Port FE LAN + 1-Port FE WAN + 1-Port RS-232 + 1-Port RS-485
- Universal 4G LTE-FDD and LTE-TDD frequency bands, compatible with WCDMA/GSM/GPRS/EDGE 3G/2G networks
- Supports DIACloud Cloud Management Platform, no ISP public IP address required
- Modbus TCP, Modbus ASCII/RTU, Mitsubishi MC and Siemens TCP protocols
- Dual SIM dual standby technology, seamless switch among ISP systems for continuous network connection
- Built-in DI/DO for alarm settings and triggering
- Firmware upgrade and automatic configuration via USB flash drives; allows remote access to the USB flash drives via FTP
- USB port could be acceptable 3rd party Wi-Fi USB adapter to add WLAN interface as Wi-Fi client (only Realtek RTL8192EU driver supported)
- Internet connection via cellular network or broadband interfaces; allows self-defined internet connectivity priority
- Firewalls: SPI, DoS attacks, IP/MAC filter
- IP30 metal case, -20°C ~ 70°C operating temperature
- Certification: NCC, CE, FCC and UL



## 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
- Supports DIACloud Cloud Management Platform, no ISP public IP address required
- Modbus TCP and Modbus ASCII/RTU protocols
- Firewalls: Stateful Packet Inspection (SPI), Denial of Service (DoS) attacks, NAT, port triggering, port mapping, IP address filtering, MAC address filtering, URL filtering
- IP30 metal case, -20°C ~ 70°C operating temperature
- Certification: 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
- Supports DIACloud Cloud Management Platform, no ISP public IP address required
- Modbus TCP and Modbus ASCII/RTU protocols
- Firewalls: Stateful Packet Inspection (SPI), Denial of Service (DoS) attacks, NAT, port triggering, port mapping, IP address filtering, MAC address filtering, URL filtering
- IP30 metal case, -20°C ~ 70°C operating temperature
- Certification: CE, FCC and UL



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

- 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
- Supports DIACloud Cloud Management Platform, no ISP public IP address required
- Modbus TCP, Modbus ASCII/RTU protocols
- Dual SIM redundancy design: seamless switch among ISP systems for continuous network connection
- IP30 metal case, -20°C ~ 70°C operating temperature
- Certification: 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
- Supports GSM/GPRS/EDGE: 850, 900, 1800, 1900 MHz
- IPSec, OpenVPN, PPTP, L2TP and GRE VPN protocols; IPSec with CA certificate supports L2TP over IPSec
- Dual SIM redundancy design: seamless switch among ISP systems for continuous network connection
- Built-in RTC
- Flexible connection method over WAN port, e.g. static IP, DHCP client and more
- Firewalls: Stateful Packet Inspection (SPI), Denial of Service (DoS) attacks, NAT, port triggering, port mapping, IP address filtering, MAC address filtering, URL filtering
- IP30 metal case, -20°C ~ 70°C operating temperature
- Certification: 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
- NMT slave, Heartbeat, Emergency and more protocols



## PROFIBUS DP Slave Module

DVPPF02-SL

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



## DeviceNet Master Module

DVPDNET-SL

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



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

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



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

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



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

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



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

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



## CANopen Remote I/O Communication Module RTU-CN01

- CANopen protocol
- Able to connect 8 DVP-S series analog I/O modules
- Able to connect DVP-S series digital I/O modules (256 points)



## EtherCAT Remote I/O Communication Module RTU-ECAT

- EtherCAT protocol
- Able to connect 8 DVP-S series analog I/O modules
- Able to connect DVP-S series digital I/O modules (256 points)



## DVP Series Slave Modules (Right-side)

| DVPCP02-H2                                                                          | DVPPF01-S                                                                           | DVPPF02-H2                                                                          | DVPDT01-S                                                                             | DVPDT02-H2                                                                            |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |  |
| CANopen Slave Module<br>Supports<br>DVP-EH2/3 Series                                | PROFIBUS Slave Module<br>Supports<br>DVP-S Series                                   | PROFIBUS Slave Module<br>Supports<br>DVP-EH2/3 Series                               | DeviceNet Slave Module<br>Supports<br>DVP-S Series                                    | DeviceNet Slave Module<br>Supports<br>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

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

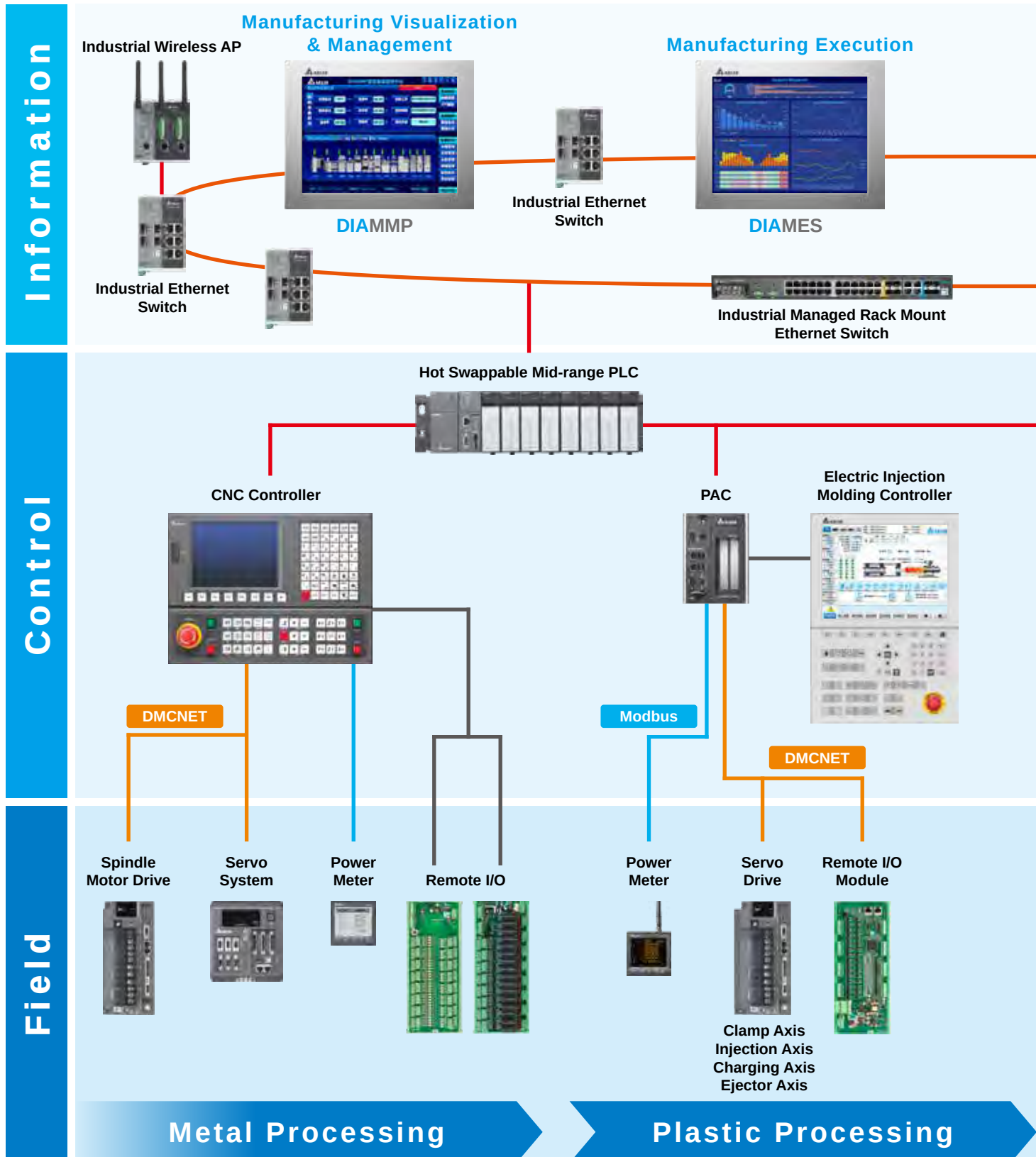
## Modbus Serial Converter

|                                                                                    |                                                   |                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | <b>IFD8500A</b><br><b>RS-232 « » RS-485</b>       | <ul style="list-style-type: none"> <li>• RS-232 to RS-422 / 485 isolated converter</li> <li>• Auto transmission speed adjustment</li> </ul>                                                                                                                                          |
|                                                                                    | <b>IFD8510A</b><br><b>RS-422/485</b>              | <ul style="list-style-type: none"> <li>• RS-422 / 485 isolated regenerator</li> <li>• RS-422 / 485 transmission distance extended to 1.2 km</li> <li>• Able to connect to 32 RS-485 devices</li> <li>• Auto transmission speed adjustment and data flow direction control</li> </ul> |
|                                                                                    | <b>IFD8520</b><br><b>RS-232 « » RS-485</b>        | <ul style="list-style-type: none"> <li>• RS-232 to RS-422 / 485 addressable isolated converter</li> <li>• Connects RS-232 to RS-422 / 485 by setting up Modbus address</li> </ul>                                                                                                    |
|  | <b>IFD8540</b><br><b>Bluetooth « » RS-485/232</b> | <ul style="list-style-type: none"> <li>• Bluetooth to RS-485/232 isolated converter</li> <li>• Supports Bluetooth GATT and Mesh mode</li> <li>• With external antenna</li> </ul>                                                                                                     |

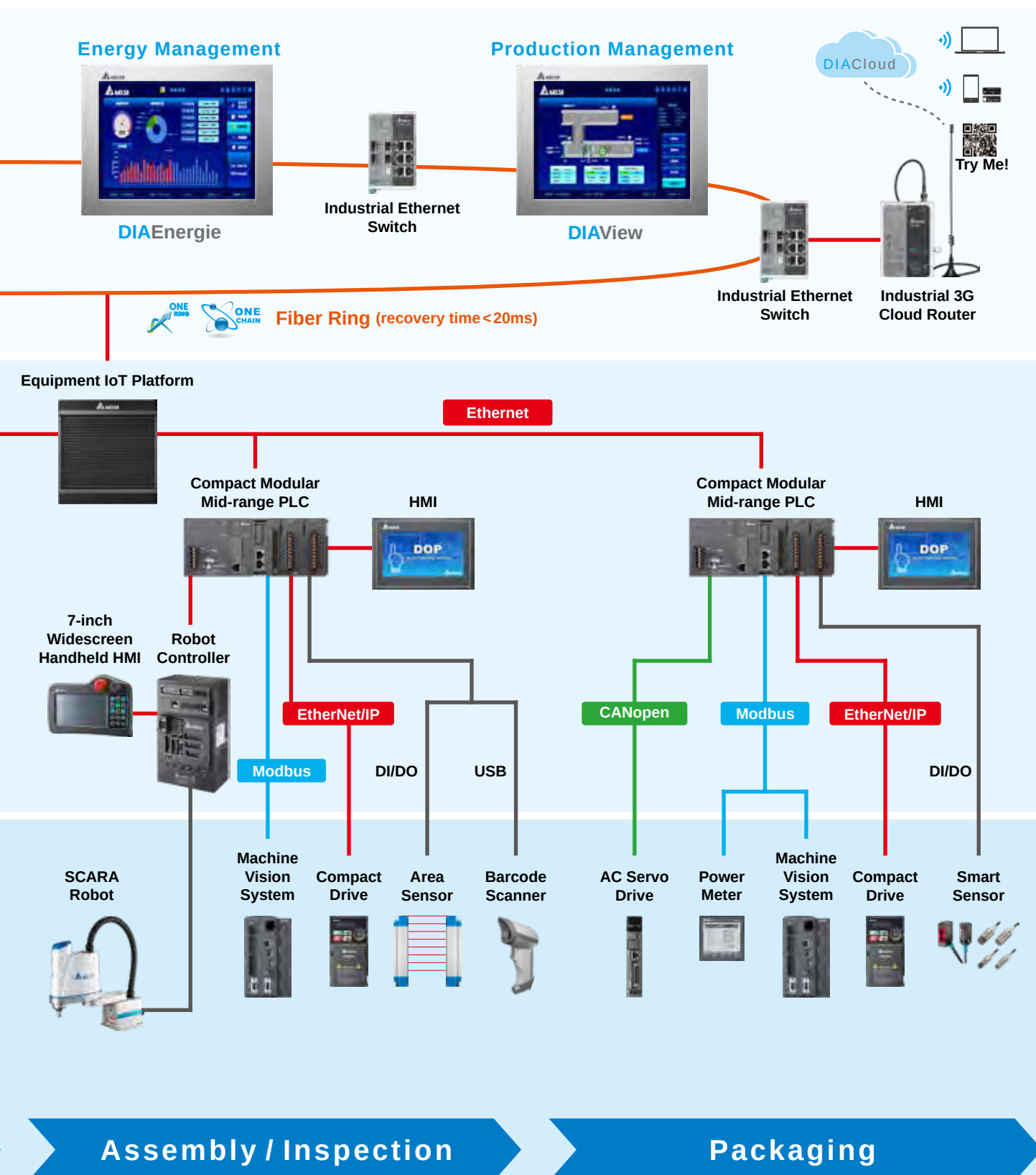
## Industrial Network Converter

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

# Industrial Automation Solutions





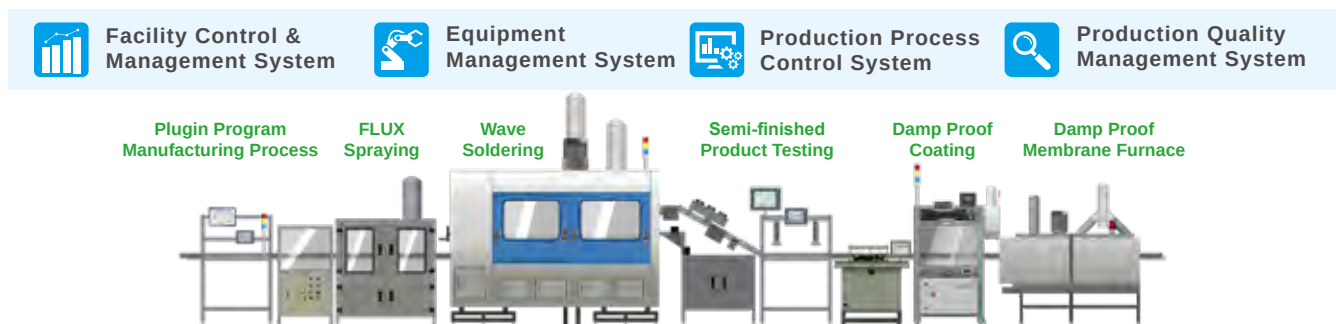
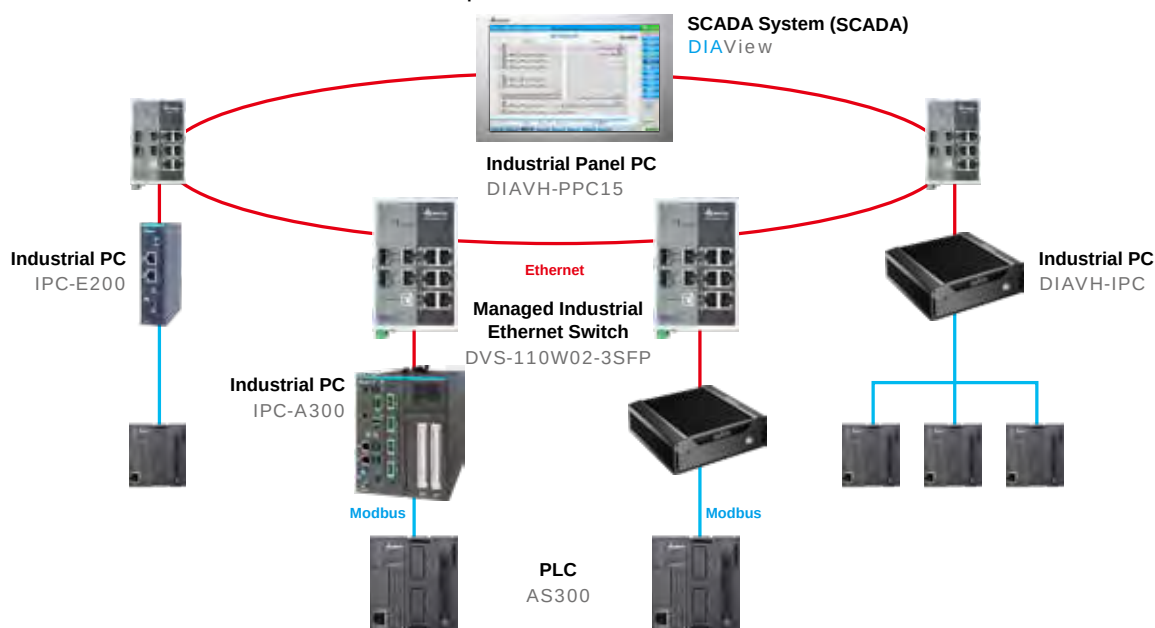


# Industrial PC New

## DIAVH/IPC

### Stable and High-performance Integration Platform

- Standard fanless industrial computers for easy DIN-rail mounting
- System expansion with PCI / PCIe slots for machine vision, web monitoring and motion control applications
- Multiple sizes of Panel PC available (10"/12"/15"/17"/19"/21")
- High/Low-temperature resistance and IP65-rated front panel (dustproof & waterproof), suitable for applications in harsh industrial environments
- Intel Core i3 / i5 / i7 and Celeron J1900 processor with fanless design and low power consumption for high efficiency and excellent performance
- One-click startup (power-on)
- Built-in Windows 10 (Pro/IoT version) with 64/128/256/512G SSD
- Compatible with SCADA and IEMS software platforms

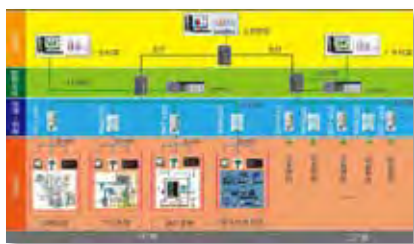


## Applications

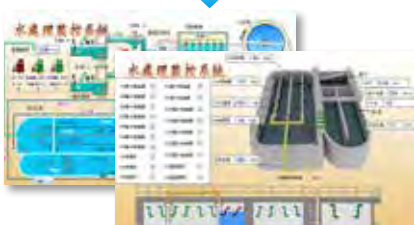
Equipment for electronics manufacturing, machinery equipment, HVAC, water treatment, facility management and monitoring control

## Factory Digitalization

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



Factory Digitalization



Factory Equipment Monitoring

## Inspection & Monitoring of Electronic Equipment

- Implementation of inspection and equipment group control via PLCs, DIAView and inspection equipment
- Daily production recording, qualified/unqualified product identification, and data inquiries



Electronic Inspection Equipment



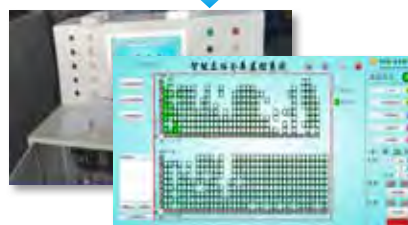
Inspection and Monitoring of Electronic Equipment

## Logistic Applications: Transportation and Stereoscopic Warehouse

- Locations of material storage are saved in the database
- Material loading/unloading/sorting via barcode scanning for space and costs saving and high efficiency



Warehousing System



Warehouse Monitoring

## 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

# Articulated Robot

## DRV

### Automation for Smart Manufacturing

- High precision, high speed
- Built-in 3 solenoid valves for quick integration and application
- Hollow design of the robot wrist (the 6<sup>th</sup> axis) for wiring and tool placement
- High integration and efficiency
  - Matched with key devices for production automation
  - Quick integration with peripheral components for workstation applications

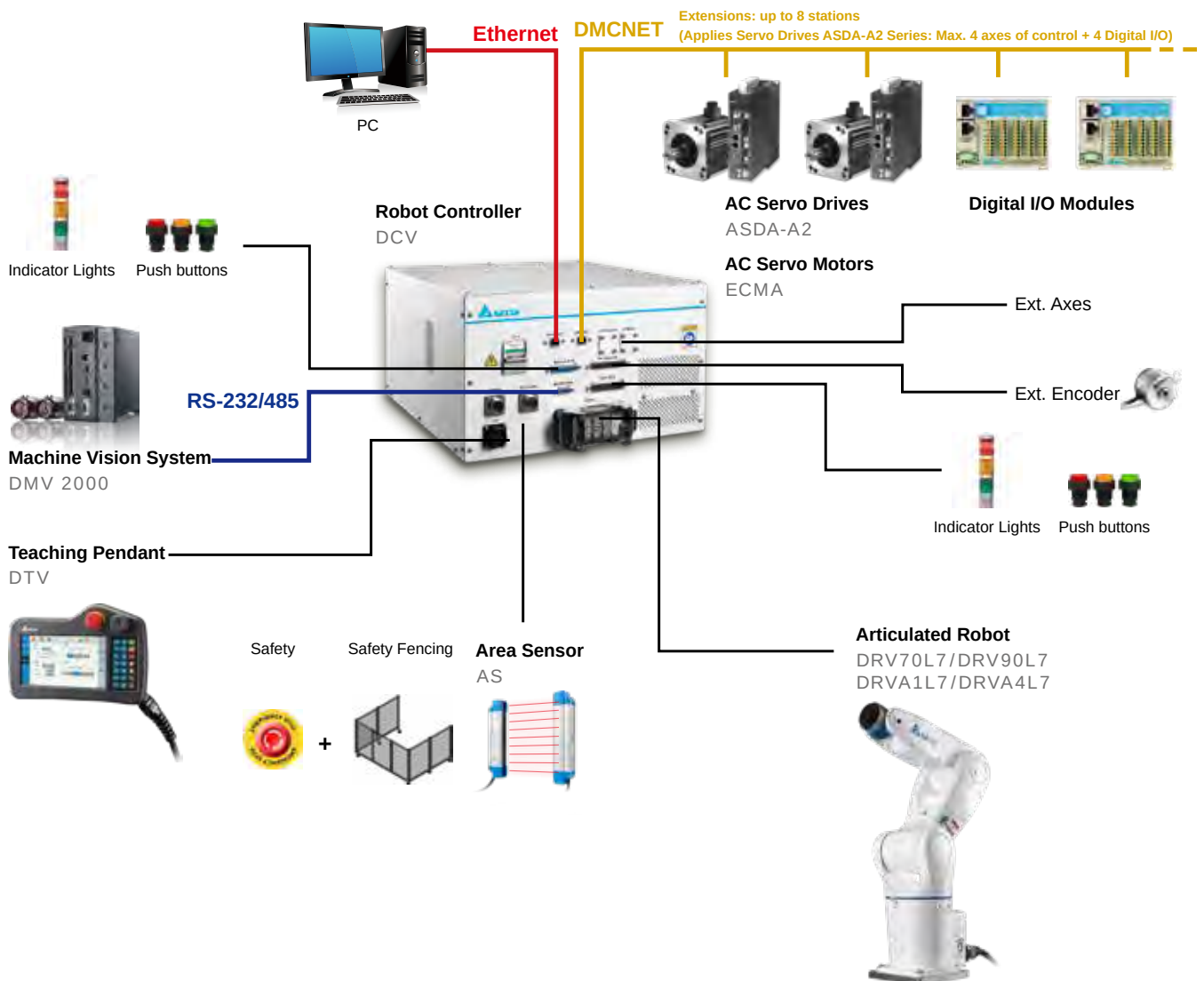


DRV70L7

DRV90L7

DRVA1L7

DRVA4L7



| Product Specifications            |             |                                                                                                                                                       |                          |                         |                        |
|-----------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------|------------------------|
| Model                             |             | DRV70L7                                                                                                                                               | DRV90L7                  | DRVA1L7                 | DRVA4L7                |
| Number of Axes                    |             | 6                                                                                                                                                     |                          |                         |                        |
| Max. Working Range                |             | 710 mm                                                                                                                                                | 900 mm                   | 1,111 mm                | 1,411 mm               |
| Max. Payload                      |             | 7 kg                                                                                                                                                  |                          |                         |                        |
| Motion Range<br>(Max. Speed)      | J1          | ±170° (450°/sec)                                                                                                                                      | ±170° (370°/sec)         | ±170°(240°/sec)         | ±170°(200°/sec)        |
|                                   | J2          | +133° / -105° (340°/sec)                                                                                                                              | +135° / -105° (260°/sec) | +135 / -105 (220°/sec)  | +135 / -105 (165°/sec) |
|                                   | J3          | +65° / -205° (510°/sec)                                                                                                                               | +65° / -205° (410°/sec)  | +60 / -205 (295°/sec)   | +60 / -205 (220°/sec)  |
|                                   | J4          | ±190° (550°/sec)                                                                                                                                      |                          | ±190° (465°/sec)        |                        |
|                                   | J5          | ±120° (550°/sec)                                                                                                                                      |                          | ±120° (480°/sec)        |                        |
|                                   | J6          | ±360° (820°/sec)                                                                                                                                      |                          | ±360° (705°/sec)        |                        |
| Repeatability                     |             | ±0.02 mm                                                                                                                                              | ±0.03 mm                 | ±0.04 mm                | ±0.05 mm               |
| Standard Cycle Time <sup>*1</sup> |             | 0.32 sec                                                                                                                                              | 0.35 sec                 | 0.48 sec                | 0.54 sec               |
| Installation                      |             | Desk-mount / Wall-mount / Ceiling-mount                                                                                                               |                          | Desk-mount / Wall-mount |                        |
| Built-in Wires                    |             | One 12Pos. connector for sensor connections and two ø6 pneumatic tubings<br>(one is for three built-in solenoids, the other is for extension purpose) |                          |                         |                        |
| IP rating <sup>*2</sup>           |             | IP40 (Standard) / IP65 (Optional)                                                                                                                     |                          | IP65 (Standard)         |                        |
| Environment                       | Temperature | 0°C ~ 40°C                                                                                                                                            |                          |                         |                        |
|                                   | Humidity    | 20 ~ 85%RH                                                                                                                                            |                          |                         |                        |
|                                   | Vibration   | 0.5 G                                                                                                                                                 |                          |                         |                        |
| Weight                            |             | 37 kg                                                                                                                                                 | 39 kg                    | 76 kg                   | 82 kg                  |
| Controller Series                 |             | Robot Controller DCV Series                                                                                                                           |                          |                         |                        |

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

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

### • High Flexibility/Multiple Installations

- Max. working range: 710mm ~ 1,411mm 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  
Enhanced reliability of  
extension wire / cords



### • Simple and User-Friendly Operation Interface



**DRASudio Robotic Automation Studio software system**



#### Intuitive user interface

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

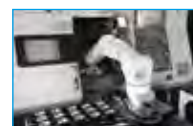


**Simple and graphic programming**

### Applications



Pick-and-Place



Load / Unload



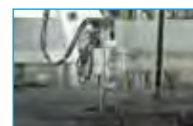
Assembly



Insertion



Inspection



Screw-driving



# SCARA Robot

## DRS

High Repeatability, High Precision, Excellent Linearity and Verticality



DRS40L3

DRS60L6

DRS80LC



Teaching Pendant  
DTS



Robot Controller  
DCS

| Product Specifications   |         |                          |                          |                          |                         |                         |                         |
|--------------------------|---------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------|-------------------------|
| Model                    |         | DRS30L3<br>SS1BN002      | DRS40L3<br>SS1BN002      | DRS60L3<br>SS1BN002      | DRS50L6<br>SS1BN002     | DRS60L6<br>SS1BN002     | DRS70L6<br>SS1BN002     |
| Number of Axes           |         | 4                        | 4                        | 4                        | 4                       | 4                       | 4                       |
| Arm Length ( X+Y )       |         | 300 mm                   | 400 mm                   | 600 mm                   | 500 mm                  | 600 mm                  | 700 mm                  |
| Rated / Max. Payload     |         | 1 kg / 3 kg              | 1 kg / 3 kg              | 1 kg / 3 kg              | 2 kg / 6 kg             | 2 kg / 6 kg             | 2 kg / 6 kg             |
| Motion Range             | J1      | ±130°                    | ±130°                    | ±114°                    | ±133°                   | ±133°                   | ±133°                   |
|                          | J2      | ±145°                    | ±146.6°                  | ±148°                    | ±153°                   | ±153°                   | ±153°                   |
|                          | J3      | 150 mm                   | 150 mm                   | 150 mm                   | 200 mm / 300 mm         | 200 mm / 300 mm         | 200 mm / 300 mm         |
|                          | J4      | ±360°                    | ±360°                    | ±360°                    | ±360°                   | ±360°                   | ±360°                   |
|                          | J5      | -                        | -                        | -                        | -                       | -                       | -                       |
|                          | J6      | -                        | -                        | -                        | -                       | -                       | -                       |
| Maximum Speed            | J1 + J2 | 4,058 mm/s               | 4,710 mm/s               | 4,050 mm/s               | 4,400 mm/s              | 5,000 mm/s              | 5,500 mm/s              |
|                          | J3      | 1,250 mm/s               | 1,250 mm/s               | 1,250 mm/s               | 1,100 mm/s              | 1,100 mm/s              | 1,100 mm/s              |
|                          | J4      | 1,875°/s                 | 1,875°/s                 | 1,875°/s                 | 2,000°/s                | 2,000°/s                | 2,000°/s                |
|                          | J5      | -                        | -                        | -                        | -                       | -                       | -                       |
|                          | J6      | -                        | -                        | -                        | -                       | -                       | -                       |
| Standard Cycle Time*     |         | 0.392 s *                | 0.42 s *                 | 0.92 s *                 | 0.39 s *                | 0.39 s *                | 0.40 s *                |
| Allowable Inertia Moment | Rated   | 0.0091 kg-m <sup>2</sup> | 0.0091 kg-m <sup>2</sup> | 0.0091 kg-m <sup>2</sup> | 0.01 kg-m <sup>2</sup>  | 0.01 kg-m <sup>2</sup>  | 0.01 kg-m <sup>2</sup>  |
|                          | Max.    | 0.075 kg-m <sup>2</sup>  | 0.075 kg-m <sup>2</sup>  | 0.075 kg-m <sup>2</sup>  | 0.023 kg-m <sup>2</sup> | 0.023 kg-m <sup>2</sup> | 0.023 kg-m <sup>2</sup> |
| Repeatability            |         | ±0.010 mm                | ±0.010 mm                | ±0.015 mm                | ±0.015 mm               | ±0.015 mm               | ±0.015 mm               |

\* 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).

\*\* When carrying a payload of 2kg and reciprocating 25mm in vertical and 300mm in horizontal directions under an operating temperature of 25°C and within a humidity of 45% ~ 65% RH (non-condensing).

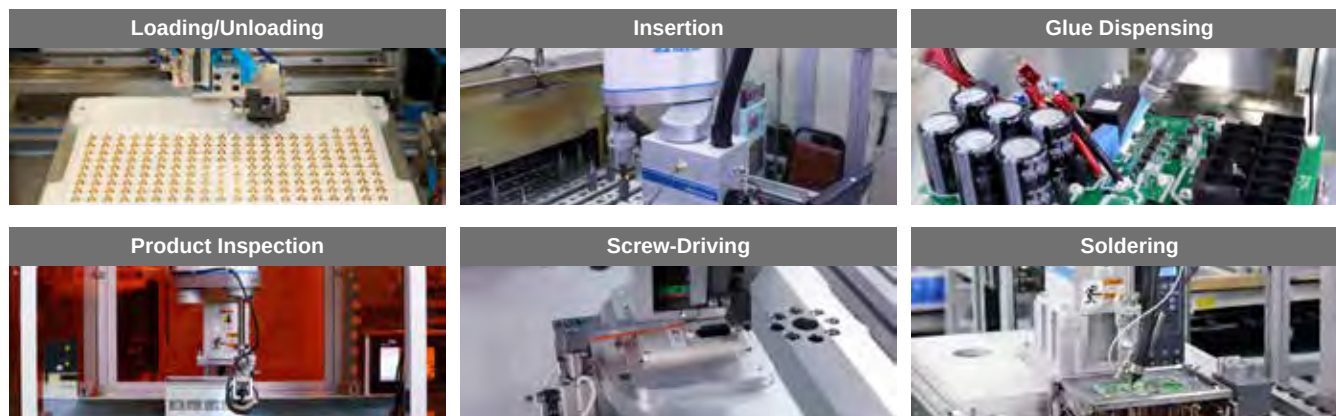


## Applications

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

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

### SCARA Robot Applications



### Product Specifications

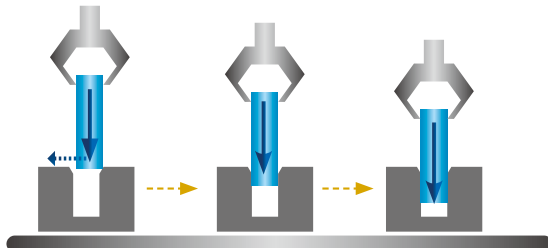
| Model                    |         | DRS60LC<br>SS1BN002    | DRS70LC<br>SS1BN002    | DRS80LC<br>SS1BN002    | DRS60H6<br>SS1BN002     | DRS60L3<br>SS1BN502     | DRS60L6<br>SS1BN302 |
|--------------------------|---------|------------------------|------------------------|------------------------|-------------------------|-------------------------|---------------------|
| Number of Axes           |         | 4                      | 4                      | 4                      | 4                       | 5                       | 3                   |
| Arm Length ( X+Y )       |         | 600 mm                 | 700 mm                 | 800 mm                 | 600 mm                  | 600 mm                  | 600 mm              |
| Rated / Max. Payload     |         | 5 kg / 12 kg           | 5 kg / 12 kg           | 5 kg / 12 kg           | 2 kg / 6 kg             | 1 kg / 3 kg             | 2 kg / 6 kg         |
| Motion Range             | J1      | ±132°                  | ±132°                  | ±132°                  | ±130°                   | ±133°                   | ±133°               |
|                          | J2      | ±152.5°                | ±152.5°                | ±152.5°                | ±150°                   | ±153°                   | ±153°               |
|                          | J3      | 200 mm / 420 mm        | 200 mm / 420 mm        | 200 mm / 420 mm        | 200 mm                  | 200 mm                  | 200 mm              |
|                          | J4      | ±360°                  | ±360°                  | ±360°                  | ±360°                   | ±360°                   |                     |
|                          | J5      | -                      | -                      | -                      | -                       | ±360°                   | -                   |
|                          | J6      | -                      | -                      | -                      | -                       | -                       | -                   |
| Maximum Speed            | J1 + J2 | 7,100 mm/s             | 7,700 mm/s             | 8,300 mm/s             | 5,000 mm/s              | 5,500 mm/s              | 5,000 mm/s          |
|                          | J3      | 118 mm/s               | 1,180 mm/s             | 1,180 mm/s             | 1,100 mm/s              | 1,100 mm/s              | 1,100 mm/s          |
|                          | J4      | 1,025°/s               | 1,025°/s               | 1,025°/s               | 2,000°/s                | 2,000°/s                |                     |
|                          | J5      | -                      | -                      | -                      | -                       | 600°/s                  | -                   |
|                          | J6      | -                      | -                      | -                      | -                       | -                       | -                   |
| Standard Cycle Time*     |         | 0.43 s **              | 0.45 s **              | 0.47 s **              | 0.39 s *                | 0.45 s *                | 0.39 s *            |
| Allowable Inertia Moment | Rated   | 0.02 kg*m <sup>2</sup> | 0.02 kg*m <sup>2</sup> | 0.02 kg*m <sup>2</sup> | 0.01 kg*m <sup>2</sup>  | 0.01 kg*m <sup>2</sup>  |                     |
|                          | Max.    | 0.25 kg*m <sup>2</sup> | 0.25 kg*m <sup>2</sup> | 0.25 kg*m <sup>2</sup> | 0.023 kg*m <sup>2</sup> | 0.023 kg*m <sup>2</sup> |                     |
| Repeatability            |         | ±0.025 mm              | ±0.025 mm              | ±0.025 mm              | ±0.015 mm               | ±0.015 mm               | ±0.015 mm           |

\* 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).

\*\* When carrying a payload of 2kg 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).

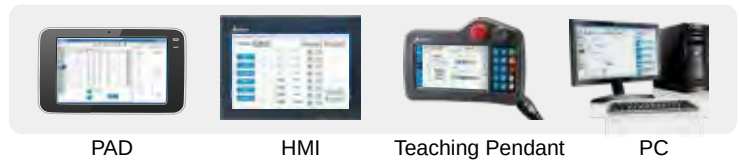
### • Sensor-less Compliance Control Function

- 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.



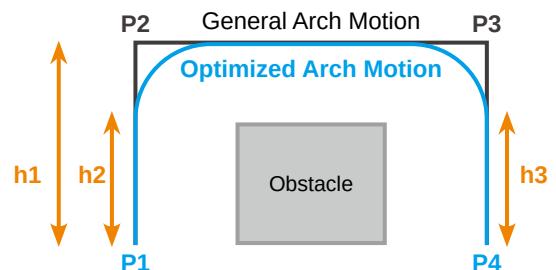
### • On-the-Fly & Conveyor Tracking

- Easy and flexible conveyor tracking
- User-friendly template guidance
- On-the-fly function provides excellent positioning to shorten cycle time and enhance productivity
- Integrates with Delta's IA products for a total solution



### • 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 Collection

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



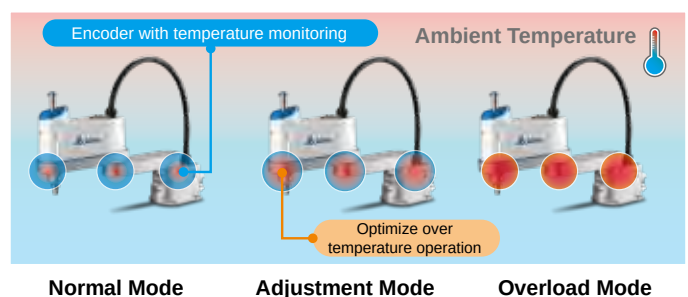
Equipment Data Acquisition Platform  
DIALink



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



# Screw Driving Robot

## RS-AFS

### One-Station Total Solution

- Robot + Screw Driver + Teaching Pendant

### Easy to Use

- High integration
- Simple screwing parameter setup

### Real-time monitoring

- Screw driving status
- Force monitoring
- Torque control

### Applications

Consumer Electronics, automotive parts assembly  
(Torque: 0.5 ~ 43 kgf-cm | Screw size: M1.2 ~ M5)

### Benefits

Precise torque control  
Products & screws not damaged



| SCARA Robot                      | Model                   |                 | RS-AFS<br>60LA01          | RS-AFS<br>60LA02 | RS-AFS<br>60LA04 | RS-AFS<br>60LA05 | RS-AFS<br>60LA06 | RS-AFS<br>60LB01 | RS-AFS<br>60LB02 | RS-AFS<br>60LB04 | RS-AFS<br>60LB05 | RS-AFS<br>60LB06 |  |
|----------------------------------|-------------------------|-----------------|---------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|--|
|                                  | Number of Axes          |                 | 3                         |                  |                  |                  |                  |                  | 4                |                  |                  |                  |  |
|                                  | Arm Length (1 + 2 axis) |                 | 600mm                     |                  |                  |                  |                  |                  |                  |                  |                  |                  |  |
|                                  | Max. Speed              | J1+J2           | 5,000 mm/sec              |                  |                  |                  |                  |                  |                  |                  |                  |                  |  |
|                                  |                         | J3              | 1,100 mm/sec              |                  |                  |                  |                  |                  |                  |                  |                  |                  |  |
|                                  |                         | J4              | N.A.                      |                  |                  |                  |                  |                  | 600°/s           |                  |                  |                  |  |
|                                  | Range of Motion         | J1              | ±133°                     |                  |                  |                  |                  |                  | ±133°            |                  |                  |                  |  |
|                                  |                         | J2              | ±153°                     |                  |                  |                  |                  |                  | ±153°            |                  |                  |                  |  |
|                                  |                         | J3              | 200mm                     |                  |                  |                  |                  |                  | 200mm            |                  |                  |                  |  |
|                                  |                         | J4              | N.A.                      |                  |                  |                  |                  |                  | ±105°            |                  |                  |                  |  |
| Repeatability                    | J1+J2                   | ±0.015 mm       |                           |                  |                  |                  |                  | ±0.015 mm        |                  |                  |                  |                  |  |
|                                  | J3                      | ±0.01 mm        |                           |                  |                  |                  |                  | ±0.01 mm         |                  |                  |                  |                  |  |
|                                  | J4                      | N.A.            |                           |                  |                  |                  |                  | ±0.01 mm         |                  |                  |                  |                  |  |
| Net Weight                       |                         | 20 kg           |                           |                  |                  |                  |                  |                  |                  |                  |                  |                  |  |
| Delta Screw Driving Robot Module | Torque (kgf/cm)         |                 | 0.5~1.8                   | 1.5~9.0          | 1.5~9.0          | 6.0~25.0         | 10.0~43.0        | 0.32~1.8         | 1.5~9.0          | 1.5~9.0          | 6.0~25.0         | 10.0~43.0        |  |
|                                  | Torque (N/m)            |                 | 0.05~0.17                 | 0.15~0.88        | 0.15~0.88        | 0.58~2.45        | 0.78~4.20        | 0.03~0.17        | 0.15~0.88        | 0.15~0.88        | 0.58~2.45        | 0.78~4.20        |  |
|                                  | Max. Speed (rpm)        |                 | 2,000                     | 2,000            | 2,000            | 1,200            | 1,000            | 2,000            | 2,000            | 2,000            | 1,200            | 1,000            |  |
|                                  | Dimensions (LxWxH, mm)  |                 | 250x57x63                 | 250x57x63        | 250x57x63        | 318x57x63        | 318x57x63        | 250x57x63        | 250x57x63        | 250x57x63        | 318x57x63        | 318x57x63        |  |
|                                  | Weight (kg)             |                 | 1                         | 1.2              | 1.2              | 1.7              | 1.7              | 1                | 1.2              | 1.2              | 1.7              | 1.7              |  |
|                                  | Screw Size              | Metric Size     | M1.2~M2                   | M2~M3            | M2~M3            | M2.5~M4          | M3~M5            | M1.2~M2          | M2~M3            | M2~M3            | M2.5~M4          | M3~M5            |  |
|                                  |                         | Screwdriver Bit | Ø4                        | Ø5               | Hex 1/4"         | Hex 1/4"         | Hex 1/4"         | Ø4               | Ø5               | Hex 1/4"         | Hex 1/4"         | Hex 1/4"         |  |
| Environment                      | Ambient Temperature     |                 | 5°C~40°C                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |  |
|                                  | Storage Temperature     |                 | -20°C~55°C                |                  |                  |                  |                  |                  |                  |                  |                  |                  |  |
|                                  | Humidity                |                 | 0~90% RH (non-condensing) |                  |                  |                  |                  |                  |                  |                  |                  |                  |  |

# Robotic Simulation Platform

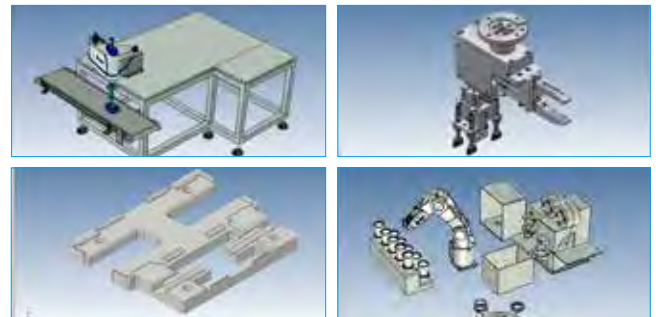
## DRASimuCAD

One software provides workstation design, simulation and operation path generation, saving setup time and boosting introduction efficiency.

- Simulates the actual workflow and operation environment, allowing real 3D models to be imported to pre-assess the rationality of the robot and peripheral equipment settings
- Pre-inspects robot abnormalities, detects collision and operation range limitations, saving teaching time and reducing errors when introducing the robot into applications
- Auto-generates path simulation and creates robot project for fast workflow design and programming to improve efficiency

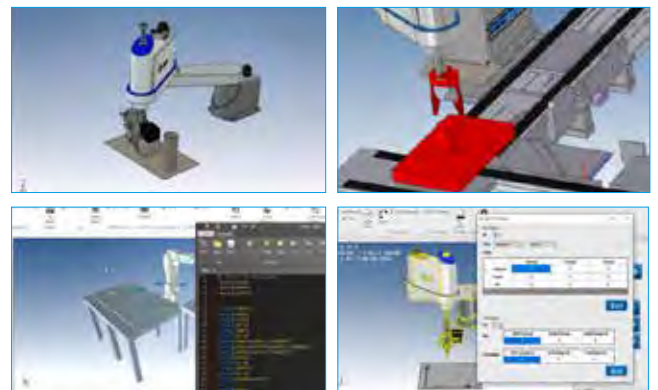
### Modeling (CAD)

- Complete 3D CAD design capabilities
- Built-in Parasolid and ACIS Dual-Core for mainstream CAD formats support, resolving the splitting image issue when importing/exporting image files
- Built-in robot, tool and application device library for easy drag and drop; preset actions links for fast simulation system establishment



### Virtual Robot Simulation

- Collision Detection
  - Predicts any collision under operation
  - Pre-inspects the operation range settings to eliminate repeated modification
- Offline Programming
  - Direct robot programming in robot language (RL)
  - Same interface with DRAStudio, allowing teaching points, setting coordinate system (user frame / tool frame) and creating robot project



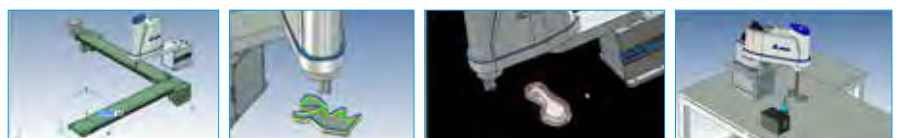
### Path Generating (CAM)

Auto-generates processing path and is combined with visual features for fast simulation



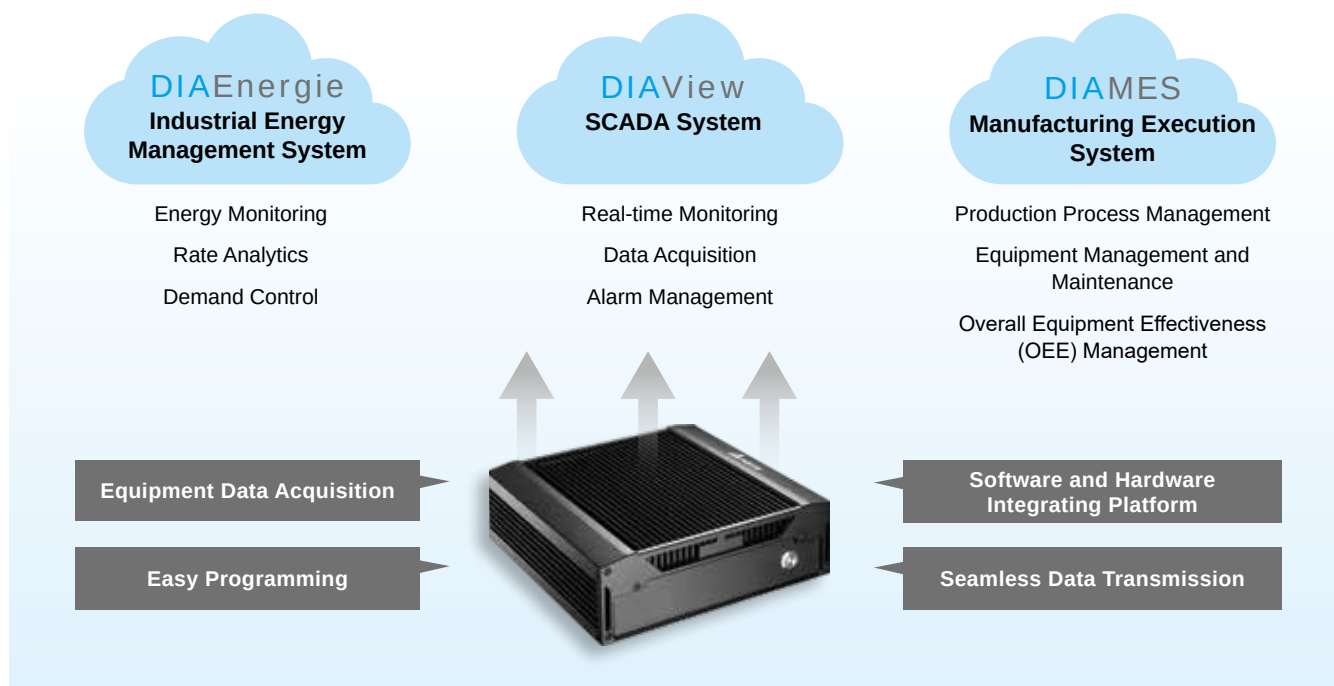
### Applications

Conveyor belt dynamic processing simulation, deburring, sole gluing, remote TCP



# Equipment IoT Platform

DIALink



## Equipment Monitoring and Data Acquisition

### Features

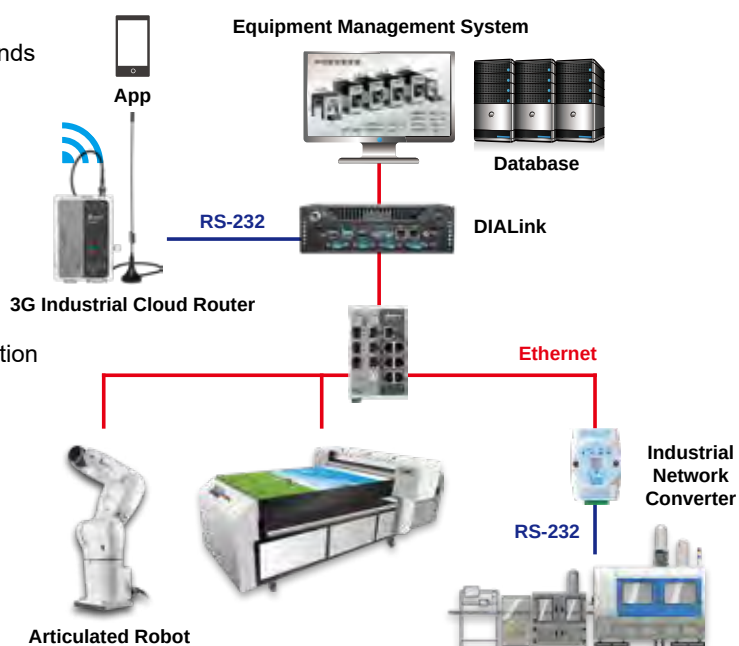
- Supports connection to CNCs/PLCs and various brands of equipment
- Data accessing/visualization/storage in real time
- Cloud computing via OPC UA/MQTT
- Edge computing with M2M connection

### Benefits

- Equipment data digitalization and management
- Customizable/user-definable real-time data visualization
- Machine anomaly and idle time monitoring
- Analysis of overall equipment effectiveness (OEE)

### Applications

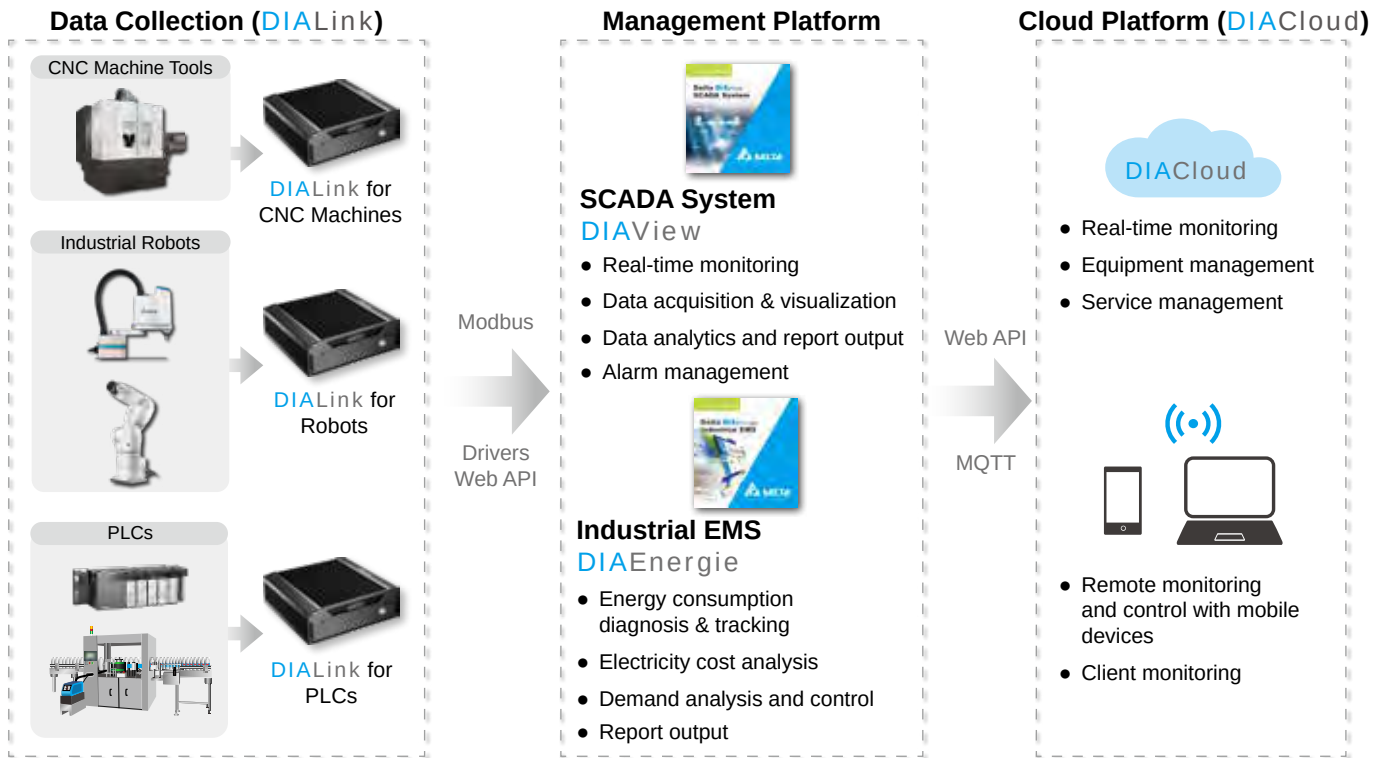
- Real-time equipment data collection
- Data analytics for management
- Remote monitoring and control



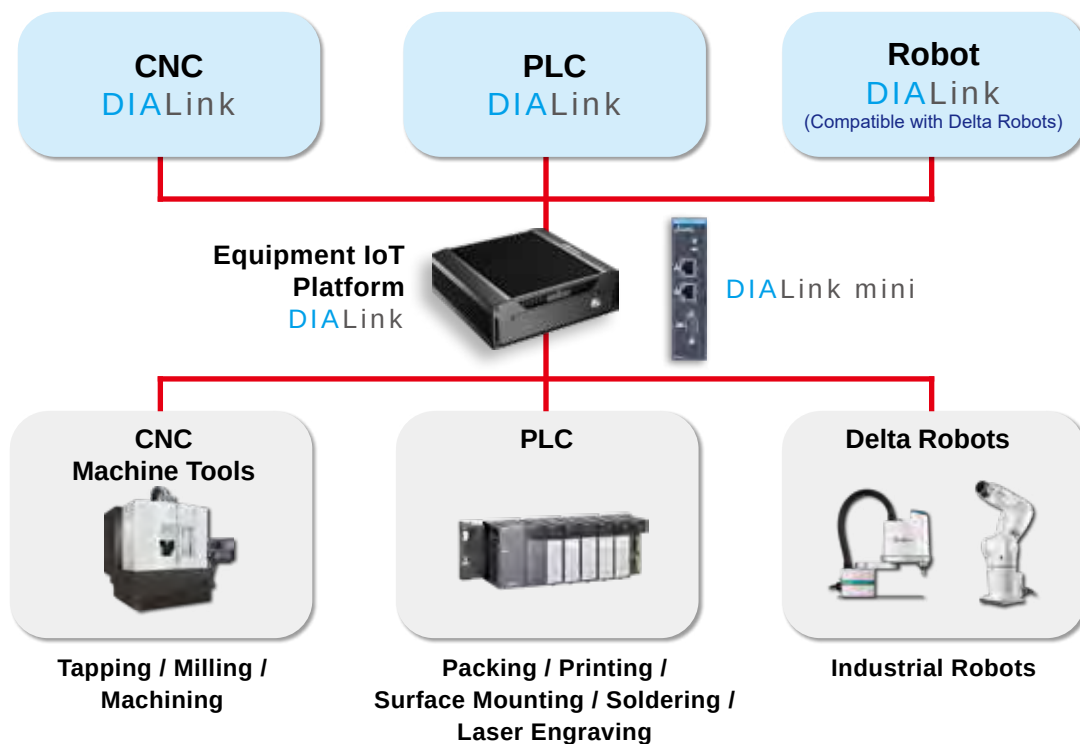


## Rapid, Seamless and Secure Data Transfer

- Supports Modbus slaves, JSON, MQTT data formats
- Open web API for development



## DIALink for CNC Machines / PLCs / Robots





# SCADA System <sup>New</sup>

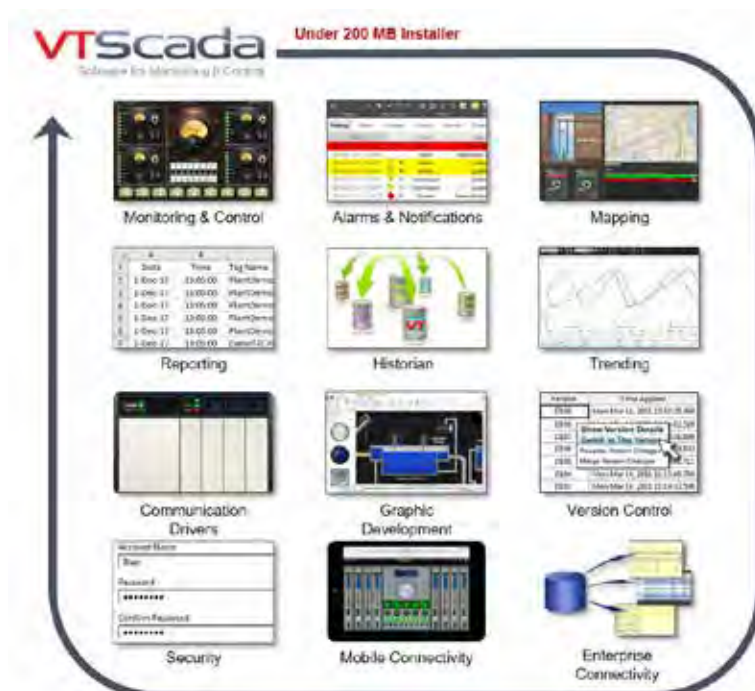
## VTScada

VTScada is a flexible and scalable SCADA software, providing an intuitive interface for real-time monitoring in various industries. It allows users to monitor hundreds to multi-million I/Os. Supporting more than 100 drivers, the software provides a reliable interface with high customizability and comprehensive functions for industrial monitoring applications.



### Fully Integrated Architecture (Standard & Optional)

- Complete SCADA functions available with one-time installation



### Applications



**Water &  
Wastewater Treatment**



**Oil & Gas | Chemicals**



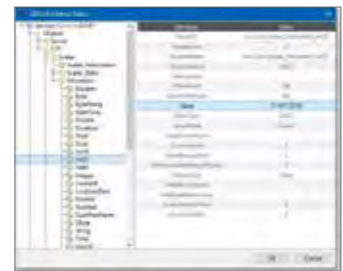
**Electronics  
Manufacturing**



**Food & Beverage**

### Device Driver Library (Standard)

- More than 100 industry standard and proprietary protocols
- Integrated device driver library allows users to connect to any combination of hardware



OPC UA Client Configuration Driver

### The VTScada Historian (Standard)

- Built-in historical database, requiring no additional costs

### Redundancy across the System (Requires Multiple Licenses)

- Automatic failover for polling and logging
- A smarter way for Thin Client server hot backup failover
- Synchronized historian and alarm database



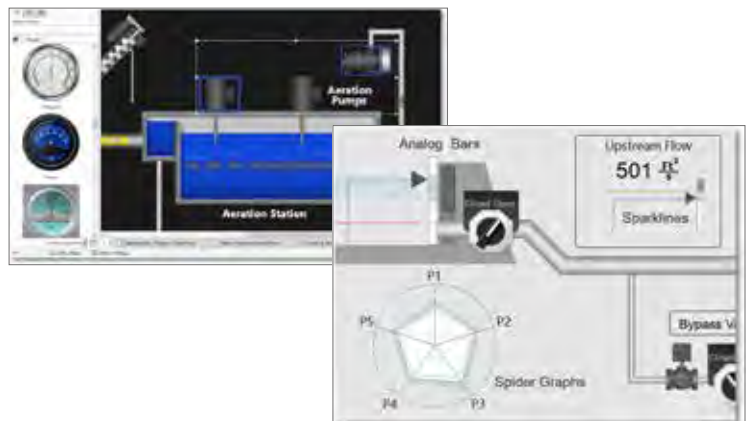
### VTScada Thin Clients (Optional)

- Supports HTML5 browsers on mobile devices and PCs



### VTScada Idea Studio (Standard in Development Runtime License)

- User-friendly drag-and-drop interface for screen development
- Applies configured changes without rebooting the whole system
- Provides 200+ widgets, 4,000+ graphics and 3D pipe elements to design customized, vivid monitoring display



# SCADA System

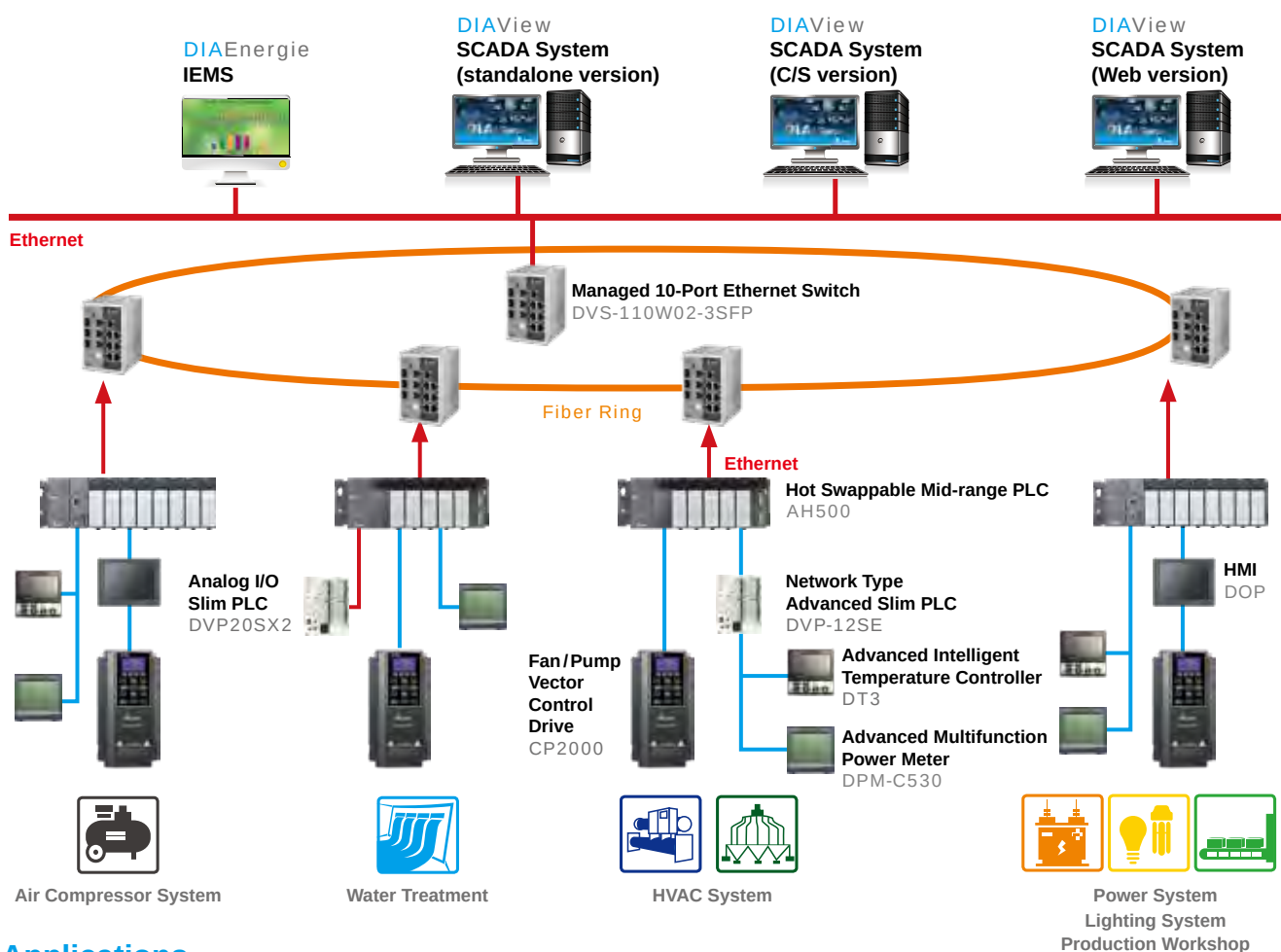
## DIAView

### Remote Monitoring for Smart Factory Management

- Seamless integration with Delta's PLC products and I/O modules, supporting various industrial communication protocols and equipment drivers
- Web-based CSS/HTML5 platform and WPF technology for intuitive & vivid displays and easy-to-navigate interfaces
- Variables Library and batch parameter editing for flexibility and high efficiency
- Diversity of real-time data visualization: S-curve/pie/bar charts and reports
- Diversified real-time and historical data analysis tools
- Efficient anomaly alarms and management
- Easy-to-learn VBScript language
- Reliable user authority management for different authorization levels



### System Structure and Applications



### Applications

Smart manufacturing and smart machines, HVAC, water treatment, electronics manufacturing

# Industrial Energy Management System

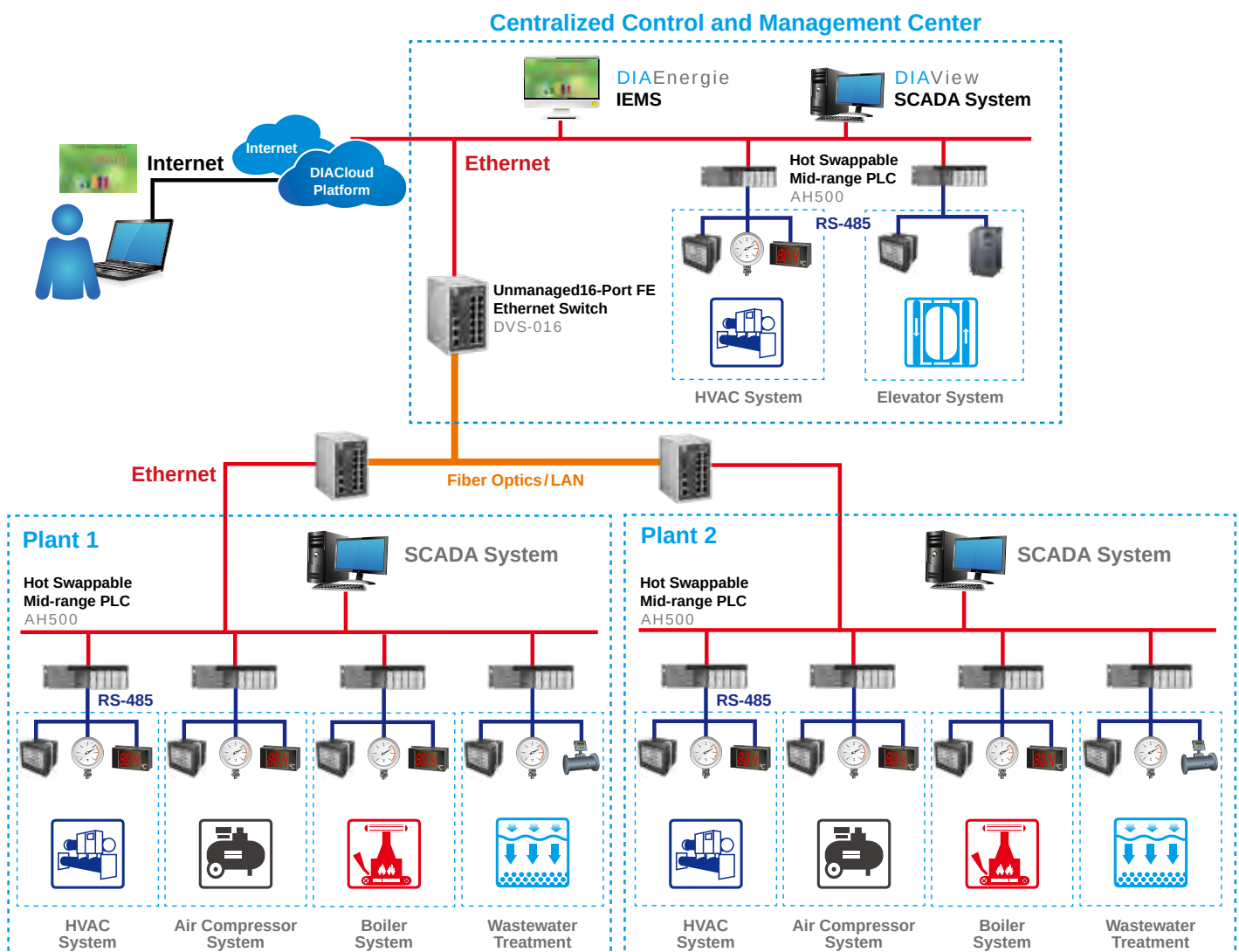
DIAEnergie

Innovative Solution for Smart Energy Saving

- Visualization and remote monitoring of critical power consumption
- Data analytics by areas and visualization per user authorization levels
- Monitoring and analysis to meet energy performance strategy goals
- Real-time alarms for anomalies
- Power consumption measurement and analysis to achieve efficient electricity usage and cost savings
- Demand management and forecasts to avoid exceeding the electricity consumption threshold
- User-definable tools for report output and a variety of types of data analysis



## System Structure and Applications







# Global Operations

## ASIA (Taiwan)



Taoyuan Technology Center (Green Building)



Taoyuan Plant 1



Tainan Plant (Diamond-rated Green Building)

## ASIA (China)

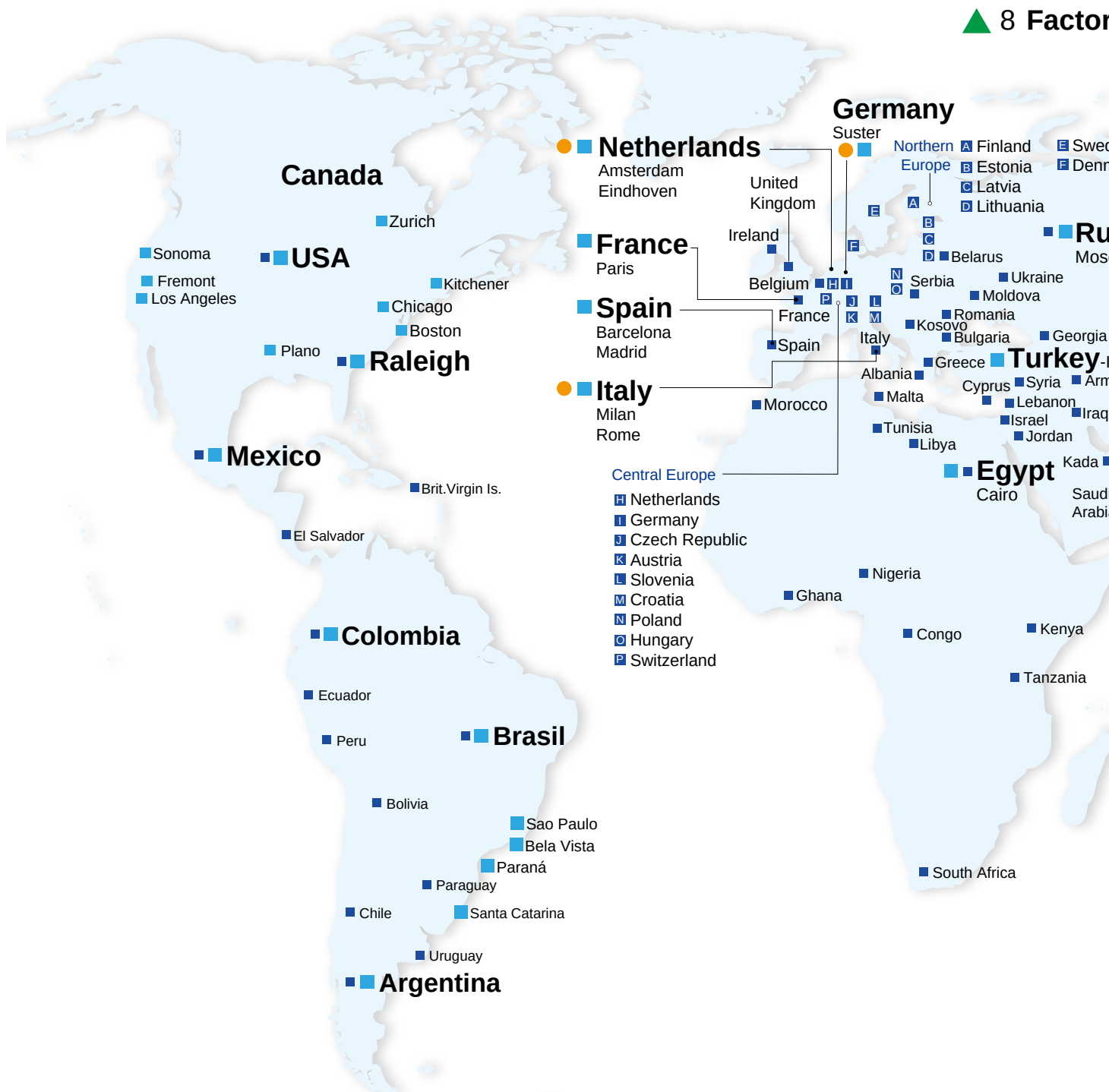


Wujiang Plant 3



Shanghai Office

## ▲ 8 Factor





## ASIA (Japan)



Tokyo Office



## ASIA (India)

Rudrapur Plant  
(Green Building)

## EUROPE



Amsterdam, the Netherlands

## AMERICA



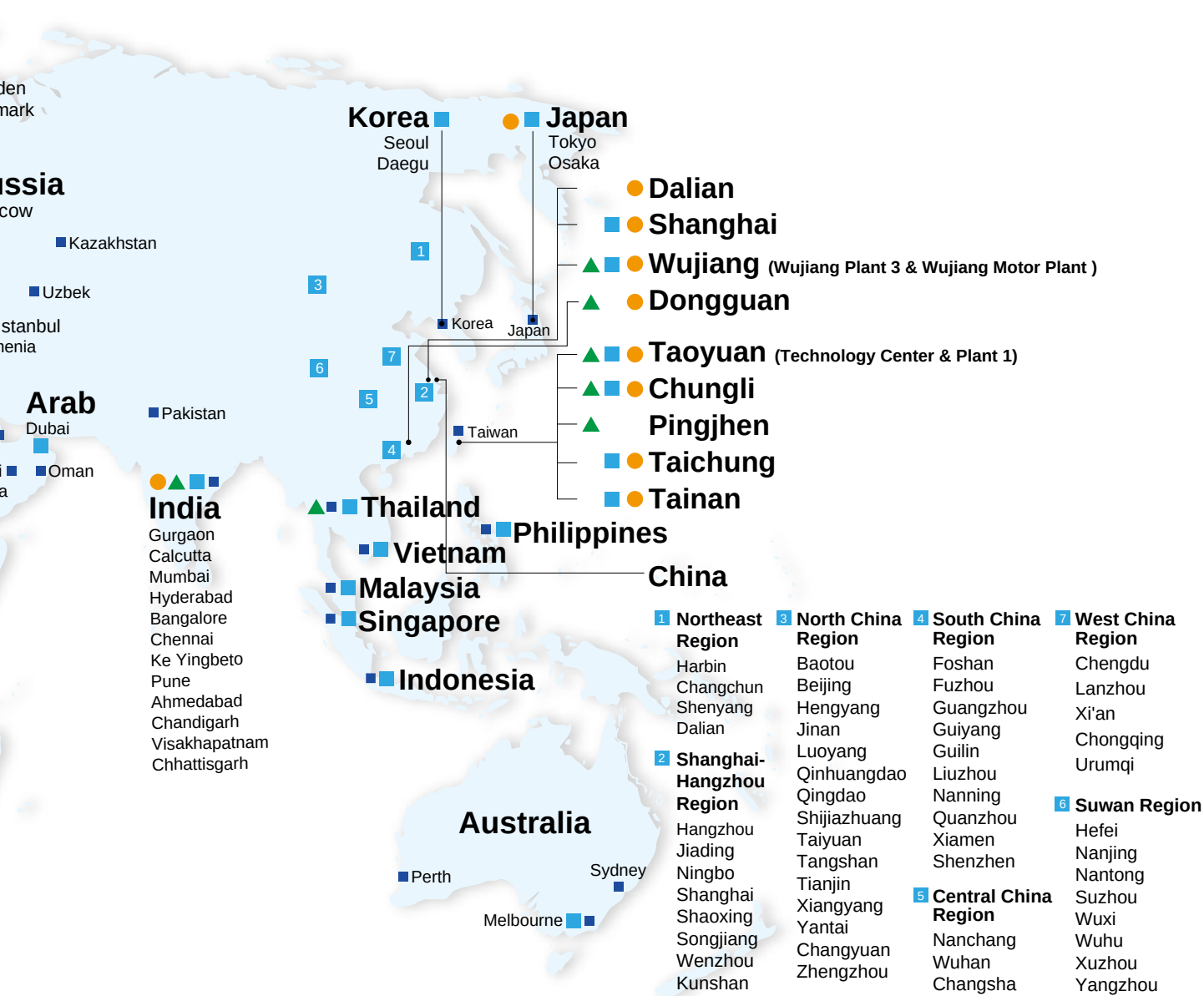
Research Triangle Park, U.S.A.

ies

112 Branch Offices

13 R&amp;D Centers

909 Distributors





Smarter. Greener. Together.

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