Automation for a Changing World

Delta PC-Based Motion Controller PAC Total Solution

ΔELTA

Smarter. Greener. Together.
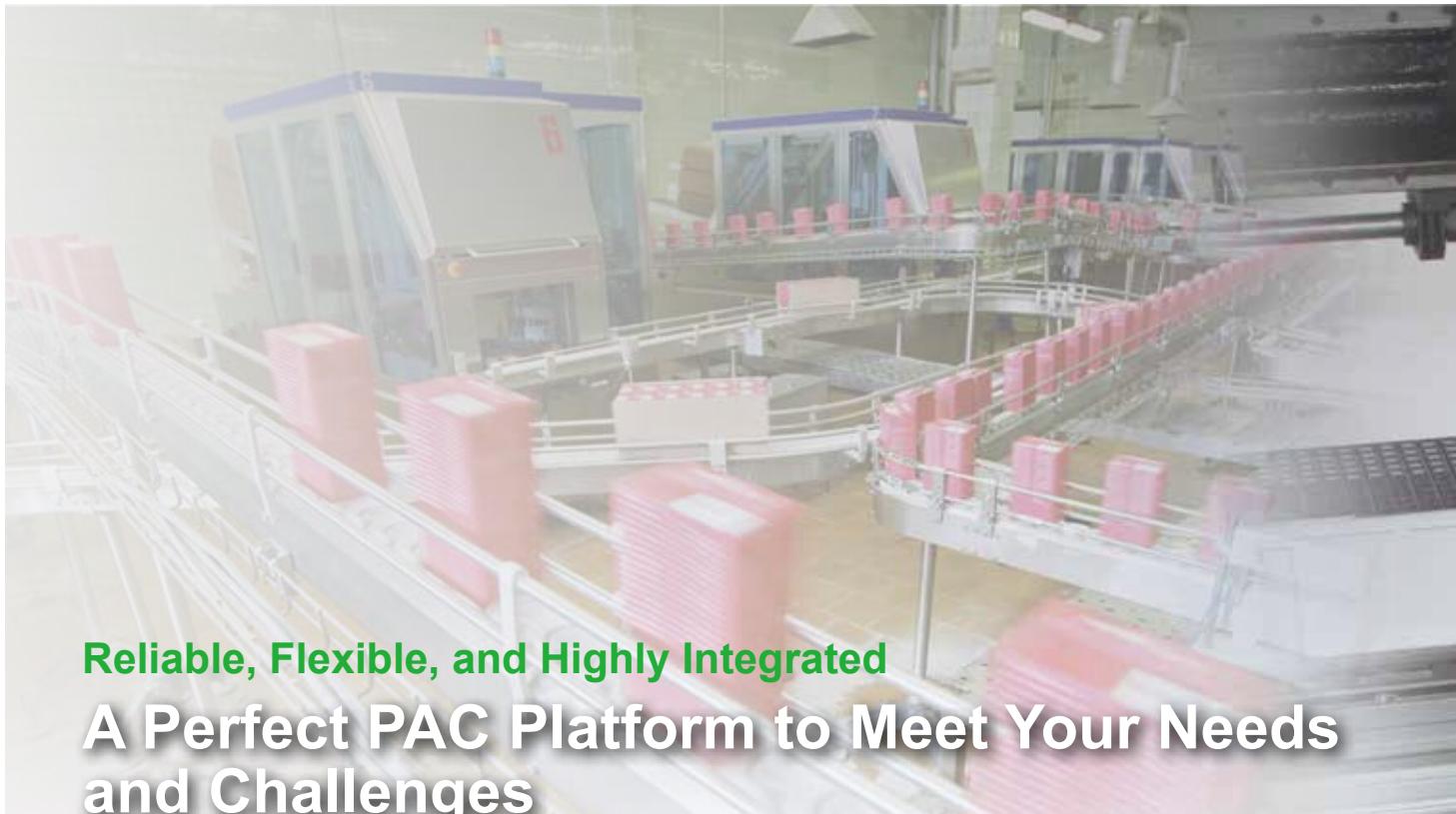
Reliable, Flexible, and Highly Integrated

A Perfect PAC Platform to Meet Your Needs and Challenges

Delta's PAC platform is a solution with high reliability, integrated network communication capability, and high-end motion control functions, and is ideal for advanced automation machining. Through EtherCAT or DMCNET communication, the platform is able to perform high-response, high-precision, and synchronous multi-axis motion control with easy and flexible operation.

Its cable-less and fan-less design enhances reliability and resistance for harsh environments and contaminants. It is also implemented with an X86 dual-core processor and EtherCAT or DMCNET communication that enables faster and more convenient data transmission.

With the built-in dynamic-link library (DLL), the controller of the platform effectively simplifies the implementation process and saves development time. In addition, the integrated versatile software of the platform provides a perfect integration of logic programming control (with SoftPLC), human machine interface (with SoftHMI), numeric control and robot control, supporting IEC61131-3 programming languages and high performance motion control for a wide range of applications and industries.

Delta's PAC platform offers a comprehensive, highly integrated, and easy industrial PC-based motion control solution to help optimize customers' competitiveness with capabilities for getting ahead of the game.

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Product Features

Energy Efficient and Robust Hardware

- The MH1 Series: provides a cable-less, fan-less and low-power consumption design, increasing reliability and providing CFast card and SSD slots inside for fast and stable data transmission

- The MP1 Series: equipped with a 10.1-inch touchscreen for more flexible operation

MH1 Series

AMP-based EtherCAT Motion Controller

The MH2 Series is an AMP-based EtherCAT motion controller. Delta provides motion control library for users to advanced programming languages for motion control and process development

Multiple Peripheral Interfaces for Communication

Equipped with USB ports, serial COM ports, Gbps Ethernet ports and PCI/PCIe extension slots, Delta's PACs support CFast card, SD card, SSD, and M.2 SSD storage for quick and stable data transmission and flexible usage

MH2 Series

Supports EtherCAT and DMCNET Master and Slave Modules

Delta provides complete servo systems and modules for DMCNET and EtherCAT fieldbus systems. Users are able to select suitable products based on their own machine cabinet spaces and precision requirements for a highly expansible motion control solution

MP1 Series

High Security

Each PAC provides an IC device for programming security and development protection

Flexible Operation Interface with Multiple Software Programs

Supports General Windows 7/10; built-in DLL and development modules (IMP) to connect with SoftHMI and SoftPLC for UI development, single or multi-axis motion control. It can also integrate equipment IoT, CAM and image recognition functions for customized requirements

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DMCNET System Structure

Motion Controllers

PC-based Controller

MH1 Series

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MP1 Series

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Servo Systems

Servo Motors and Drives

ASDA-A3-F ASDA-A2-F ASDA-B3-F ASDA-B2-F ASDA-M

** Please refer to the catalogues of Delta's servo drives and motors ASDA Series for detailed specifications

Digital Remote Modules

32 Digital Input Remote Module
ASD-DMC-RM32MN

64 Digital Input Remote Module
ASD-DMC-RM64MN

Digital I/O Remote Module
HMC-RIO3232RT5

32 Digital Output Remote Module
ASD-DMC-RM32NT

64 Digital Output Remote Module
ASD-DMC-RM64NT
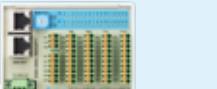
32 Digital I/O Remote Module
ASD-DMC-RM32PT

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Pulse Remote Module

4-Channel Pulse Remote Module

ASD-DMC-RM04PI

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Analog Remote Modules
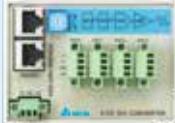
4-Channel Analog Output
Remote Module
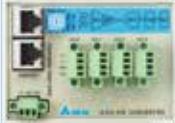
ASD-DMC-RM04DA

4-Channel Analog Input
Remote Module

ASD-DMC-RM04AD

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Gateway Type Remote Modules

Gateway Type Remote
Power Coupler
ASD-DMC-GA01

Gateway Type 1-Channel
Pulse Remote Module
ASD-DMC-GE01PH

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Delta's High-Speed Motion Control System - DMCNET

Delta's Motion Control NETwork (DMCNET) is a high speed, real-time communication system, capable of controlling up to 12 axes of servo system units within 1ms simultaneously: with 3-axis helical and linear interpolation in 4 groups, or 2-axis linear and arc interpolation in 6 groups. It supports 64-bit dual-precision floating point, allowing high-precision system calculations and flexible operation, and also absolute commands, incremental commands and T-curve / S-curve velocity profiles for different uses. With built-in position, speed and torque control modes, and 35 homing modes, it is able to receive real-time servo information, parameters, or change control modes via communication command, offering fast communication and motion control for various applications

DMCNET Motion Control Structure

In addition to a one-wire communication protocol, the DMCNET also provides various options, such as 6-axis PCI-DMC-F02, 12-axis PCI-DMC-A02, and the PCI-DMC-B01 with pulse compare & capture functions. Based on user's requirements, the servo drive can be combined with Servo Motor ASDA-A3-F Series, ASDA-A2-F Series, ASDA-B2-F Series or ASDA-B3-F Series. Delta provides users achieve best product performance and value with minimum investment

PAC as the DMCNET Master
MH1 Series

Built-in DMCNET bus
MP1 Series

AC Servo Drives ASDA-A3-F

AC Servo Drives ASDA-A2-F

AC Servo Drives ASDA-B3-F

AC Servo Drives ASDA-B2-F

Gateway Type Power Coupler GA + Remote Modules GE

Remote Modules

Pulse Output Module

Servo Motor

Servo Motor

Linear Stages

Linear Motors

Stepping Motor

DI/DO

AI/AO

Stepping Motors
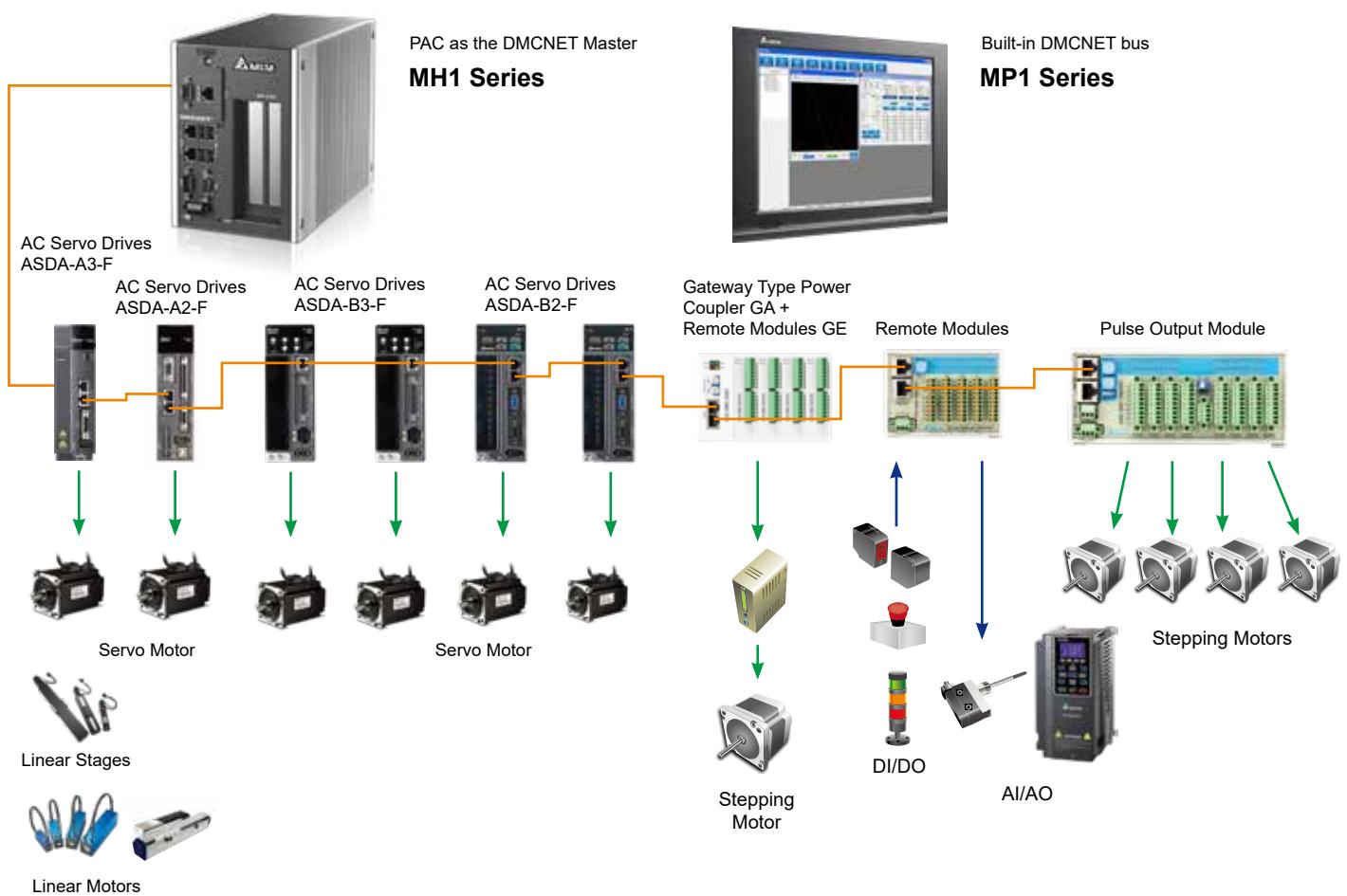
EtherCAT System Structure

Motion Controllers

PC-based controller

MH2 Series

Servo Systems

AC Servo Drive

ASDA-A3-E

ASDA-A2-E

ASDA-B3-E

** Please refer to the catalogues of Delta's servo drives and motors ASDA Series for detailed specifications

Gateway Type Remote Modules

Gateway Type E-Bus Remote Power Coupler

R1-EC5500D0

Pulse Remote Module

1-Channel Pulse Remote Module

R1-EC5621D0

Digital Remote Modules

16 Digital Input Remote Module

R1-EC6002D0
R1-EC6022D0

16 Digital Input Remote Module
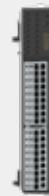
R1-EC7062D0
R1-EC70A2D0
R1-EC70E2D0
R1-EC70F2D0

Remote Module R2-EC0902D0

Analog Remote Modules

4-Channel Analog Input Remote Module

R1-EC8124D0

4-Channel Analog Output Remote Module

R1-EC9144D0

Functional Remote Modules

For Manual Pulse Generator (MPG)

R1-EC5614D0

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High-Speed Motion Control System - EtherCAT

Ethernet Central Automation Technology (EtherCAT) is an open Ethernet-based fieldbus system that provides high-efficiency and high-performance synchronization quality for automation control. Delta's EtherCAT motion control solution achieves rapid and real-time multiple axes of motion control, and is capable of controlling up to 100 slave stations that enable a 64-axis motion control within 1ms cycle time. It also provides 35 homing modes, point-to-point position control, 2-axis interpolation, 3-axis interpolation, multi-axis synchronization, continuous motion, gantry control, speed control, torque control, ECAM and Motion Buffer functions.
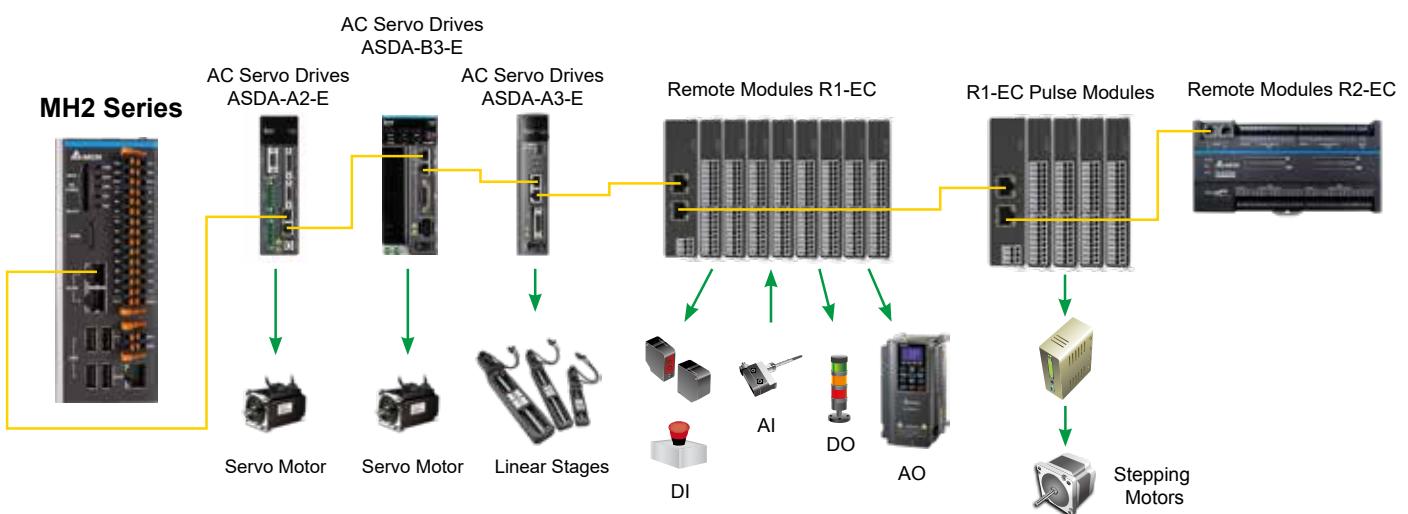
EtherCAT Motion Control Structure

Delta provides a rugged and high-speed motion control solution with complete functions for EtherCAT masters, and that supports device description in XML format (EtherCAT Slave Information - ESI) that are useful for EtherCAT device development.

Delta's EtherCAT motion control solution also allows the system to quickly identify ESI files and offers the capability of real-time connection via EtherCAT for high-level integration. Its rapid communication can update commands between stations within 1ms~0.125ms to ensure accurate and prompt data transfer within the network.
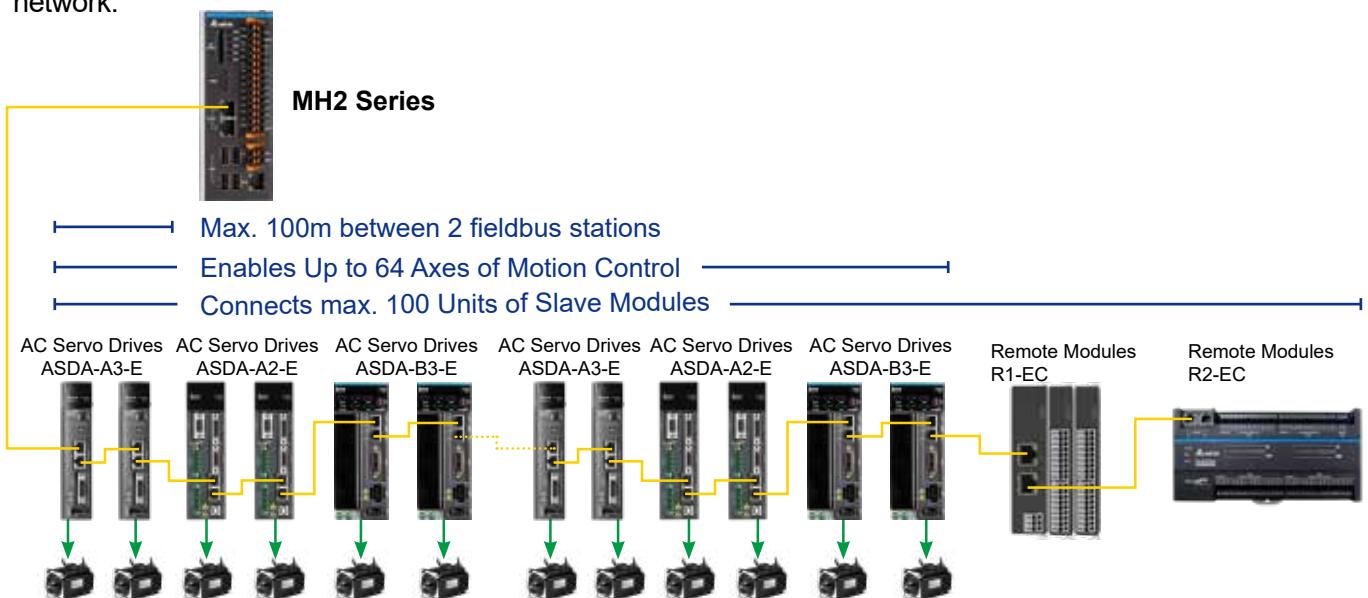
IPC Motion Platform (IMP 1.5)
A Simple and Fast Setup Development Platform for Realizing Unsurpassed Motion Control

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

▶ **Powerful Motion Control Core:** Upgrades Delta's PAC and PC with a motion control card installed to become an advanced motion controller, which integrates functions of motion control, HMI, PLC and high-speed communication fieldbus in one unit.

▶ **Customized Platform for Secondary Development:** Combines with Delta's standard HMI editor DOPSoft and PLC editor WPLSoft in one customer-driven platform, the platform makes complex programming and development easy and time-saving without depending on technical support from the manufacturer.

▶ **Scalable Communication for Expandable Network:** Through PCI extension slots, three DMCNET communication networks with up to 36 stations can be established, which means 36 axes of servo motors can be controlled simultaneously without connecting to any remote modules.

▶ **Industry-Oriented Controller:** Soft Numeric Control (SNC) and Motion Program Macro (MPM) are provided for users to adjust and modify self-developed motion paths and commands according to changing application requirements.

▶ **Standard Communication Interfaces:** Supports built-in standard Modbus and Modbus TCP gateways to enable data transmission and exchange between machines more conveniently.
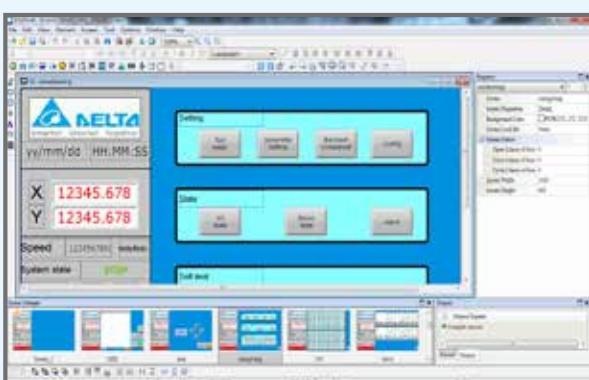
HMI Editor

After installing on a PC, even without C or C++ programming language, the HMI Editor DOPSoft 3.0 provides a simple path and quick downloading of customized user interfaces to Delta's PAC with the IMP for easy programming and system design. For specific industry applications, such as numerical control (NC), the IMP contains numerous example programs to provide a practical aid in real time for machine verification and evaluation.
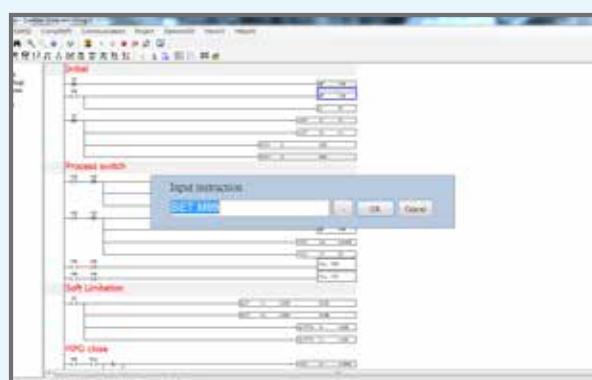
PLC Editor

The IMP integrates Delta's PLC editor WPLSoft that offers users a ladder diagram editing environment to develop PLC programs for secondary development and to customize their applications. The PLC editor also accepts motion control commands and allows users to control servo systems and remote I/O modules to complete single-axis motions, multi-axis linear interpolation, arc interpolation, continuous speed and other motions, fulfilling the needs of users who are familiar with the PLC.

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IMP System Configuration with DMCNET

VGA Display

IMP - Powerful Motion Control Kernel

The IMP is the kernel of the system, like the firmware of a motion controller, which runs on one of the processors of a multi-core PC or PAC with a plug-in motion control card. Without adding extra hardware, users can download HMI screens and PLC programs, edit user-defined graphical interfaces and execute programming logic control to run machine applications via software and VGA display only.

The IMP is a powerful motion control kernel and it simplifies connectivity and delivers more flexible functionality for the entire system. Not only is MODBUS communication equipped as standard, Soft Numeric Control (SNC) and Motion Program Macro (MPM) are also provided for users to change and calibrate motion paths and commands for different application requirements.

IPC Motion Platform

DMCNET
Motion Control Card

Host PAC

Panel PAC

AC Servo Drives
ASDA-A3-F

AC Servo Drives
ASDA-A2-F

AC Servo Drives
ASDA-B3-F

AC Servo Drives
ASDA-B2-F

DMCNET

Max. 36 Axes

Main Station GA +
Extension Module GE

Remote Module
RM

Pulse Output Module
RM-04PI

Max. 36 Stations

AC Servo Drives
ASDA-A3-F

AC Servo Drives
ASDA-A2-F

AC Servo Drives
ASDA-B3-F

AC Servo Drives
ASDA-B2-F

Main Station GA +
Extension Module GE

Remote Module
RM

Pulse Output Module
RM-04PI

IMP System Configuration with EtherCAT

VGA Display

IMP - Powerful Motion Control Kernel

The IMP is the kernel of the system, like the firmware of a motion controller, which runs on one of the processors of a multi-core PC or PAC with a plug-in motion control card. Without adding extra hardware, users can download HMI screens and PLC programs, edit user-defined graphical interfaces and execute programming logic control to run machine applications via software and VGA display only.

The IMP is a powerful motion control kernel and it simplifies connectivity and delivers more flexible functionality for the entire system. Not only is MODBUS communication equipped as standard, Soft Numeric Control (SNC) and Motion Program Macro (MPM) are also provided for users to change and calibrate motion paths and commands for different application requirements.

IPC Motion Platform

EtherCAT Card

EtherCAT

AC Servo Drives
ASDA-A3-E

AC Servo Drives
ASDA-A2-E

AC Servo Drives
ASDA-B3-E

Max. 36 Axes

Remote Module
R1-EC

Remote Module
R2-EC

Max. 100 Stations

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Fieldbus Verification and Validation - EzDMC Software

EzDMC Software provides simple editing functions for all the relevant parameters of the fieldbus communication and facilitates program development and the hardware system to be easily configurable, even first time users of Delta's DMCNET motion control cards can utilize the motion control card functions.
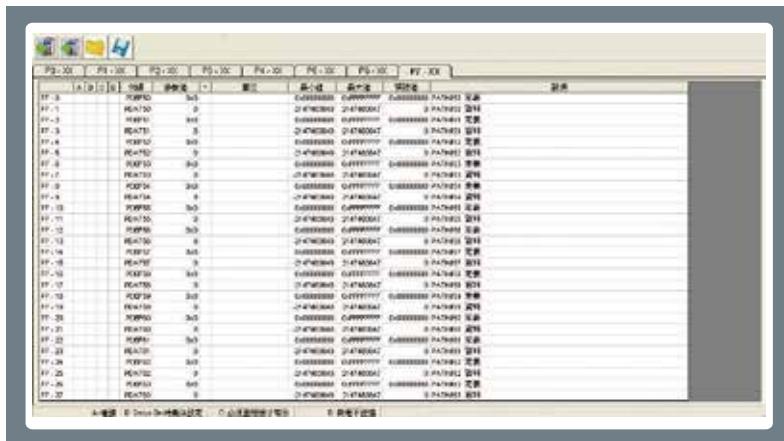
► User-Friendly Operation Interface

Helps users create and edit programs with clear images, easy-to-use parameter settings, and instruction disk for programming samples and function keys explanation
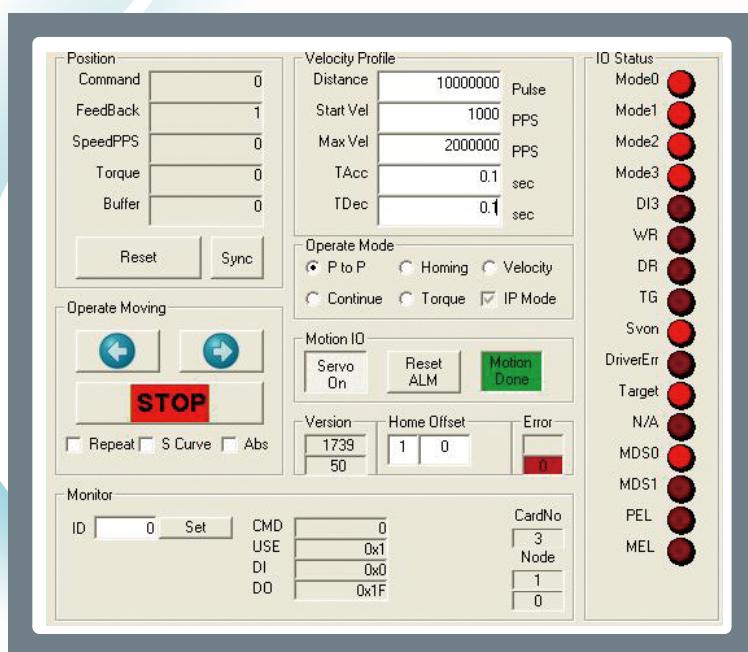
► Independent Control Unit

With the independent control unit, users can set up simple motions of the servo drives for flexible operation and management

Operate Mode
- ○ Linear2 ○ Circle ○ Circle2
- ● Linear3 ○ Heli   ○ Circle3
- ○ Spiral   ○ Spiral2 ○ Sphere
- ○ Multi Axis
- ○ Ellipse
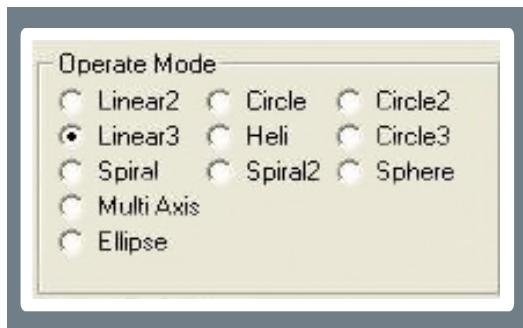
► Multi-Axis Motion Control Modes

Offers a variety of sample programs and control modes (e.g. Linear 2, Linear 3, Heli, Circle, Circle 2 and Circle 3) for linear, arc and helical interpolation to supervise various multi-axis motions and execute programming for multi-axis motion control applications
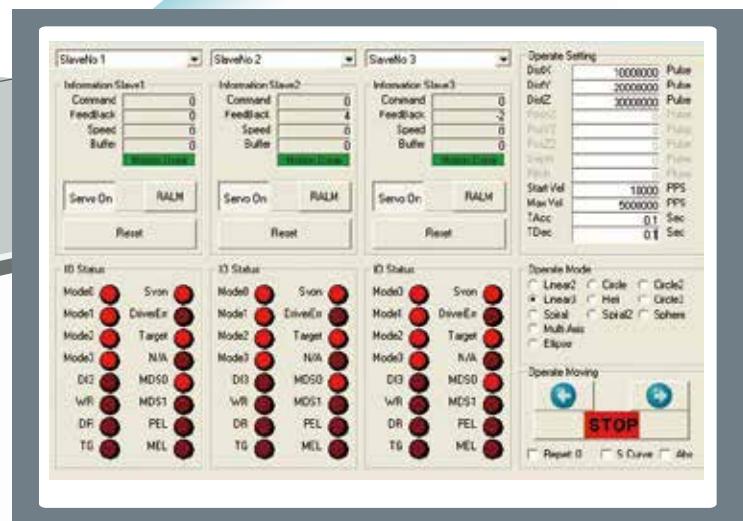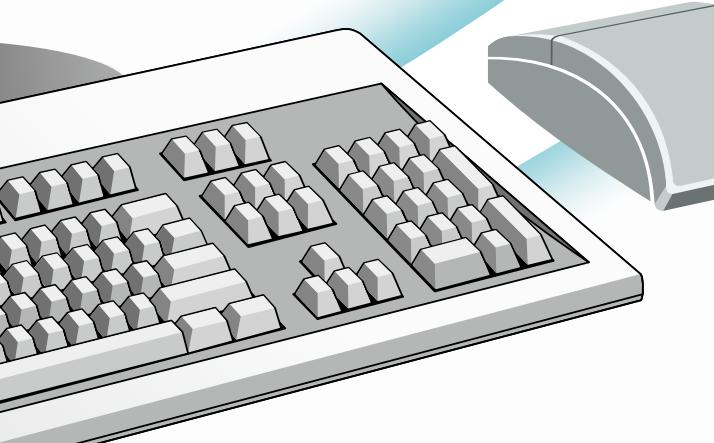
► Real Time Response and Feedback

Monitoring and displaying the status of the connected servo drives is completed in a timely and efficient manner

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Fieldbus Verification and Validation - EcNavi Software

► EtherCAT Automation Software

EcNavi development software is for configuring an EtherCAT network that includes an EtherCAT master controller and slave devices for data communication, functional identification, programming and debugging. For new users of Delta's EtherCAT motion control, the EcNavi helps them become familiar with the configuration of the system and to complete the function verification and validation in real time.
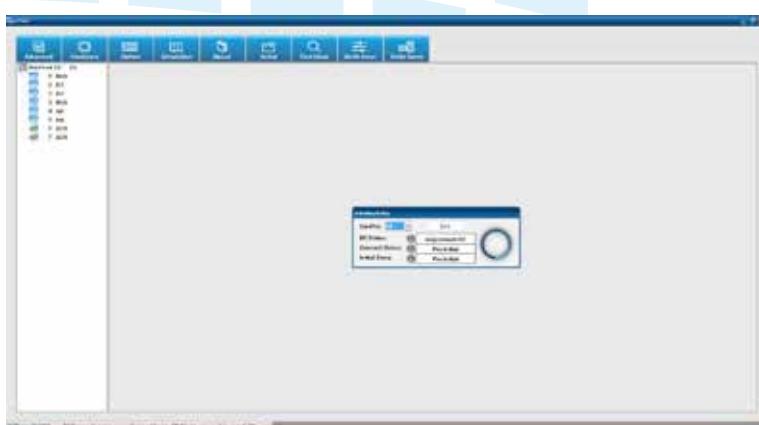
► Hardware Structure Search

Provides search function for all slaves connected by EtherCAT to check hardware configuration and verify whether the network communication is established successfully via software
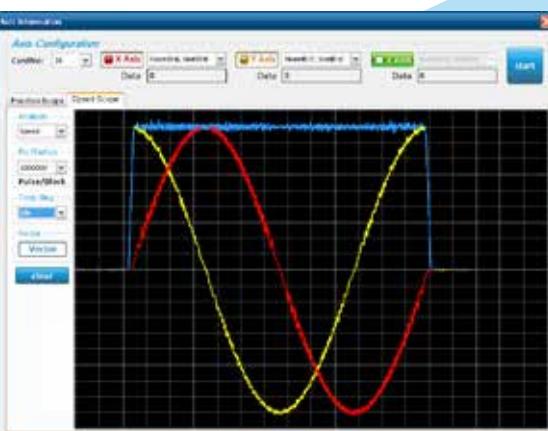
► Speed Curve Tracing

Offers real-time tracing for speed curves of current motion commands to achieve better synchronization effects between multiple axes

► Independent Control Unit

Assists users avoid writing complex programs and immediately verifies all motion commands with the servo drives to meet application requirements

► Multi-Axis Motion Control Mode

Offers a variety of sample programs and control modes for EtherCAT devices (e.g. Linear 2, Linear 3, Heli, Circle, Circle 2 and Circle 3) to help users easily edit and complete development programs for multi-axis motion control applications

DELTA

Dimensions

MH1 Series

Dimensions: 230mm (L) x 127mm (W) x 175mm (H)
Frame Dimensions: 230mm (L) x 127mm (W) x 175mm (H)

Rear View

127 (6.89)

230 (9.06)

Lateral View

175 (6.89)

230 (9.06)

Front View

(H)
175 (6.89)

(W)
127 (4.9)
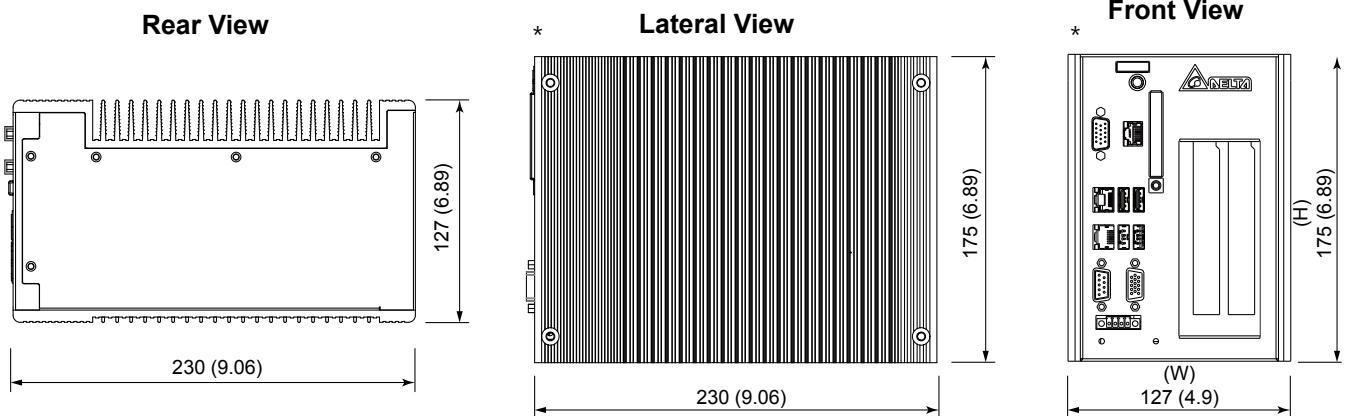
Note: All models of the MH1 Series
have the same dimensions

Exterior Description

MH1-A12/C50/C70 D Series

(1)
(2)
(3)
(4)
(5)
(6)
(7)
(8)
(9)
(10)
(11)
(12)
(13)
(14)
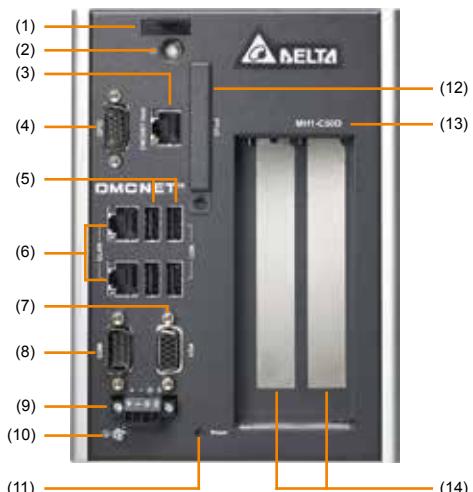
MH1-A12/C50/C70 N Series

(1)
(2)
(5)
(6)
(7)
(8)
(9)
(10)
(11)
(12)
(13)
(14)
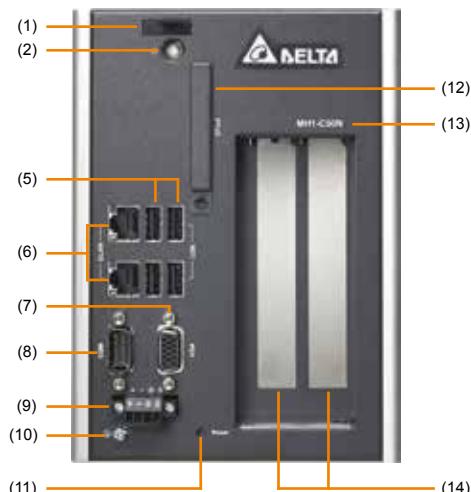
	Interface		
(1)	LED Indicator	**(8)**	RS-232
(2)	Power Switch	**(9)**	Power Supply Port
(3)	DMCNET Communication*	**(10)**	Ground Wire Screw
(4)	IO Connector	**(11)**	Reset Switch
(5)	USB 2.0 Port	**(12)**	CFast Card Slot
(6)	Gigabit LAN Connector	**(13)**	Product Number
(7)	VGA Output Connector	**(14)**	PCI / PCI Extension Slot

Model Explanation

MH1 Series

M H 1 - A 1 2 D - A 0 3 D G

Product Name:
Motion Control Host 1ˢᵗ Generation

CPU Information:
A12 = Intel Atom E3845 Quad Core 1.91 GHz
C50 = Intel Core i5-3610ME Dual Core 2.7 GHz
C70 = Intel Core i7-3612QE Quad Core 2.1 GHz

Communications:
D = DMCNET
N = N/A or EtherCAT

Extension Slot Interface:
A = 2 PCI slots
C = 2 PCIe slots x4 + x1

Product Version:
DG=Windows 7 Embedded(32 bit)
DH=Windows 7 Embedded(64 bit)
DM=Windows 7Embedded(32 bit)
+IMP(IPC Motion Platform)
* Please refer to Ordering Information for actual versions

CFast card and SSD card:

SSD \ CFast	None	16GB	32GB	64GB	128GB
None	0	1	3	A	B
16GB	2	-	-	-	-
32GB	6	-	-	-	-
64GB	4	-	-	-	-
128GB	5	-	-	-	-

DRAM and Micro-SD (eMMC):

SD eMMC \ DRAM	None	2GB	4GB	8GB	4GB+4GB
None	-	1	0	-	3
4GB	-	-	-	-	-
8GB	-	-	-	-	-
4GB+4GB	2	-	-	-	-

Ordering Information

Specifications

Model Name		MH1-A12 D / E / N	MH1-C50 D / E / N	MH1-C70 D / E / N
Processor System	Processor	Intel Atom E3845 Quad Core 1.91 GHz	Intel Core i5-3610ME Dual Core 2.7 GHz	Intel Core i7-3612QE Quad Core 2.1 GHz
	System Chipset	N/A	Intel QM77	
	BIOS	AMI BIOS		
	MRAM	DDR3L-1333 Default 4 GB, Max. 4 GB, ECC supported	DDR3-1600 x2, Default 4 GB / Max. 8 GB ECC supported	
	System Memory	128 KB MRAM	128 KB MRAM	
I/O Interface	CRT	2560x1600 / 60Hz	2048x1536 / 75 Hz	
	Internet	2 x IEEE 802.3/802.3u/802.3ab 1 Gbps		
	Communication	DMCNET ™ (12-Axis) - (A12D / C50D / C70D Series) N/A - (A12N / C50N / C70N Series)		
	USB	4 x USB 2.0		
	Serial Port	1 x RS-232 (Hardware auto flow control)		
	Digital Input	1-CH isolated, Sink type, 24 V_{DC} (5 mA/CH) - (A12D / C50D / C70D Series)		
	Digital Output	1-CH isolated, Sink type, 24 V_{DC} (10 mA/CH) - (A12D / C50D / C70D Series)		
	Encoder Input	2-CH isolated, EA± / EB± - (A12D / C50D / C70D Series)		
	Compare Output	2-CH isolated, CMP± - (A12D/C50D/C70D Series)		
	Expansion[1]	2 x PCI slot or 1 x PCIe x4 slot + 1 x PCIe x1 slot (C50 / C70 Series) 2 x PCI slot or 1 x PCIe x1 slot + 1 x PCIe x1 slot (A12E/N Series) 2 x PCI slot (A12D Series)		
Storage	CFast Card	1 x CFast Card (optional)		
	Solid State Disk[1]	1 x 2.5" SATA SSD (optional)		
Power Requirements	Input Voltage	15 ~ 30 V_{DC}		
	Power Consumption[2]	24V / 1A / 24W	24V / 1.25A / 30W	24V / 1.42A / 34W
Mechanical	Mounting	Desk / Wall-mounting		
	Dimensions (W x H x D)	3.4 kg	3.9 kg	3.9 kg
	Weight	127 x 175 x 250 mm (W x H x D)		
Environment	Operation Temperature	0°C ~ 50°C		
	Storage Temperature	-30° C ~ 85° C		
	Humidity	0% ~ 90% RH (non-condensing)		
	Anti-pollution Degree	Pollution Degree 2		
	Vibration Resistance	2 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis		
	Shock Resistance	75 G, IEC 60068-2-27, half sine, 11 ms duration		
	Safety Certification	CE		
Software Support	Microsoft Windows	Windows 7 Embedded		

Note 1. Max power constraint: PCIe x 4 (25W), PCIe x1 (10W), PCI (10W), SSD (5W), CFast (5W), POE (72W)
Note 2. CPU under full load; external storage (CFast Card / SSD), PCI / PCIe Card or POE excluded

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Dimensions

MH2-P10N

▶ Dimensions: 54.2 mm(W) × 141 mm(H) × 137.5 mm(L)

▶ Dimensions (Accessories included): 54.2 mm(W) × 164 mm(H) × 166.8 mm(L)
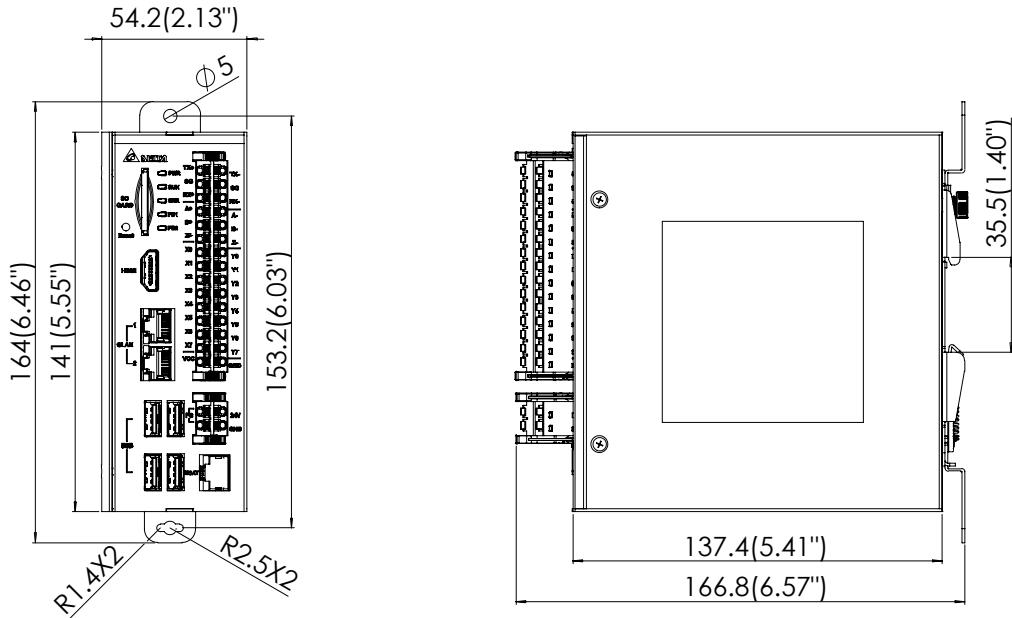
Exterior Description

MH2-P10N
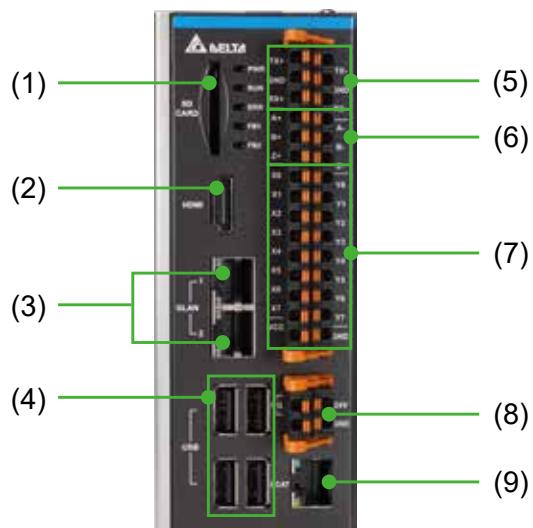
Interface			
(1)	SD Card Slot	**(6)**	Encoder Input Port
(2)	HDMI Output Terminal	**(7)**	IO Connector
(3)	Gigabit LAN Port	**(8)**	Power Connector
(4)	USB 2.0	**(9)**	EtherCAT COM Port
(5)	RS-422/485 Serial COM Port		

Model Name

MH2 Series

<div align="center">

M H 2 - P 1 0 N - N 0 6 D L

</div>

Model Name:
Motion Control Hub 2nd Generation

CPU Information:
P10N = Intel Celeron J1900 4 Quad Core 2.0GHz

Communications:
N = N/A or EtherCAT

Local I/O Outputs:
N = NPN Type
P = PNP Type

DRAM and Micro-SD (eMMC):
RAM 4GB

Product Version:
DL = Windows 10 (64-bit)
* Please refer to Ordering Information for actual versions

CFast Card and SSD Card:

SSD \ CFast	None	16GB	32GB	64GB	128GB
None	0	1	3	A	B
16GB	2	-	-	-	-
32GB	6	-	-	-	-
64GB	4	-	-	-	-
128GB	5	-	-	-	-
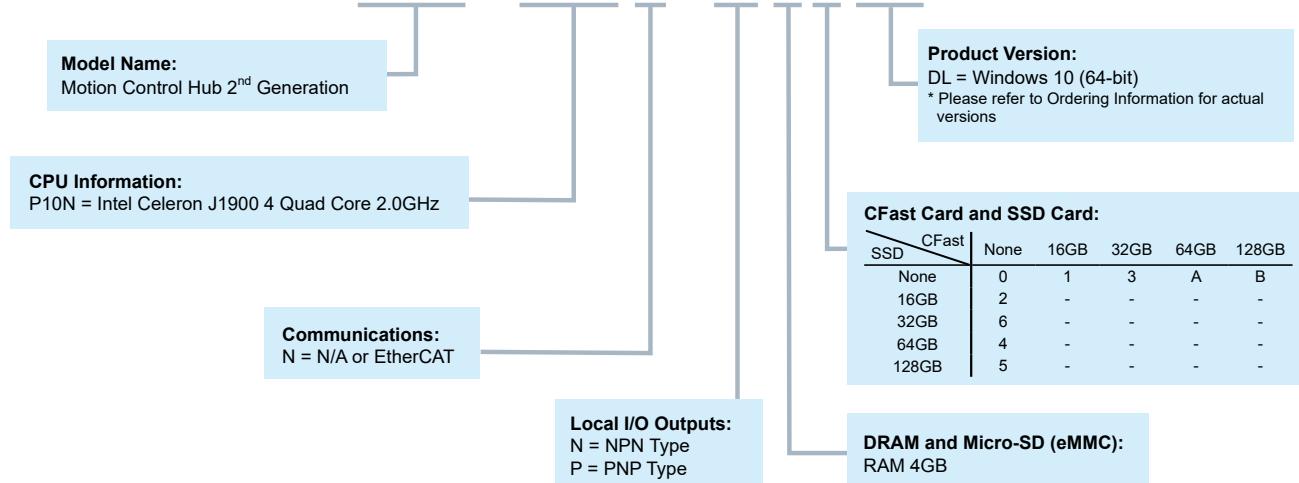
Ordering Information

Specifications

Model Name		MH2-P10N
Processor	CPU	Intel Celeron J1900 Quad Core, 2.0GHz
	BIOS	AMI BIOS
	Memory	Built-in DDR3L-1333 Max. 4GB
	Nonvolatile Memory	128kB MRAM
Display	HDMI	HDMI 1.4a × 1
Input / Output	USB	USB 2.0 × 4
	Ethernet	2 × IEEE 802.3/802.3u/802.3ab 1G bps (Intel I210AT)
	Fieldbus	EtherCAT (Intel I210AT) × 1
	Serial Port	Isolated RS-485 / RS-422 × 1
	Digital Input	8-CH high-speed isolated input, Sink / Source type, 24 VDC (5 mA/CH)
	Digital Output	8-CH high-speed isolated output, Source type, 24 VDC (200 mA/CH)
	Encoder Input	(Incremental) 1-CH isolated, (EA± / EB± / EZ±) × 1 (Absolute) 1-CH isolated (TX± / RX±) (use RS-422 I/F)
Storage	HDD	M.2 module × 1
	SD Card	SD card slot × 1
MISC.	Security IC	Built-in software system protection security IC × 1
	LEDs	LED display (PWR/RUN/ERR/FB1/FB2) × 5
	Watchdog	Supports Watchdog function
Power Supply Requirement	Input Voltage	DC 24V ± 15%
	Power Consumption	24V / 2A / 48W
	Power Loss Detection	Low voltage detection and power loss data saving
Mechanism	Installation	Wall-mounted / Slide
	Dimensions	54.2 × 141 × 137.5 mm (W × H × D)
Ambient Environment	Operating Temperature	0˚C~50˚C
	Storage Temperature	-30˚C~85˚C
	Relative Humidity	0% ~ 90% RH (Non-condensing)
	Vibration Resistance	2 Grms, IEC 60068-2-64, Random continuous shock, 5 ~ 500 Hz, 1 hr/axis
	Shock Resistance	75G IEC 60068-2-27, Half Sinusoid, Continuous for 11ms
	Certification	EN 55022 : 2010 · EN 55024 (EN55011 : 2010)
Software	Microsoft Windows	Windows 10 IoT 64bit
	Real-time OS	N/A

AELTA

Dimensions

MP1-A10D-15 Series

385mm

296mm
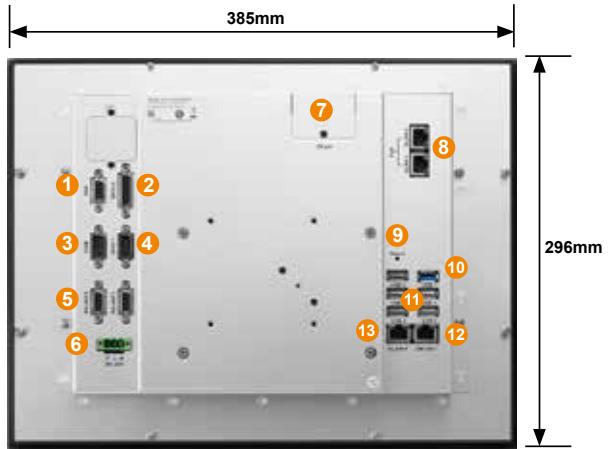
Exterior Description

(1)	VGA Output Connector
(2)	Digital Input/ Output Port (12 inputs / 12 outputs)
(3)	MPG Input
(4)	Digital Input/ Output Port (QEP x 2 / CMP x 2)
(5)	2 x RS-485
(6)	24V Power Input
(7)	CFast Card Slot

(8)	2 x Gigabit LAN Ports
(9)	Reset Switch
(10)	1 X USB 3.0
(11)	5 X USB 2.0
(12)	DMCNET Communication
(13)	1 x Gigabit LAN Port

Model Explanation

MP1Series

M P 1 - P 1 0 D - 1 5 0 A D L

Product Type:
Motion Control Panel 1st Generation

CPU Information:
P10=Intel Celeron J1900 Quad Core 2.0GHz

Communications:
D = DMCNET

Display Size:
15 = 15"

DRAM and Micro-SD (eMMC):
RAM 4GB

CFast Card and SSD Card:

SSD \ CFast	None	16GB	32GB	64GB	128GB
None	0	1	3	A	B
16GB	2	-	-	-	-
32GB	6	-	-	-	-
64GB	4	-	-	-	-
128GB	5	-	-	-	-

Product Version:
DL=Windows 10(64 bit)+IMP(IPC Motion Platform)
* Please refer to Ordering Information for actual versions

Specifications

Model Name		MP1-P10D-15
Processor System	Processor	Intel Celeron J1900 Quad Core 2.0GHz
	MRAM	128KB
	BIOS	128KB
	System Memory	DDR3L-1333 4GB
Display Interface	LCD Panel	15" TFT-LCD (262k / 16.7M color) 1024 x 768 pixels (XGA), LED backlight 304.1 (H) x 228.1 (V) mm
	Touch Panel	4-wire Resistive (Max. 10-bit Resolution)
	LED	POWER / RUN / ERROR
	CRT	2560 x 1600 / 60Hz
I/O Interface	Ethernet	3 x IEEE 802.3 / 802.3u / 802.3ab 1Gbps
	DMCNET	O
	USB	1 x USB 3.0 5 x USB 2.0
	Serial Port	2 x isolated RS-422 / 485
	Digital Input	1-CH isolated, Sink type, $24V_{DC}$ (5mA / CH) 12-CH isolated, Sink / Source type, $24V_{DC}$ (5mA / CH)
	Digital Output	1-CH isolated, Sink type, $24V_{DC}$ (10mA / CH) 12-CH isolated, Sink type, $24V_{DC}$ (200mA / CH)
Storage	CFast Card	1 x CFast Card (optional)
	eMMC	1 x eMMC (optional)
	Solid State Disk	1 x 2.5" SATA SSD (optional)
Power Requirements	Input Voltage	$12{\sim}30V_{DC}$
	Power Consumption[1]	TBD
Mechanical	Mounting	Wall-mounting
	Dimensions (W x H x D)	385 x 296 x 55 mm
	Weight	3.18 kg
Environment	Operating Temperature	0° C ~ 50° C
	Storage Temperature	0° C ~ 50° C
	Humidity	0% to 90% RH (non-condensing)
	Vibration Resistance	2 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr / axis
	Shock Resistance	75 G, IEC 60068-2-27, half sine, 11 ms duration
	Safety Certification	C E
	Windows 10 IoT 64 bit	O

1. Full load power consumption without CFast/SSD or any PCI/PCIe card

DMCNET Remote Modules

Digital Input Remote Modules

- **ASD-DMC-RM32MN (32 Digital Inputs)**
- **ASD-DMC-RM64MN (64 Digital Inputs)**
- **ASD-DMC-RM32PT (16 Digital Inputs / 16 Digital Outputs)**

Electrical Specifications

Model Name	RM32MN / RM64MN / RM32PT
Input Circuit Type	Single common port input
Input Signal Type	SINK / SOURCE
Input Signal Voltage	24 V_{DC} (5mA)
Response Time	0 to 3 ms, adjustable
Action Level (OFF > ON)	> 16.5 V_{DC}
Action Level (ON > OFF)	< 8 V_{DC}
Noise Tolerance Threshold	ESD (IEC 61131-2, IEC 61000-4-2): 8 KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2 KV, Communication I/O: 1 KV RS (IEC 61131-2, IEC 61000-4-3): 80 MHz ~ 1 GHz, 10 V/m
Environment	Operating Temperature: 0 ℃ ~ 50 ℃ Storage Temperature: -20 ℃ ~ 70 ℃

Installation & Wiring

MH1 Series

L:100 mm
W:75 mm
H:43 mm

L:168 mm
W:75 mm
H:43 mm

MP1 Series

NPN Wiring

PNP Wiring

P3L

+V (Brown)
Axls X (Purple)
Axls Y (Gary)
Axls Z (White)
Axls U (Black)
RATE(X1) (Brown & White)
RATE(X10) (Red & White)
RATE(X100) (Light Green)
EN
EGND (Red)

*EN and EGND need to be short-circuited in the MPG mode.

P3H

+V (None)
Phase A (Purple)
Phase B (Gary)
JOG 1+ (None)
JOG 1- (None)
JOG 2+ (None)
JOG 2- (None)
JOG 3+ (None)
JOG 3- (None)
EGND (Black & White)
(Orange & White)

MPG (Manual Pulse Generator)
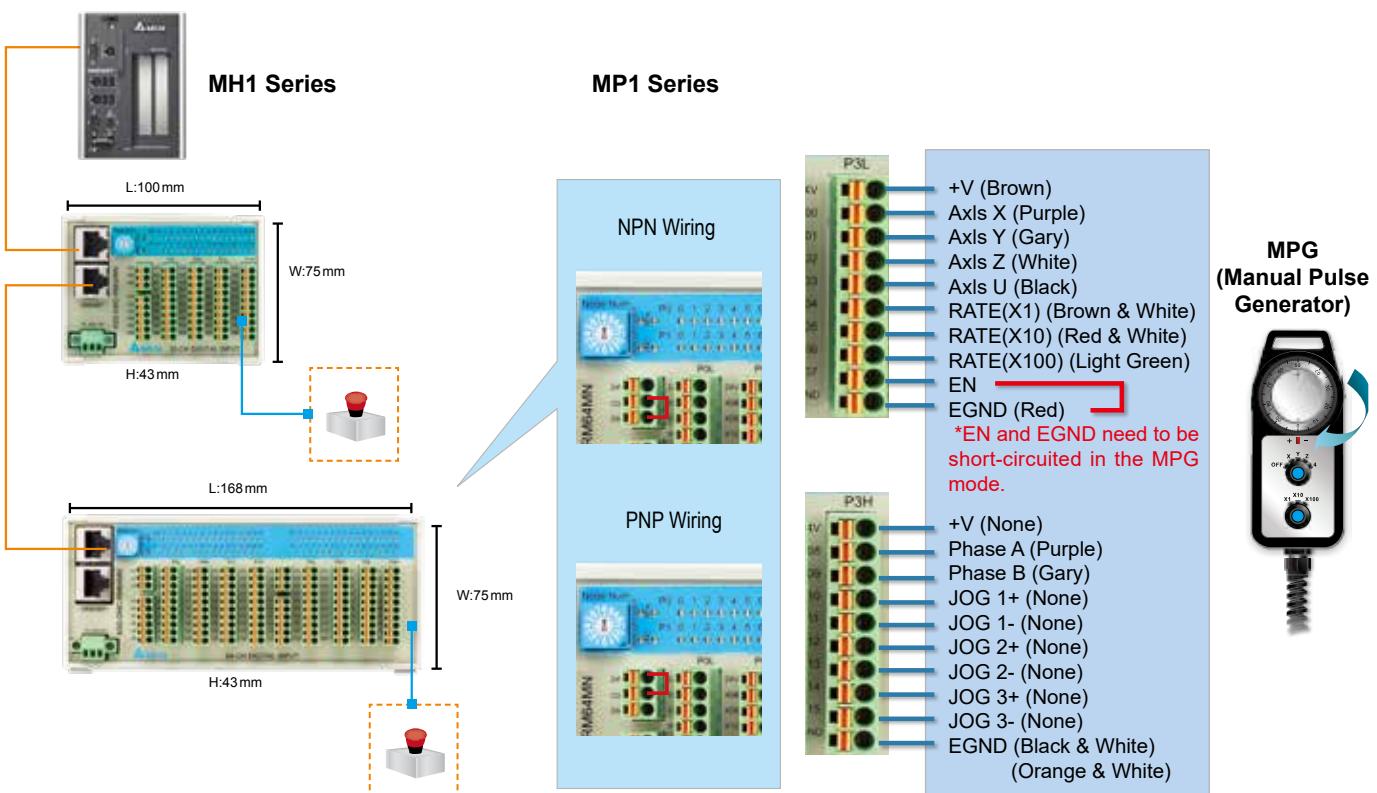
*MPG can only be used for the terminals of P3H and P3L of ASD-DMC-RM64MN.

Digital Output Remote Modules

- **ASD-DMC-RM32NT (32 Digital Outputs)**
- **ASD-DMC-RM64NT (64 Digital Outputs)**
- **ASD-DMC-RM32PT (16 Digital Inputs / 16 Digital Outputs)**

  ▪ Non-volatile memories can be managed through a software API
  ▪ Load Output: 0.1A / 1 Point

Electrical Specifications

Model Name	RM32NT / RM64NT
Output Circuit Type	Transistor
Output Signal Type	SINK
Current Specifications	0.1A / 1 point
Voltage Specifications	24 V_{DC}
Maximum Switching (Operating) Frequency	1 KHz
Action Level (OFF > ON)	20 us
Action Level (ON > OFF)	30 us
Noise Tolerance Threshold	ESD (IEC 61131-2, IEC 61000-4-2): 8 KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2 KV, Communication I/O: 1 KV RS (IEC 61131-2, IEC 61000-4-3): 80 MHz ~ 1 GHz, 10 V/m
Environment	Operating Temperature: 0 ℃ ~ 50 ℃ Storage Temperature: -20 ℃ ~ 70 ℃

Installation & Wiring

MH1 Series

MP1 Series

L:100 mm

W:75 mm

H:43 mm

L:168 mm

W:75 mm

H:43 mm

ΔELTA

DMCNET Remote Modules

● HMC-RIO3232RT5 (Digital I/O Remote Module)

- 16 points relay type output unit, Max. loading: 2A / 1 Point with non-volatile memory function
- 16 points transistor type output unit, Max. loading: 0.1A / 1 Point
- 32 points digital input unit – supports SINK and SOURCE modes

Electrical Specifications

Item	HMC-RIO3232RT5
Supply Voltage	24V$_{DC}$ (15% ~ 20%)
Power Consumption	1.2W
Noise Immunity	RS: Frequency: 80MHz ~ 1GHz, 1.4GHz ~ 2.0GHz, Test level 10V/m ESD: Contact discharge ±8KV Air discharge ±8KV EFT: ±2KV(Power port), ±2KV (I/O line), Surge: ±2KV (RIO power port)
Temperature	Operating: 0ºC ~ 55ºC (Temperature), 10 ~ 90% (Humidity); Storage: -20ºC ~ 60ºC (Temperature), 10 ~ 90% (Humidity)
Vibration	IEC 61131-2 compliant 5Hz ~ 8.3Hz = Continuous: 3.5mm, 8.3Hz ~ 150Hz = Continuous: 1.0g
Shock	IEC 60068-2-27 compliant 15g peak for 11 ms duration X, Y, Z directions for 6 times
Weight	Approx. 460g

Item	Input Port
Input Signal Type	SINK / SOURCE
Input Signal Voltage	24 V$_{DC}$ (5 mA)
Input Impedance	4.7K ohm
Action Level	(OFF → ON) > 16.5 V$_{DC}$ (ON → OFF) < 5 V$_{DC}$

Item	Output Port
Output Circuit Type	Transistor / Relay
Voltage Specifications	24 V$_{DC}$ (-10% ~ +15%) / < 250 V$_{AC}$ (Relay Only)
Current Specifications	100 mA / 1 Point (Transistor), 2A / 1 Point (Relay), Resistive Load
Max. Switching (Operating) Frequency	8 kHZ (TR) / 1 Hz (RELAY)
Response Time	TR: (ON → OFF) :115 µs, (OFF → ON) : 12 µs RELAY: (ON → OFF) :10 ms, (OFF → ON) : 10 ms

Installation & Wiring
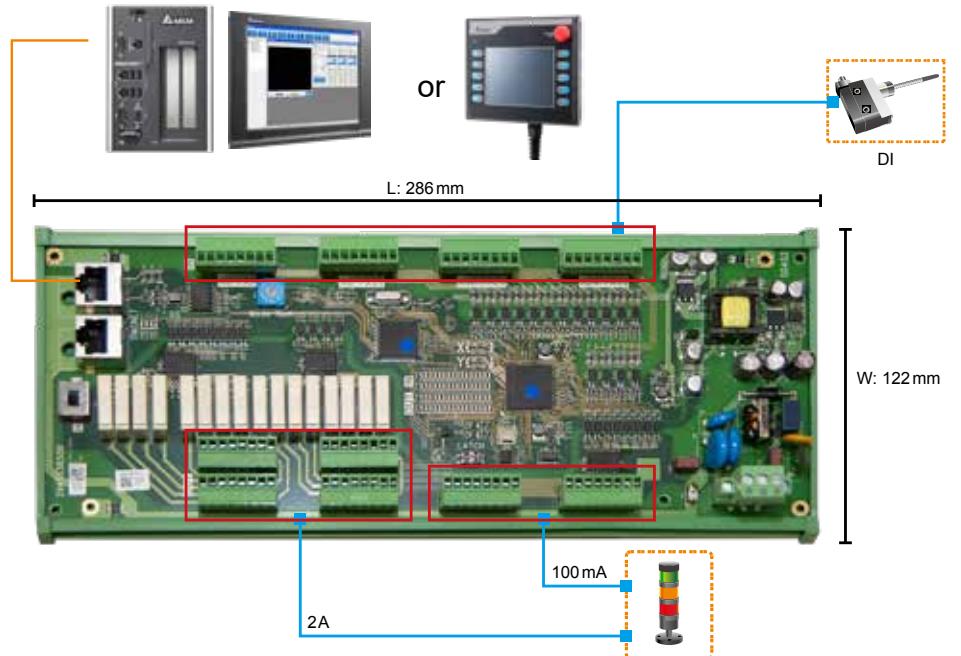
DMCNET Remote Modules

● ASD-DMC-RM04PI (4-Channel Pulse)

- 4 channels of 200 kHz pulse outputs (Pulse +Direction, CCW pulse +CW pulse, A phase + B phase)
- 4 channels of 200 kHz pulse inputs (CCW pulse +CW pulse, A phase + B phase)
- Digital Inputs x8 / Digital Outputs x8
- Built-in Positive / Negative Limit and Home for each channel
- In Mode 1, each RM04PI module occupies one node number only, and interpolation motion is carried out within one module.
    - 4 channels occupy 1 node number only
    - 4 channels occupy one PDO and SDO
    - Performs interpolation motion of 4 channels within one RM04PI module only
    - Transfers data in cyclical patterns
    - Motion commands set by parameters
    - Point-to-Point motion mode, motion position calculation is performed within one RM04PI module
- In Mode 2, each RM04PI module occupies node numbers 1~4, which correspond to 4 channels. The interpolation motion can be carried out among different modules.

Electrical Specifications

ASD-DMC-RM04PI	
Item	**Input (QA, QB, QZ, DI1, DI2)**
Circuit Type	Single
Signal Type	SINK
Power Supply Voltage	5 V_{DC}
Work Frequency	QA, QB, QZ: 200 kHz (5 mA / 1 point) DI1, DI2: 1 kHz (5 mA / 1 point)
Noise Immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8 KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2 KV Communication I/O: 1 KV RS (IEC 61131-2, IEC 61000-4-3): 80 MHz ~ 1 GHz, 10 V/m
Operating/ Storage Environment	Operating: 0 ºC ~ 50 ºC (32 ºF ~ 122 ºF) Storage: -20 ºC ~ 70 ºC (-4 ºF ~ 158 ºF)

ASD-DMC-RM04PI		
Item	**Input (MEL, PEL, ORG, SLD)**	**Output (CW, CCW, DO1, DO2)**
Circuit Type	Single	Transistor
Signal Type	SINK / SOURCE	SINK
Power Supply Voltage	24 V_{DC} (5 mA)	5~24 V_{DC} (30 mA / 1 point)
Response Time/ Work Frequency	1 ms	CW, CCW: 200 kHz DO1, DO2: 1 kHz
Active Level (OFF > ON)	> 16.5 V_{DC}	-
Active Level (ON > OFF)	< 8 V_{DC}	-
Noise Immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8 KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2 KV Communication I/O: 1 KV RS (IEC 61131-2, IEC 61000-4-3): 80 MHz ~ 1 GHz, 10 V/m	
Operating/Storage Environment	Operating: 0 ºC ~ 50 ºC (32 ºF ~ 122 ºF) Storage: -20 ºC ~ 70 ºC (-4 ºF ~ 158 ºF)	

Installation & Wiring

MH1 Series

MP1 Series

Stepping Motors

L: 168 mm

H: 40mm

W: 75 mm

NELTA

ASD-DMC-RM04AD (4-Channel Analog Input)

Electrical Specifications

ASD-DMC-RM04AD	
Channel	4 Channels / module
Voltage Analog Input Range	-10 ~ 10 V / -5 ~ 5 V / 0 ~ 10 V / 0 ~ 5 V
Current Analog Input Range	0 ~ 24 mA
Digital Conversion Range	0 ~ 65535
Resolution	16 bits
Voltage Input Resistance	140 kΩ
Current Input Resistance	249 Ω
General Precision	Within ±0.5% (25ºC, 77 ºF) at full scale Within ±1% (0 ~ 55ºC, 32 ~ 131 ºF) at full scale
Response Time	Min. 1 ms / Max. 3 ms × the number of channels.
Isolation	Internal circuit and analog output terminals are isolated with an optical coupler
Voltage Absolute Input Range	-15 ~ 15
Current Absolute Input Range	32 mA
Digital Data Format	16 significant bits
Sampling Mode	Five modes which the average number is two (2), four (4), eight (8), sixteen (16) and thirty-two (32) are available for selection.

Installation & Wiring

MH1 Series   MP1 Series

L: 100 mm

W: 75 mm

H: 43 mm
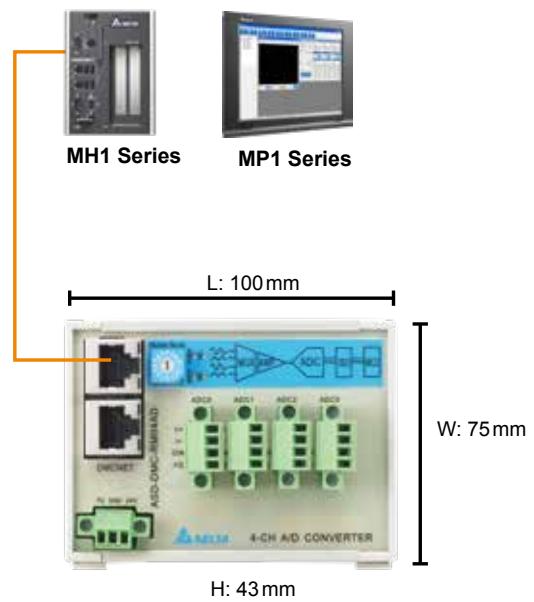
ASD-DMC-RM04DA (4-Channel Analog Output)

Electrical Specifications

ASD-DMC-RM04DA	
Channel	4 Channels / module
Voltage Output Range	-10 ~ 10 V / -5 ~ 5 V / 0 ~ 10 V / 0 ~ 5 V
Current Output Range	0 ~ 24 mA / 0 ~ 20 mA / 4 ~ 20 mA
Excess Limit (Voltage)	10 %
Maximum Output Current (Voltage)	20 mA
Allowable Load Resistance (Current)	0 ~ 500 Ω
Digital Data Range	0 ~ 4096
Resolution	16 bits
DC Output Resistance	0.3 Ω
Response Time	1 ms
Digital Data Format	16 bits
Isolation	Internal circuit and analog output terminals are isolated with an optical coupler
Protection	Voltage output is protected by short circuit, but must be aware of long-lasting short circuit damaging the internal circuits

Installation & Wiring

MH1 Series   MP1 Series

L: 100 mm

W: 75 mm

H: 43 mm
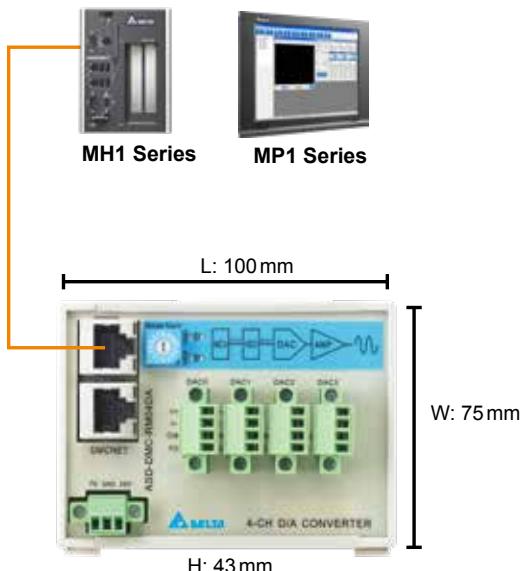
Gateway Type Remote Power Coupler

Master Module - GA Series

Front View
W: 37 mm

L: 90 mm

ASD-DMC-GA01

H: 63 mm

- One GA01 can connect up to a maximum of 4 GE remote modules, of which there may be a maximum of four GE01PH modules.
- One GE01PH module occupies one node number.
- The EzDMC provides a software auto calculation function for calculating the numbers of start and end stations of the ASD-DMC-GA01.

ASD-DMC-GA01 Switching Settings

ADDR1 & ADDR2

ADDR1		
PIN	**Function**	**Explanation**
1 ~ 12	Start Node Address	Start Station
ADDR1		
PIN	**Function**	**Explanation**
1 ~ 12	End Node Address	End Station

There is no communication when the value is set to 0 and 13 ~ 15.
When ADDR1 is set to 1 and ADDR2 is set to 2, it indicates that the remote modules have occupied two stations.

Gateway Type Digital I/O Remote Module

Slave Module - GE Series
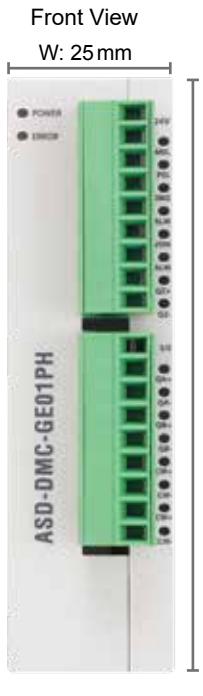
Front View
W: 25 mm

L: 90 mm

ASD-DMC-GE01PH

H: 63 mm

- **Gateway Type 1-Channel Pulse Remote Module ASD-DMC-GE01PH**

Electrical Specifications

ASD-DMC-GE01PH		
Item	**Input**	**Output**
Circuit Type	Single common port input	Transistor
Signal Type	SINK / SOURCE	SINK
Signal Voltage	$24\,V_{DC}$ (5 mA)	$5 \sim 24\,V_{DC}$ (30 mA/1 point)
Response Time	1 ms	
Maximum Input Pulse Frequency	QA+, QB+, QZ+, QA-, QB-, QZ-: 4 MHz (5 mA / 1 point)	CW, CCW: 4 MHz (30 mA / 1 point) SVON, RALM: 1 kHz (30 mA / 1 point)
Action Level (OFF → ON)	$> 16.5\,V_{DC}$	-
Trigger Level (ON → OFF)	$< 8\,V_{DC}$	-
Output Circuit Type	-	RS-422
Output Signal Type	-	Differential

ADELTA

EtherCAT Remote Modules

Gateway Type E-bus Remote Power Coupler

R1-EC5500D0

W: 25mm

E
D

L: 100mm

C

B

A

H: 74mm
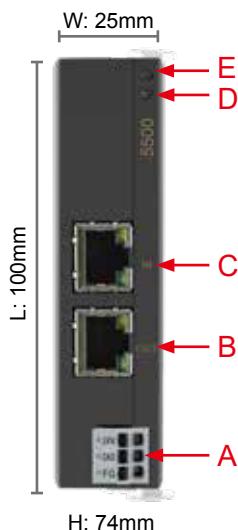
NO.	Description
A.	DC Power Input
B.	EtherCAT Output
C.	EtherCAT Input
D.	Status Indicator
E.	Power Indicator

Technical Data	R1-EC5500D0
Task Within EtherCAT System	Connect EtherCAT Slave module with 100 baseTX EtherCAT
Data Transfer Medium	Ethernet/EtherCAT cable (min. CAT 5), shielded
Distance Between Stations	100 M (100BASE-TX) between two slaves
Protocol	EtherCAT
Data Transfer Rates	100 Mbaud
Bus Interface	RJ 45 x 2
Input Voltage	$24\,V_{DC}$
Input Current	50 mA + (E-bus total E-bus current)/4
Current Supply E-Bus	2A
Electrical Isolation	500 Vrms (Power contact / Supply voltage / Ethernet)
Vibration / Shock Resistance	EN 60068-2-6 / EN 60068-2-27 / 29
EMC Immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2KV Communication I/O: 1KV RS (IEC 61131-2, IEC 61000-4-3): 80MHz ~ 1GHz, 10V/m
Operating Environment	Operating temperature: 0 ºC ~ 50 ºC Storage temperature: -20 ºC ~ 70 ºC
Weight	55 g
Protection Class	IP20
Mounting Type	DIN-rail

1-Channel Pulse Output Remote Module
R1-EC5621D0

W: 17.5 mm

L: 100 mm

H: 74 mm

F
E
D
C
B
A
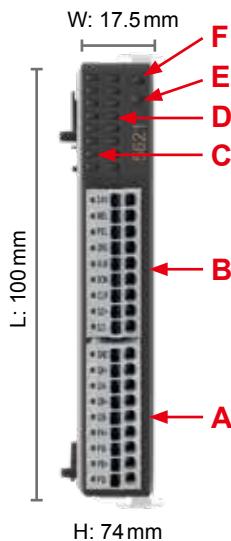
NO.	Description	No.	Description
A.	IO Signal Port	D.	IO Signal Indicator
B.	IO Signal Port	E.	Status Indicator
C.	IO Signal Indicator	F.	Power Indicator

Input	Description	Input	Description
24V	24V Power	GND	External Ground
MEL	End Limit (-)	QA+	Encoder A Phase (+)
PEL	End Limit (+)	QA-	Encoder A Phase (-)
ORG	Home Signal	QB+	Encoder B Phase (+)
ALM	Servo Alarm	QB-	Encoder B Phase (-)
SON	Servo On	PA+	Pulse Signal (+)
CLR	Reset Servo Alarm	PA-	Pulse Signal (-)
QZ+	Encoder Z Phase (+)	PB+	Dir. Signal (+)
QZ-	Encoder Z Phase (-)	PB-	Dir. Signal (-)

Technical Data	R1-EC5621D0
Number of Outputs	1 channel (PA+, PA-, PB+, PB-)
Number of Inputs	1 channel (QA+, QA-, QB+, QB-. QZ+, QZ-)
Power Supply	Supplied by E-bus
Signal Voltage	RS422 standards
Max. Output Current	RS422 standards
Base Frequency	1Hz ~ 4MHz
Numbers of 24 V Input	4 (MEL, PEL, ORG, ALM)
Numbers of 24 V Output	2 (CLR, SON)
Trigger Voltage (On > Off)	$< 8\,V_{DC}$
Trigger Voltage (Off > On)	$> 16.5\,V_{DC}$
Maximum Current of Each Output Port	30 mA
Current Consumption E-Bus	150 mA
Electrical Isolation	500 Vrms (E-bus / field potential)
Bit Width in the Process Image	32 byte in/out (1 x 16 byte data, 1 x 16 byte control/status)
Vibration / Shock Resistance	EN 60068-2-6 / EN 60068-2-27 / 29
EMC Immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8 KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2 KV Communication I/O: 1 KV RS (IEC 61131-2, IEC 61000-4-3: 8 MHz ~ 1 GHz, 10 V/m
Operating Environment	Operating temperature: 0 ºC ~ 50 ºC Storage temperature: -20 ºC ~ 70 ºC
Weight	Approx. 60 g
Protection Class	IP20
Mounting Type	DIN-rail

ADELTA

EtherCAT Remote Modules

16-Channel Input Remote Module

R1-EC6002D0 / R1-EC6022D0

W: 17.5 mm

L: 100 mm

H: 74 mm
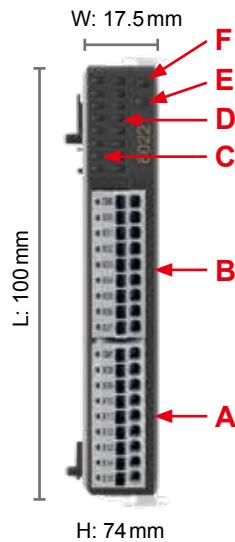
NO	Description	NO.	Description
A.	Port 1 Terminals	D.	Port 1 IO Signal X08～X15 (From the top)
B.	Port 0 Terminals	E.	Status Indicator
C.	Port 0 IO Signal X00～X07 (From the top)	F.	Power Indicator

Input	Description	Input	Description
CM0	Port 0 COM	CM1	Port1 COM
X00	Input 0	X08	Input 8
X01	Input 1	X09	Input 9
X02	Input 2	X10	Input 10
X03	Input 3	X11	Input 11
X04	Input 4	X12	Input 12
X05	Input 5	X13	Input 13
X06	Input 6	X14	Input 14
X07	Input 7	X15	Input 15

Technical Data	R1-EC6002D0	R1-EC6022D0
Connection Technology	single-ended	
Number of Inputs	16	
Nominal Voltage	$24\,V_{DC} \pm 10\%$	
Signal Type	SINK / SOURCE	
Trigger Voltage (On > Off)	$< 8\,V_{DC}$	
Trigger Voltage (Off > On)	$> 16.5\,V_{DC}$	
Input Filter	100μs	2ms
Input Current	3 mA at each port	
Current Consumption E-Bus	110 mA	
Electrical Isolation	500 Vrms (E-bus/field potential)	
Bit Width in the Process Image	16 inputs	
Vibration / Shock Resistance	EN 60068-2-6 / EN 60068-2-27 / 29	
EMC Immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8 KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2 KV Communication I/O: 1 KV RS (IEC 61131-2, IEC 61000-4-3): 80 MHz ~ 1 GHz, 10 V/m	
Operating Environment	Operating temperature: 0 ℃ ~ 50 ℃ Storage temperature: -20 ℃ ~ 70 ℃	
Weight	55 g	
Protection Rating	IP20	
Mounting Type	DIN-rail	

16-Channel Output Remote Module
R1-EC7062D0 / R1-EC70E2D0 / R1-EC70A2D0 / R1-EC70F2D0

W: 17.5mm

L: 100mm

H: 74mm
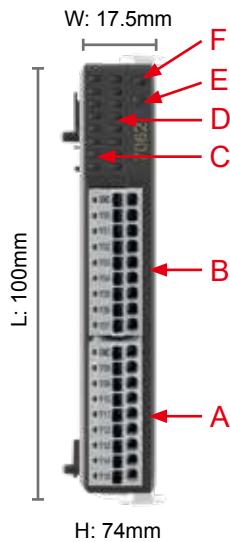
NO.	Description	NO.	Description
A.	Port 1 Terminals	D.	Port 1 IO Signal Y08～Y15 (From the top)
B.	Port 0 Terminals	E.	Status Indicator
C.	Port 0 IO Signal Y00～Y07 (From the top)	F.	Power Indicator

Output	Description	Output	Description
GND*	Port 0 GND	GND	Port 1 GND
24V**	Port 0 24V Input		
Y00	Input 0	Y08	Input 8
Y01	Input 1	Y09	Input 9
Y02	Input 2	Y10	Input 10
Y03	Input 3	Y11	Input 11
Y04	Input 4	Y12	Input 12
Y05	Input 5	Y13	Input 13
Y06	Input 6	Y14	Input 14
Y07	Input 7	Y15	Input 15

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

Technical Data	R1-EC7062D0	R1-EC70E2D0	R1-EC70A2D0	R1-EC70F2D0
Connection Technology	MOSFET			
Signal Type	SINK		SOURCE	
Nominal Voltage	24 V_{DC}			
User-defined Output Disconnection	X	✓	X	✓
Input Current	0.5A (Max.)	0.25A (Max.)		
Current Consumption E-Bus	120mA	200mA		
Response Time / Frequency	1 kHz			
Trigger Time (OFF > ON)	140us		160us	
Trigger Time (ON > OFF)	150us		110us	
EMC Immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8 KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2 KV Communication I/O: 1 KV RS (IEC 61131-2, IEC 61000-4-3): 80 MHz ~ 1 GHz, 10 V/m			
Operating Environment	Operating temperature: 0℃ ~ 50℃ Storage temperature : -20℃ ~ 70℃			
Weight	Approx. 60 g			
Protection Rating	IP20			
Mounting Type	DIN-rail			

EtherCAT Remote Modules

Digital Input / Output Module

R2-EC0902D0

W: 120mm

L: 230mm

H: 41.5mm
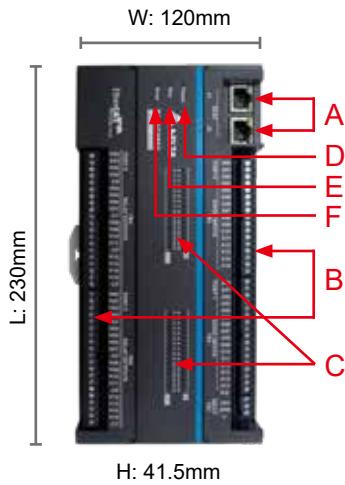
NO.	Description	NO.	Description
A.	EtherCAT DI/DO Terminals	D.	Power Indicator
B.	GPIO DI/DO Terminals	E.	Communication Indicator
C.	GPIO Status Indicator	F.	Alarm Indicator

DI/DO	Description	DI/DO	Description
X00 ⋮ X15	Port 0 Input 1 ⋮ Port 0 Input 16	24V	External Power Supply Input
N.C	Reserved	GND	External Power Ground
X00 ⋮ X15	Port 1 Input 1 ⋮ Port 1 Input 16	FG	Ground
S/S*	NPN / PNP Setting		
Y00 ⋮ Y15	Port 2 Input 1 ⋮ Port 2 Input 16		
Y00 ⋮ Y15	Port 3 Input 1 ⋮ Port 3 Input 16		

*1: S/S: NPN / PNP Setting, NPN = Vcc, PNP = GND

Technical Data	R2-EC0902D0	
Nominal Voltage	24 VDC -15% ~+20%	
Input Current	<1A	
Digital I/O	Digital Input	Digital Output
Insolation	Optical Coupler	Relay
Signal Type	Sink / Source	A (N.O) Dry Contact
I/O Terminals	32-CH	32-CH
Max. Operating Voltage / Current	$30V_{DC}$@8mA / Per CH	$30V_{DC}$ @ 2A / Per CH $250V_{AC}$ @ 2A / Per CH
Rated Input Voltage / Current	$24V_{DC}$ @ 5mA	-
Frequency	1 kHz	1 Hz
Response Time (Operation) (OFF > ON)	300us	10 ms
Response Time (Release) (ON > OFF)	300us	5 ms
Relay ON/OFF Times	-	Inductive : 20000 Times @$30V_{DC}$ 2A Resistive : 100000 Times @ $30V_{DC}$、$250V_{AC}$ 2A
Dimensions	230 x 120 x 41.5mm (W x H x D)	
Operating Environment	Operating Temperature : 0° C ~ 50° C (32° F ~ 122° F) ; Storage Temperature : -20° C ~ 70° C (-4° F ~ 158° F)	
Mounting Type	DIN-rail	
Vibration / Shock Resistance	Compliant with EN 60068-2-6 / EN 60068-2-27/29	
EMC Immunity	ESD (IEC 61131-2, IEC 61000-4-2) EFT (IEC 61131-2, IEC 61000-4-4) RS (IEC 61131-2, IEC 61000-4-3)	
Protection Rating	IP20	
Safety Certification	CE	

EtherCAT Remote Modules

4-Channel Analog Input Remote Module
R1-EC8124D0
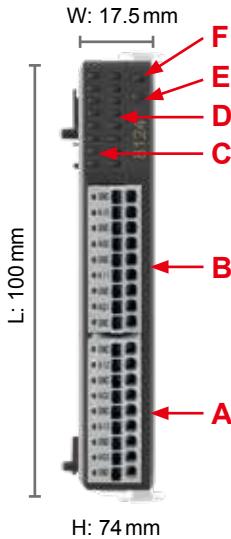
W: 17.5 mm

L: 100 mm

H: 74 mm

NO.	Description	NO.	Description
A.	CH3/CH4 Signal Port	D.	CH3/CH4 Signal Indicator
B.	CH1/CH2 Signal Port	E.	Status Indicator
C.	CH1/CH2 Signal Indicator	F.	Power Indicator

Input	Description	Input	Description
GND	Analog Ground	GND	Analog Ground
AI0	CH1 Voltage /Current Input	AI2	CH3 Voltage / Current Input
GND	Analog Ground	GND	Analog Ground
AG0	CH1 Current COM*	AG2	CH3 Current COM*
GND	Analog Ground	GND	Analog Ground
AI1	CH2 Voltage / Current Input	AI3	CH4 Voltage / Current Input
GND	Analog Ground	GND	Analog Ground
AG1	CH2 Current COM*	AG3	CH4 Current COM*
GND	Analog Ground	GND	Analog Ground

* In current mode: please connect current COM to GND ; In voltage mode: please disconnect this COM

Technical data	R1-EC8124D0
Number of Inputs	4 (single-ended)
Power Supply	Supplied by E-bus
Signal Voltage	±10 V / ±5 V
Internal Resistance	> 1 MΩ
Input Filter Limit Frequency	1 kHz ~ 10 kHz
Resolution	16 bit
Over Sampling Rate	0 ~ 64
Conversion Time	2 us ~ 191 us (depends on Over Sampling Rate)
Measuring Error	< ±0.2 % (relative to full scale value)
Electrical Isolation	500 Vrms (E-bus / signal voltage)
Current Consumption E-Bus	300 mA
Bit Width in the Process Image	Input : 4 x 16 byte data, 4 x 16 byte control/status
Vibration / Shock Resistance	60068-2-6 / EN 60068-2-27 / 29
EMC Immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8 KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2 KV Communication I/O: 1 KV RS (IEC 61131-2, IEC 61000-4-3): 8 MHz ~ 1 GHz, 10 V/m
Operating Environment	Operating temperature: 0 ℃ ~ 50 ℃ Storage temperature: -20 ℃ ~ 70 ℃
Weight	Approx. 60 g
Protection Rating	IP20
Mounting Type	DIN-rail

4-Channel Analog Output Remote Module
R1-EC9144D0
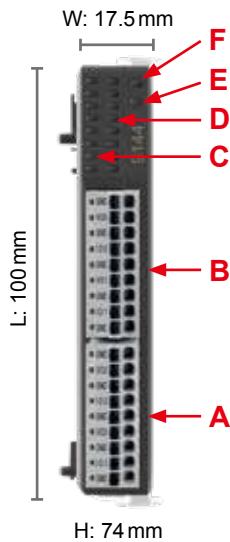
W: 17.5 mm

L: 100 mm

H: 74 mm

F
E
D
C
B
A

NO.	Description	NO.	Description
A.	CH3/CH4 Signal Port	D.	CH3/CH4Signal Indicator
B.	CH1/CH2 Signal Port	E.	Status Indicator
C.	CH1/CH2 Signal Indicator	F.	Power Indicator

Output	Description	Output	Description
GND	Analog Ground	GND	Analog Ground
VO0	CH1 Voltage Output	VO2	CH3 Voltage Output
GND	Analog Ground	GND	Analog Ground
IO0	CH1 Current Output	IO2	CH3 Current Output
GND	Analog Ground	GND	Analog Ground
VO1	CH2 Voltage Output	VO3	CH4 Voltage Output
GND	Analog Ground	GND	Analog Ground
IO1	CH2 Current Output	IO3	CH4 Current Output
GND	Analog Ground	GND	Analog Ground

Technical Data	R1-EC9144D0
Number of Inputs	4 (single-ended)
Power Supply	Supplied by E-bus
Signal Voltage Output	±10 V / ±5 V / 0 ~ 5 V / 0 ~ 10 V
Current Output	0 ~ 20 mA / 4 ~ 24 mA / 0 ~ 24 mA
Load	> 1 KΩ (short-circuit-proof)
Resolution	16 bit
Conversion Time	80 us
Measuring Error	< ±0.2 % (relative to full scale value) voltage output < ±0.3 % (relative to full scale value) current output
Electrical Isolation	1000 Vrms (E-bus/signal voltage)
Current Consumption E-Bus	550 mA
Bit Width in the Process Image	Output: 4 x 16 byte, (4 x16-bit analog output)
Vibration / Shock Resistance	EN 60068-2-6 / EN 60068-2-27 / 29
EMC Immunity	ESD (IEC 61131-2, IEC 61000-4-2): 8 KV Air Discharge EFT (IEC 61131-2, IEC 61000-4-4): Power Line: 2 KV Communication I/O: 1 KV RS (IEC 61131-2, EC 61000-4-3): 8 MHz ~ 1 GHz, 10 V/m
Operating Environment	Operating temperature: 0 ℃ ~ 50 ℃ Storage temperature: -20 ℃ ~ 70 ℃
Weight	Approx. 60 g
Protection Rating	IP20
Mounting Type	DIN-rail

EtherCAT Remote Modules

Manual Pulse Generator (MPG) Module

R1-EC5614D0

W: 17.5mm

L: 100mm

H: 74mm
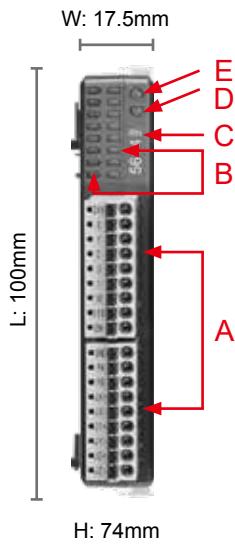
NO.	Description	NO.	Description
A.	IO Signal Port	D.	Status Indicator
B.	IO Signal Indicator	E.	Power Indicator
C.	Product No.		

Input	Description	Input	Description
GND	External Ground	24V	External Power Input
PA	MPG Pulse Phase A Input	X	X-axis Pulse Chosen Signal
PB	MPG Pulse Phase B Input	Y	Y-axis Pulse Chosen Signal
JX+	JOG X-axis Signal (+)	Z	Z-axis Pulse Chosen Signal
JX-	JOG X-axis Signal (-)	U	U-axis Pulse Chosen Signal
JY+	JOG Y-axis Signal (+)	1	Pulse magnification (x 1)
JY-	JOG Y-axis Signal (-)	10	Pulse magnification (x 10)
JZ+	JOG Z-axis Signal (+) / *W-axis	100	Pulse magnification (x 100)
JZ-	JOG Z-axis Signal (-) / *V-axis	EN	Motion / Setting Execution

*Supports 6-axis MPG via software: JZ+ needs to connect to W-axis signal; JZ- needs to connect to V-axis signal

Technical Data	R1-EC5614D0
Control Axes	4 / 6 axes
Power Supply	Supplied by E-bus
Pulse Magnification	x 1 / x 10 / x 100
JOG Input	3 / 2 sets
Sampling Rate	40kHz
FIFO Length	30 sets
Communication Time	125us - 3276800us
Trigger Time (ON > OFF)	< 8V$_{DC}$
Trigger Time (OFF > ON)	> 16.5V$_{DC}$
Current Consumption E-Bus	180mA
Electrical Isolation	500 Vrms (E-bus / Signal Power)
Vibration / Shock Resistance	Compliant with EN 60068-2-6 / EN 60068-2-27 / 29
EMC Immunity	ESD (IEC 61131-2, IEC 61000-4-2) EFT (IEC 61131-2, IEC 61000-4-4) RS (IEC 61131-2, EC 61000-4-3)
Operating Environment	Operating temperature: 0 ºC ~ 50 ºC Storage temperature: -20 ºC ~ 70 ºC
Weight	Approx. 55 g
Protection Class	IP20
Safety Certification	CE
Mounting Type	DIN-rail

ΔNELTA

Ordering Information

Programmable Automation Controllers - Motion Control Host PAC

Model Name	CPU Type	Storage	Slot Interface	RAM	OS	Motion Protocol	Development Tool
MH1-A12D-A03DG	Atom E3845 Quad Core 1.91GHz	2 PCI	32GB CFast	4GB	Win 7 32bit	DMCNET	API
MH1-A12D-A03DM			32GB CFast				IMP
MH1-A12D-A05DG			128GB SSD				API
MH1-C50D-A03DG	Core i5-3610ME Dual Core 2.7GHz	2 PCI	32GB Cfast	4GB	Win 7 32bit	DMCNET	API
MH1-C50D-A03DM							IMP
MH1-C50D-A33DH				8GB	Win 7 64bit		API
MH1-C50D-A04DG			64GB SSD	4GB	Win 7 32bit		API
MH1-C50D-C03DG		PCIe (x4+x1)	32GB CFast				API
MH1-C70D-A03DG	Core i7-3612QE Quad Core 2.1GHz	2 PCI	32GB CFast	4GB	Win 7 32bit	DMCNET	API
MH1-C70D-A03DM							IMP
MH1-C70D-A33DH				8GB	Win 7 64bit		API
MH1-C70D-C03DG		PCIe (x4+x1)		4GB	Win 7 32bit		API
MH1-C70D-C33DH					Win 7 64bit		API
MH1-A12N-A03DG	Atom E3845 Quad Core 1.91GHz	2 PCI	32GB CFast	4GB	Win 7 32bit	NA	NA
MH1-A12N-A05DG			128GB SSD				
MH1-C50N-A03DG	Core i5-3610ME Dual Core 2.7GHz	2 PCI	32GB CFast	4GB	Win 7 32bit	NA	NA
MH1-C50N-A05DG			128GB SSD				
MH1-C50N-C03DG		PCIe (x4+x1)	32GB CFast				
MH1-C50N-C33DH				8GB	Win 7 64bit		
MH1-C70N-A03DG	Core i7-3612QE Quad Core 2.1GHz	2 PCI	32GB CFast	4GB	Win 7 32bit	NA	NA
MH1-C70N-C03DG		PCIe (x4+x1)					
MH1-C70N-C33DH				8GB	Win 7 64bit		
MH2-P10N-N04DL	Celeron J1900 Quard Core 2.0GHz	NA	64GB SSD	4GB	Win 10 IoT 64bit	EtherCAT	API
MH2-P10N-N06DL			32GB SSD				

Programmable Automation Controllers - Motion Control Panel PC

Model Name	CPU Type	Storage	Slot Interface	RAM	OS	Motion Protocol	Development Tool
MP1-P10D-150ADL	Celeron J1900 Quard Core 2.0GHz	15"	64GB CFast 128GB CFast	4GB	Win 10 IoT 64bit	DMCNET	API/IMP
MP1-P10D-150BDL							

Ordering Information

Motion Control Cards	
PCI-DMC-A02	DMCNET Standard Type Motion Control Card with Local I/O (32 DI / 24 DO)
PCI-DMC-B01	DMCNET Advanced Type Motion Control Card with 2 Groups of Pulse Compare
PCI-DMC-B02	DMCNET Advanced Motion Control Card + 2D Pulse Compare
PCI-DMC-B03	DMCNET Advanced Motion Control Card + 3 Sets of Pulse Compare & 10 Sets of DO
PCI-DMC-F02	DMCNET Economic Type Motion Control Card + local IO (32 DI / 24 DO)
PCIe-L221-B1D0	EtherCAT Advanced Motion Control Card + 2 Sets of Pulse Compare
PCI-L221-P1D0	EtherCAT Standard Type Motion Control Card
PCI-L221-F1D0	EtherCAT Economic Type Motion Control Card
PCI-L221-B1D0	EtherCAT Advanced Type Motion Control Card with 2 Groups of Pulse Compare
PCI-M324-F1D0	4-axis Pulse Motion Control Card (Not available in Taiwan)
PCI-D122-XND0	32IN/32OUT Digital Signal Capture Card
DB-D1XX-01D0	Digital Signal Capture Slave Card

DMCNET Remote Modules	
ASD-DMC-RM32MN	32 Digital Input Remote Module (NPN / PNP)
ASD-DMC-RM64MN	64 Digital Input Remote Module (NPN / PNP) plus MPG Module
ASD-DMC-RM32NT	32 Digital Output Remote Module
ASD-DMC-RM64NT	64 Digital Output Remote Module
ASD-DMC-RM32PT	32 Digital I/O Remote Module with 16 DI (NPN / PNP) & 16 DO (Transistor Output)
ASD-DMC-RM04PI	4-Channel Pulse Remote Module (4 Channels of 200 kHz Pulse Outputs and Inputs)
ASD-DMC-RM04AD	4-Channel Analog Input Module
ASD-DMC-RM04DA	4-Channel Analog Output Module
HMC-RIO3232RT5	Digital I/O Remote Module with 32 DI (NPN / PNP), 16 DO (Relay Output) & 16 DO (Transistor Output)

Ordering Information

DMCNET Gateway Type Remote Modules	
ASD-DMC-GA01	DMCNET Gateway Type Remote Power Coupler
ASD-DMC-GE01PH	DMCNET Gateway Type Pulse Output Remote Module (1-Channel of 4M High-speed Pulse Interface)

EtherCAT Remote Modules	
R1-EC5500D0	E-BUS Remote Power Coupler
R1-EC5621D0	1-Channel Pulse Output Remote Module
R1-EC5614D0	MPG Extension Module
R1-EC6002D0	Digital Input Remote Module (NPN / PNP); response time < 0.1ms
R1-EC6022D0	Input Remote Module (NPN / PNP); response time 2ms
R1-EC7062D0	Digital Output Remote Module (NPN)
R1-EC70A2D0	Digital Output Remote Module (PNP)
R1-EC70E2D0	Digital Output Remote Module (NPN)
R1-EC70F2D0	Digital Output Remote Module (PNP)
R2-EC0902D0	Digital Input / Output Remote Module with Relay

Smarter. Greener. Together.

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