



Automation for a Changing World

Delta Hot Swappable Mid-range PLC AH Series



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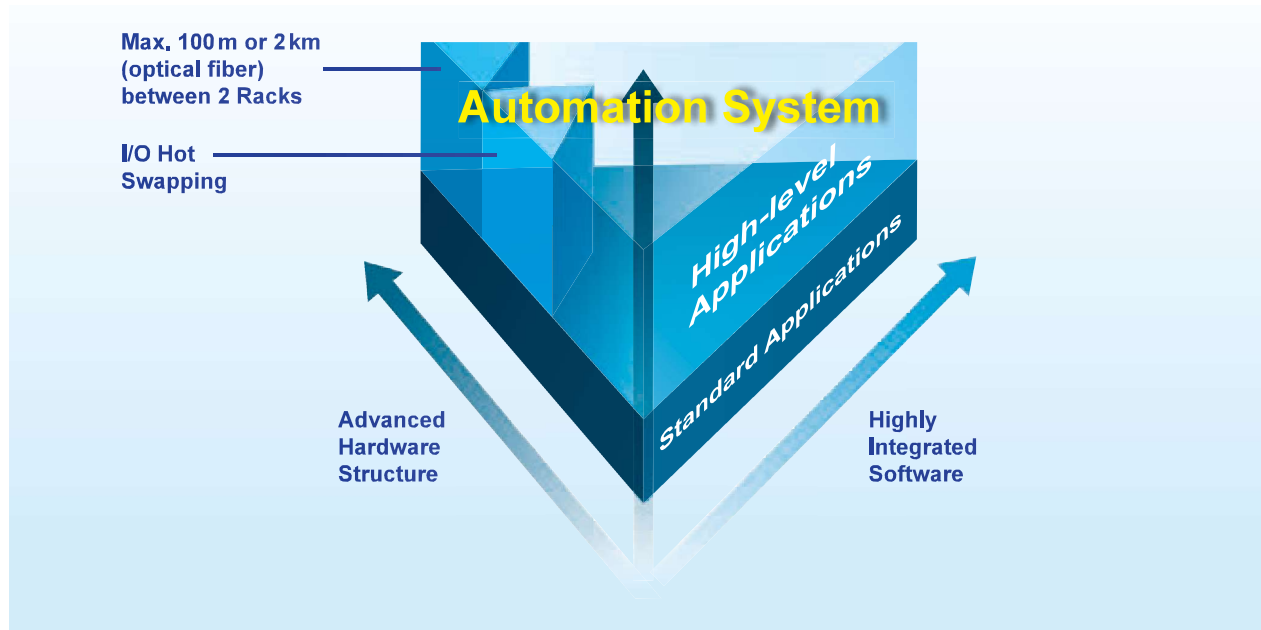
AH - Automation System for High-level Applications

The new generation AH Series PLC provides automation solutions for high-level applications. The combination of modularized hardware structure, advanced functions, and the highly integrated software provides a system solution for process control applications. In addition to various function blocks, excellent performance, and an abundant selection of extension modules, the AH Series PLC also provides exceptional system expandability and full redundant solution, greatly reducing the system cost for a broad range of applications.



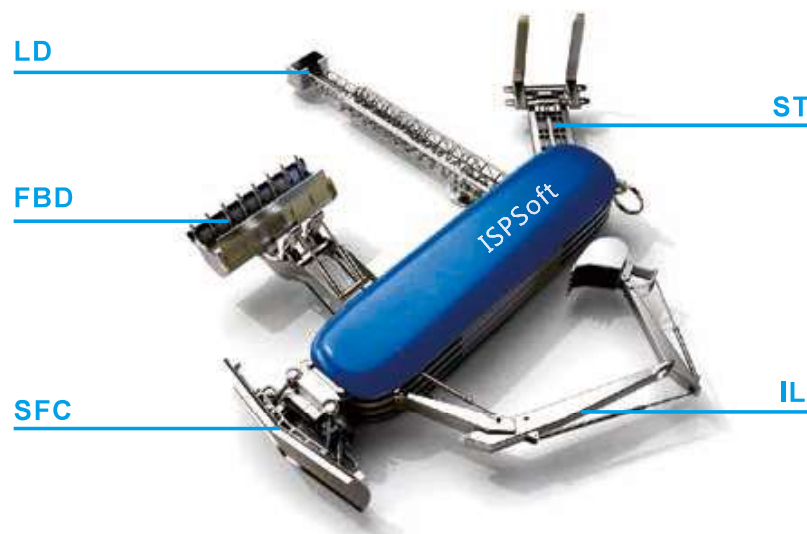
- » Highly integrated software ISPSOft: graphical interface with 5 programming languages
- » Enhanced flexibility: Max. 100m or 2 km (optical fiber) between 2 local extension racks
- » Redundant and hot-swapping functions keep the system running for improved maintainability
- » Reliable operations of the supported modules in severe conditions
 - * Operating condition: -20~60°C/5~95% (Non-condensing)
 - * Storage condition: -40~70°C/5~95% (Non-condensing)
- Utilizes 32-bit processor and real-time operation system (RTOS)
- Max. I/O points:
 - DIO: Max. 4,352 points
 - AIO: Max. 544 channels
 - RIO: >100,000 points
- Program capacity: Max. 1 M steps (4 MB)
Data register (D+L): 512 k words
- Excellent program execution speed: LD instruction execution speed: 0.02µs
- CPU built-in with fully isolated RS-232/422/485, Mini-USB, Ethernet and SDHC card slot
- Abundant selection of DIO modules, AIO modules, temperature measurement modules, network modules, pulse-train modules and DMCNET/EtherCAT motion control modules

AH Series PLC – Automation System with Fully Integrated Hardware and Software Interfaces



Highly Integrated Software – Excellent Accessibility

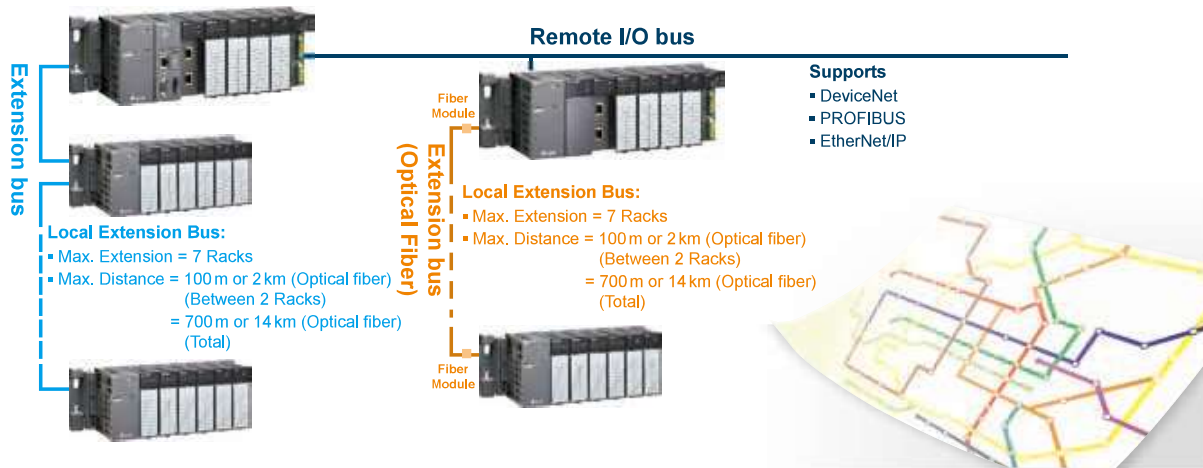
AH PLCs adopt the highly accessible programming software ISPSOft, integrating the main functions that include control process programming, hardware configuration, network configuration, and providing a graphical interface for these functions. In addition, users of ISPSOft can choose their most efficient programming tools from the 5 supported languages: Ladder Diagram (LD), Function Block Diagram (FBD), Sequential Function Chart (SFC), Instruction List (IL) and Structured Text (ST).



Enhanced Flexibility – Extends the System Freely

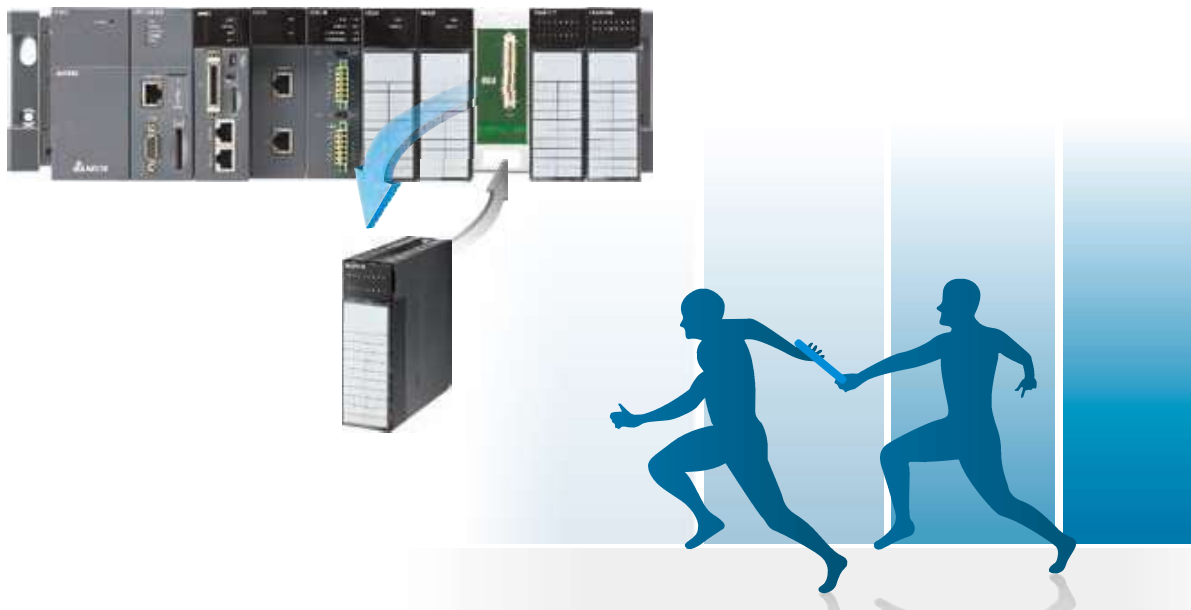
The length of extension cables between each AH local extension rack can reach a maximum of 100m or 2 km (optical fiber), greatly enhancing wiring flexibility. In addition, the AH provides modularized backplanes and modules applicable for not only CPU racks but also for remote I/O racks. This feature improves the flexibility of system planning and reduces the additional cost that might be generated by preparing two different types of spare backplanes and modules.

System Extension Structure



Improved Maintainability – Keeps the System Running

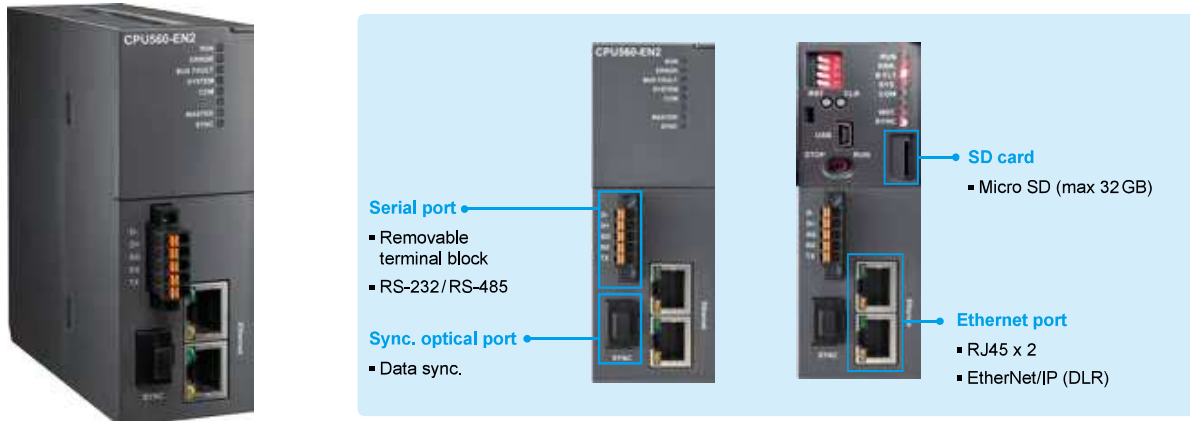
The hot-swap function provided for AIO and DIO modules increases maintainability when I/O modules fail. Users can replace modules without stopping the operation of the CPU module, preventing a possible loss due to a pause in the system's operation.



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), AHBP06MR1-5A (6-slot), AHBP08MR1-5A (8-slot)



Redundant expansion backplane: AHBP06ER1-5A (6-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"> Ethernet module - AH10EN-5A (V3) Serial module - AH10SCM-5A (V3) | <ul style="list-style-type: none"> DIO AIO (includes temperature modules) Serial modules - AH10SCM-5A, AH15SCM-5A | <ul style="list-style-type: none"> DIO AIO (include temperature modules) |

Tasks

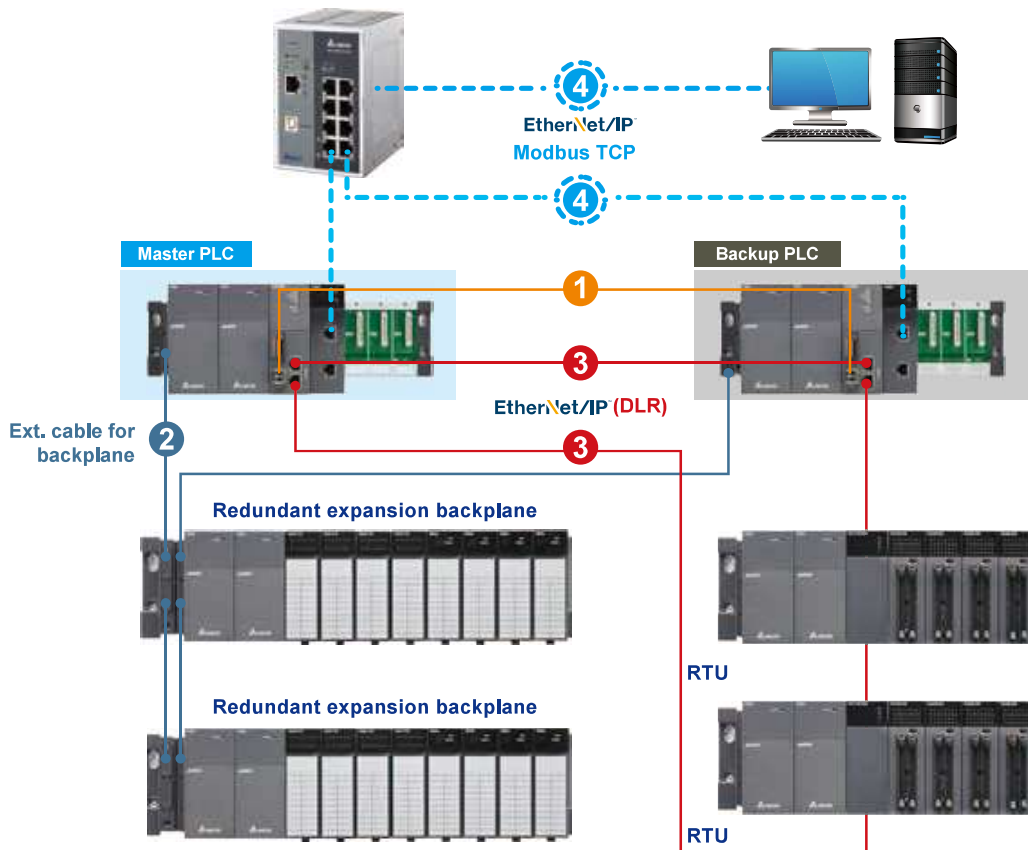
| | |
|--------|-----------------|
| Cyclic | Timer interrupt |
|--------|-----------------|

CPU built-in sync. module

CPU switch-over time: 20 ms

RTU nodes to support expansion backplanes

Standard backplanes available (under some conditions)



1 Sync. optical fiber

3 EtherNet/IP ring topology (DLR)

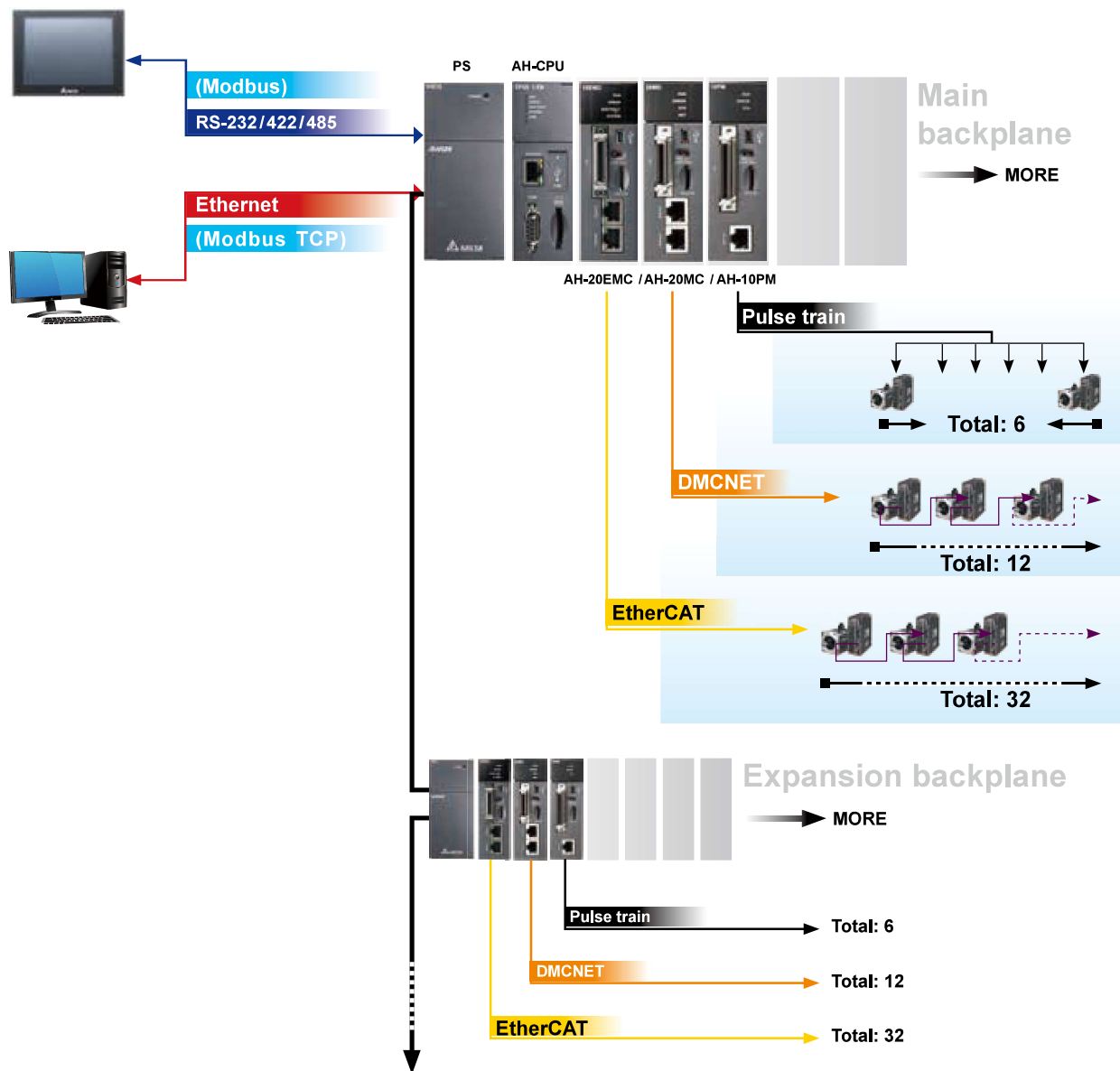
2 Ext. cable for backplane

4 Star topology EtherNet/IP, Modbus TCP

Standard Motion Control System

- ▶ Provides EtherCAT, DMCNET and pulse train solutions for customers.
- ▶ Motion modules can independently take care of both the logic and motion control. Users can write and download the programs to the motion modules.
- ▶ All motion modules support the standard motion control system.
- ▶ All motion modules can be installed on the local backplanes.
- ▶ Motion control functions:
 - » Performance:
 - Pulse train module: Max. 1 MHz output
 - DMCNET module: Min. synchronization time at 12 axes is 1 ms
 - EtherCAT module: Min. synchronization time at 8/16/32 axes is 0.5/1/2 ms
 - » Supports UD/PD/AB/4AB input modes
 - » Supports MPD inputs/E-Cam/G-code/2~6 axes linear interpolation/2 axes arc interpolation/3 axes helical interpolation

Note: The EtherCAT modules (AHxEMC-5A) do not support G-code.



Compact Motion Control System

- ▶ Provides EtherCAT, DMCNET and pulse train solutions for customers.
- ▶ AHxxEMC-5A motion controller can be installed on the CPU slot of the specific motion backplane and works as a CPU module.
- ▶ Compact motion control system does not support the expansion backplane.
- ▶ Motion modules can be installed on the I/O slot of the motion backplane.
- ▶ Motion control functions:
 - » Performance:
 - Pulse train module: Max. 1 MHz output
 - DMCNET module: Min. synchronization time at 12 axes is 1 ms
 - EtherCAT module: Min. synchronization time at 8/16/32 axes is 0,5/1/2 ms
 - » Supports UD/PD/AB/4AB input modes
 - » Supports MPD inputs/E-Cam/G-code/2~6 axes linear interpolation/2 axes arc interpolation/3 axes helical interpolation

Note: The EtherCAT modules (AHxxEMC-5A) do not support G-code.

