YAMATAKE **Specification**

[Rel.300]

Harmonas DEO Harmonized Automation System - Dependable Open

Introduction

The Harmonas-DEO™ system is a next generation automation system.
The Harmonas-DEO system uses open and standard technology bases in vision of the 21st Century, such as Windows OS for information management and Ethernet connections for control and information networking functions, in order to significantly improve the flexibility of information-sharing environments. As a field network, the system complies with the industry standard Fieldbus Foundation specifications. Regarding information sharing, DCOM, ActiveX, and OPC are used for the control software data interface to further improve coordination with general-purpose software products.
The new "Dependable Open" concept assures the level of high reliability that is generally required for process control applications while adopting these open and standardized technology bases.

Features

1) Open Modular Architecture & Information on Demand

The open and distributed functional structure implements Plug and Play solutions in the area of industrial automation systems. Furthermore, its specific feature is that any data is accessible from any location in the system.

The Harmonas-DEO architecture combines a wide variety of applications, including field-level system components as well as production control systems, in an organized structure with open networks to form the core of the system. Any data integrated in a DEO system is accessible from anywhere in the system through open networks. With this feature, all of the staff personnel, ranging from operators in actual fields to higher management people, can track the operational status of the system in real time.

2) Dependable

Total reliability supports plant control environments.

In order to assure the required level of process control reliability for obtaining customer satisfaction while using open and general purpose infrastructure, the Harmonas-DEO automation system uses technology bases that are focused on the concept of dependability. In addition to the basic reliability mechanisms, such as Ethernet redundancy and redundancy and fail-over functions of nodes, a high level of stability in overall automation system operation has been achieved with the Harmonas-DEO system, improving maintainability, operation integrity assurance, and security at the same time.

3) Automation Suite

Solutions necessary for plant automation are provided.

Harmonas-DEO can provide a wide range of software solutions that are necessary for constructing a plant automation system. "Automation Suites" is the generic name of a group of solutions that can be implemented by the Harmonas-DEO system.

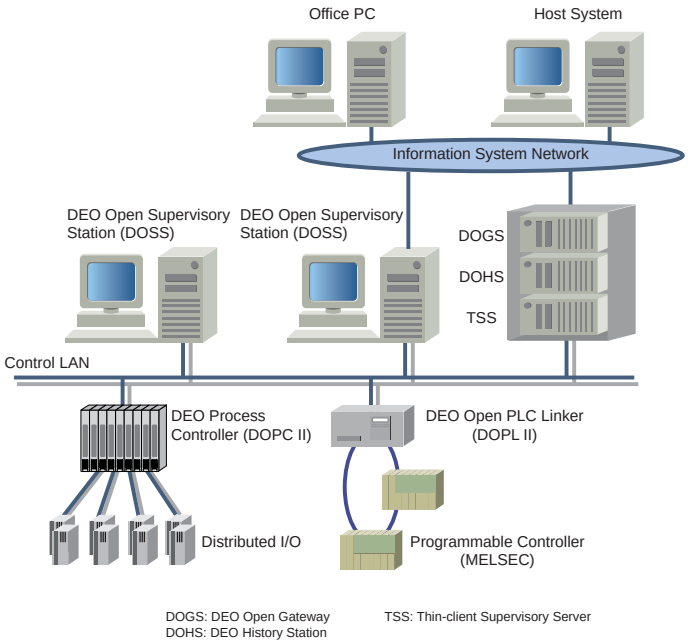

Figure 1. Example System Configuration

System Configuration

A Harmonas-DEO system is comprised of human-machine interface (HMI) nodes to be used for system monitoring and control operations, highly reliable process controller nodes that can be arranged in a redundant configuration, and redundant control LAN (Ethernet) systems to connect all the nodes. Windows OS is used for all HMIs as the basic operating system to provide the users with a comfortable monitoring and control operation environment as well as to provide an open data processing environment.

Furthermore, in order to establish a control system that is suited for the purpose of the system, various types of application modules, including field operation modules, remote monitoring modules, history analysis modules, batch process control modules, communication gateway modules, transient operation support modules, and alarm analysis modules are available.

System Component Equipment

• DEO Supervisory Station (DOSS, DOSS_H)

DOSS provides system construction (engineering) functions as well as HMI functions for process control and monitoring operations. DOSS_H is implemented with the process history database (MS-SQL server) functions in addition to the basic HMI functions of DOSS.

Either a general-purpose desktop CPU type or a console type (single-stage or dual-stage) configuration is selectable for these nodes.

• DEO Open History Station (DOHS)

A DOHS node is implemented with a process history data server (MS-SQL server) and is dedicated to history data collection functions.

• DEO Process Controller (DOPC II, DOPC)

DOPC II and DOPC are multi-functional process controllers that can be used for implementing process input/output control, loop control, logic control, and sequence control functions. High density and redundantly configurable process I/O modules are connected to DOPC and DOPC II. DOPC II is a controller with redundant control CPUs and communication modules. DOPC is a small capacity controller; its non-redundant configuration is also available.

• DEO Open PLC Linker (DOPL II)

DOPL II is a multi-functional and redundantly configurable controller to be used for integrating and controlling Mitsubishi MELSEC devices through MELSECNET/10 (or MELSECNET/H) networks. By using DOPL II, all link devices of MELSECNET are handled as I/O devices for enabling loop control, logic control, and sequence control functions, as well as the operations with DOPC II. The control database of DOPL II is constructed in common with DOPC II.

• Thin-client Supervisory Server (TSS)

TSS server nodes provide client PCs installed in remote fields and offices with a DCS operations environment. DOSS-like control operations can be made from client PCs. Display applications of TSS are constructed in common with DOSS.

• DEO Open Gateway (DOGS)

A DOGS general-purpose communications gateway connects the Harmonas-DEO system to information system networks for enabling data communication with host computers. DOGS uses OPC, a general-purpose protocol, as the communications protocol to function as an OPC server.

System Specification

Table 1. Outline Specifications for the Harmonas-DEO System

Item		Specification
Number of nodes	Total nodes per system	126 nodes
	Total number of HMI nodes (Note 1)	32 nodes
	Total number of controllers (Note 2)	96 nodes
Number of control tags	Graphic tag	60,000 tags per SS node
	Controller tag	100,000 tags per system
Network	Control bus	l0 Mbps/l00 Mbps Ethernet, up to 2.5 km (2 km for 100 Mbps)
	Data Control System LAN	10Mbps/100Mbps/1Gbps Ethernet
Redundancy functions	Redundant control bus (Ethernet)	Standard
	Redundant controller	DOPC II, DOPL II
	Non-redundant controller	DOPC, DOPL II
Maximum number of nodes per node	DOSS	28 nodes
	DOSS_H, DOHS	5 nodes
	Number of clients (Note 3)	50 nodes
	TSS server	8 nodes
	Number of TSS clients (Note 4)	40 nodes
	DOGS	5 nodes
	Number of DOGS clients (Note 5)	50 nodes
Maximum number of nodes per controller	DOPC II, DOPC	96 nodes
	DOPL II	96 nodes
History capacity	Number of history points	Up to 6400 points
	History period	1, 5, 10, or 30 seconds, 1, 2, 5, or 10 minutes

Note 1: Total number of HMI nodes, including DOSS, DOSS_H, TSS, DOHS, and DOGS.
Note 2: Total number of controller nodes, including DOPC II, DOPC, FLC, and DOPL II.
Note 3: The maximum number of history clients for DOSS_H and DOHS is 10 nodes per server. The number of clients includes the DOSS nodes that are remote trend client nodes.
Note 4: The maximum number of clients is 10 nodes per TSS server.
Note 5: The maximum number of DOGS clients is 10 nodes per server.

Example System Configuration

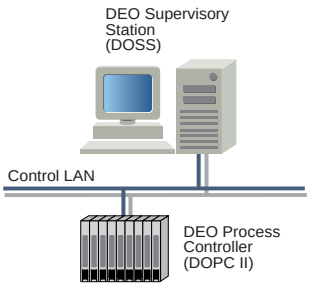

Figure 2. Harmonas-DEO Minimum Configuration (example)

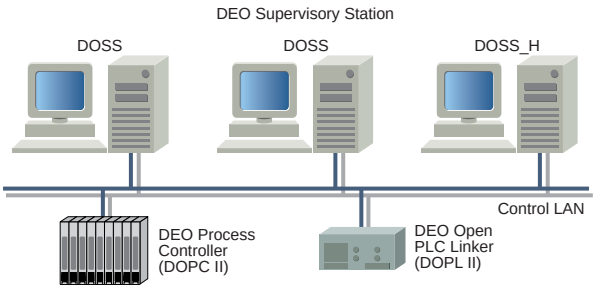

Figure 3. Harmonas-DEO Multiple Node Configuration (example)

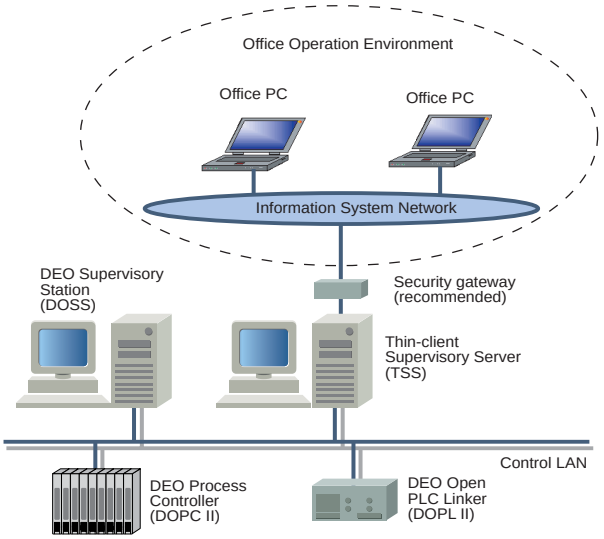

Figure 4. Office Operation Configuration (example)

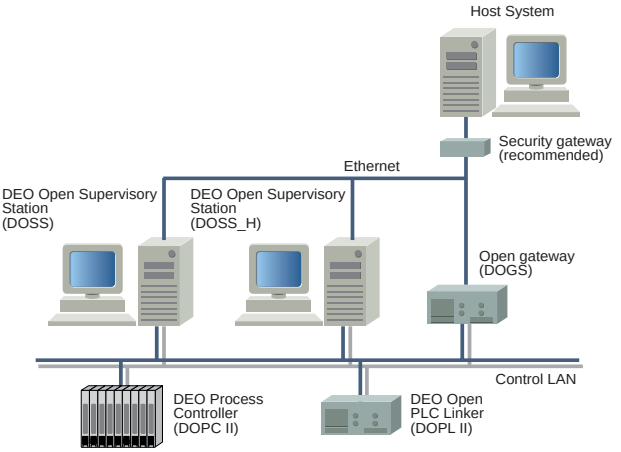

Figure 5. Host System Connection Configuration (example)

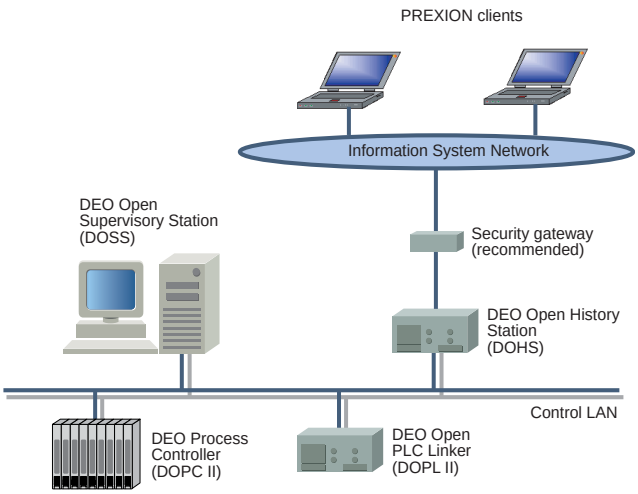

Figure 6. Example Process Data Analysis System (PREXION clients)

Specifications are subject to change without notice.

YAMATAKE

Yamatake Corporation
Advanced Automation Company
1-1-32 New Stage Yokohama, Shin-urashima-cho,
Kanagawa-ku, Yokohama, Kanagawa-ken 221-0031, Japan
Tel : +81-45-461-8800

Savemation
Saving through Automation

http://www.yamatake.com/
0511-Y/Y

This has been printed on recycled paper.