

● **SOE Server Configurator (Model: LPC6910)**

The SOE Server Configurator is designed to configure the SOE Server. The Configurator is used to define various settings such as the station configuration, SOE input terminals and the trip report configuration.

● **SEM OPC Interface (Model: LPC6930)**

The SEM provides the OPC interface function which OPC clients such as Exaquantum can access the SOE data stored in the SOE server through Ethernet. The OPC interface works as an OPC Alarm and Events (A&E) server and an OPC Historical Data Access (HDA) server.

● **Human Interface Stations (HISs)**

Using the SOE Viewer Software an HIS can be used to access the SOE data stored in a SOE Server via Vnet/IP. The status of SOE modules, ADV151-E/AGP813-S can be displayed on the Station Status Display window of the HIS.

● **Vnet/IP Network**

The CENTUM VP system synchronizes the system time across Vnet/IP using own time synchronization protocol. When the time synchronization with an external master clock is required, the Vnet/IP system allows connection with a Simple Network Time Protocol (SNTP) server. A SNTP server incorporating a Global Positioning System (GPS) receiver or similar is used for more accurate time reference.

■ **SYSTEM SPECIFICATIONS**

- Number of SOE inputs:
Up to 2048 points per SOE Server
- Number of SOE Servers:
One server per SEM system
- Number of FCSs per SOE Server: Up to 32 (*1)
- Number of ADV151-E:
Up to 78 modules per FCS with LFS1550 Node Expansion Package
Up to 110 modules FCS with LFS1750 Node Expansion Package
- Number of AGP813-S:
Up to 8 modules (*2) including ALR111/ALR121/ALE111/ALP111/ALP121 (*3)/AGS813/AGP813 per FCS.
- Number of Events retained in CP461/CP451 event buffer:
Up to 10,000 events
- Number of Events retained in ADV151-E event buffer:
Up to 512 events per two seconds
- Number of Events retained in AGP813-S event buffer:
Up to 256 events per two seconds
- Time stamp resolution: One millisecond (*4)
- Time-stamp delay compensation setting:
Zero to 100 milliseconds
- Automatic event deletion:
Selection from among 15 options from no auto-deletion to auto-deletion of the five oldest events occurring within the last 3.5 seconds.
- Software filter setting:
4 to 512 milliseconds (can be set increments of two milliseconds).

- *1: Up to 16 FCSs per SOE Server for CENTUM VP R5.03.20 or earlier
- *2: Up to 16 modules with LFS1550 or LFS1750-V1□
Up to 32 modules with LFS1750-V2□
- *3: ALP111 and ALP121 cannot be mounted in the same FCS.
- *4: The time stamp resolution within the same domain is ±1 ms. However, this applies to events from an I/O module installed within a 4 km distance from the CPU node. The time stamp resolution when using an ESB bus optical repeater module for an extended distance of up to 50 km is ±3 ms.

When the number of SOE inputs or FCSs exceeds the limitations for a single SEM system, multiple SEM systems can be installed, up to eight servers.

The SOE Viewers can access the SOE stored data from multiple SOE Servers via Ethernet and display the SOE data on a single SOE Viewer window.

■ SPECIFICATIONS OF SOE SERVER

SOE Server (*1):

Dedicated server for the installation of SOE Server, SOE Viewer and SOE Server Configurator packages. It is not allowed to install any CENTUM VP software packages other than SOE software packages.

*1: When the conditions for "Installation in an HIS" in the following are met, SOE Server can be resided in HIS.

Event acquisition rate:

Up to 2000 events per second in AFV10□
Up to 4000 events per second in AFV30□/AFV40□

Number of Clients for SOE Viewer and SOE Server Configurator:

Up to the number allowed by the licenses purchased for Microsoft SQL Server 2005/2008/2008 R2/2012, and Microsoft Windows Server 2008 or Microsoft Windows Server 2008 R2

Database capacity:

A disk size of 200 MB is required for retaining 365,000 historical events, assuming 1,000 events per day for one year.

Microsoft SQL Server is used as a database management system. The database capacity is limited by the hard disk capacity except for the following Microsoft SQL Server.

- 4 GB for Microsoft SQL Server 2005 Express Edition and Microsoft SQL Server 2008 Express with Tools.
- 10 GB for Microsoft SQL Server 2008 R2 Express with Management Tools and Microsoft SQL Server 2012 Express With Tools.

● Installation in an HIS

The SOE server packages are allowed to reside an HIS under the following conditions.

Total number of SOE inputs:

Up to 512 points

Event acquisition rate:

Up to 500 events per second

PC Operating system for HIS:

See "Table Compatibilities of SQL Servers and Operating Systems" in "● Software Requirements".

Database management system:

Microsoft SQL Server 2005 Express Edition, Microsoft SQL Server 2008 Express with Tools or Microsoft SQL Server 2008 R2 Express with Management Tools. Refer to the "Database capacity" as described above.

Other specifications for SEM and HIS:

Same specifications as standard

■ SPECIFICATIONS OF SOE VIEWER

Number of data acquisition sources:

Up to eight data sources or up to eight SOE Servers

Data acquisition source types:

SOE Server, historical messages in HIS, Unified Operator Interface (UOI) messages

Number of events displayed:

Up to 99,999 events

Display items in the SOE Viewer screen:

Time stamp: Date and time of occurrence of the corresponding event signal

Quality: Single letter indicating the time synchronization state at the event occurrence

Type: Importance level of the corresponding event, either "SOE" (ordinary) or "SOE-H" (important)

ID: Either "SOE_ALM" (occurrence of the alarm state) or "SOE_RTN" (return to normal state)

Resource: Equipment name (plant hierarchy name) associated with the corresponding SOE event signal

Reference: Reference number (tag name) of the corresponding SOE event signal

Message: Message text of the corresponding SOE event signal

■ SPECIFICATIONS OF SOE SERVER CONFIGURATOR

Number of SOE input assignments:

Selection from 128, 512, and 2048 input points

Number of Trip trigger assignments:

Up to 50 triggers

■ NETWORKING SPECIFICATIONS

The SEM uses an open communication network adopting IEEE802.3 standards on the bus 2 of Vnet/IP for SOE Server, SOE Viewers and SOE Server Configurator.

When the Simple Network Time Protocol (SNTP) server is required for the time synchronization with an external master clock, the server can be also connected on the bus 1 of Vnet/IP.

For the networking specifications of SEM, see the "Vnet/IP network specifications" of "Integrated Control System CENTUM VP System Overview (GS 33K01A10-50E)".

■ OPERATING ENVIRONMENT

● Hardware Requirements

SOE Server

The SOE Server function runs on a PC which meets the following requirements:

- PC: A personal computer (IBM PC/AT-compatible) following the basic specifications of HIS.
For details of HIS, see GS 33K05D10-50E.
- Hard disk: Refer to the "Database capacity" in the "■ SPECIFICATIONS OF SOE SERVER"
- Network: One Ethernet network on the bus2 of Vnet/IP for the SOE Server.
For details of Vnet/IP network specifications, see GS 33K01A10-50E.
- Peripherals: DVD drive
Tape drive for data backup (optional)

SOE Viewer and/or SOE Server Configurator

- PC: A personal computer (IBM PC/AT-compatible) following the basic specifications of HIS.
For details of HIS, see GS 33K05D10-50E.
- Network: One Ethernet network on the bus2 of Vnet/IP for the SOE Server.
For details of Vnet/IP network specifications, see GS 33K01A10-50E.
- Peripherals: DVD drive

Other Components

- AFV30□: Field Control Unit.
- AFV40□: Field Control Unit.
- AFV10□: Field Control Unit. Style 2 or later (Style No. is indicated on the component tag)
- EC402: ESB Bus Coupler Module.
- EC401: ESB Bus Coupler Module. Style 2 or later (Style No. is indicated on the component tag)
- VI702/VI701: Vnet/IP Interface Card. For VI701, firmware revision should be R6 or later
(Firmware revision No. is indicated under "F" on the revision sticker on the component)
- AVR10D: Duplexed V net Router. Firmware revision of VI451 should be R6 or later
(Firmware revision No. is indicated under "F2" on the revision sticker on the component)