GENERAL

This GS covers the hardware specifications of the Field Control Unit (FCU) which is the core of the control function of the Field Control Station (FCS).

Attention:
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HARDWARE SPECIFICATIONS
For the installation specifications and the environmental conditions common to the systems, refer to "Integrated Production Control System CENTUM VP System Overview (Vnet/IP Edition)" (GS 33K01A10-50E).

Memory Protection During Power Failure
- Battery
  - Battery Back-up for Main Memory: Max. 72 hours
  - Battery Recharge Time: Min. 48 hours

FCU Status Contact Output
- 2 terminals (NC, C)
- Contact Points open during FCU failure
- Contact Rating: 30 V DC, max. 0.3 A
  - Note: When option code /HKU is specified, a FCU fault contact is output from the House Keeping Unit (HKU).

Communication Interface
- Vnet/IP Interface: Dual-redundant

For more details, refer to "Integrated Production Control System CENTUM VP System Overview (Vnet/IP Edition)" (GS 33K01A10-50E).

HKU Interface (Option)
When option code /HKU is specified, a FCU fault contact is output from the HKU. Also, the environmental conditions of the cabinet connected via the HK bus and optical ESB bus can be monitored and the operating status of the HKU can be displayed on the HIS. System alarms can also be displayed.

No. of Node Units Connectable
- Max. 13/FCU
- The total number of ESB Bus Node Units (ANB10□) and Optical ESB Bus Node Units (ANB11□) that can be connected to FCU are 13 or less. The ER Bus Node Unit (ANR10□) cannot be connected.
- The Control function for field control station (LFS1700) allows up to 3, and can be expanded as follows by adding the Node Expansion Package (LFS1750).
  - LFS1750-V1: Max. 9/FCU
  - LFS1750-V2: Max. 13/FCU
- To connect a node unit to the FCU, a Node Unit Expansion License (option code: /NDEL) is required for the node unit.

Module Configuration
- Power Supply Module (PW481 or PW482 or PW484): 2 modules for dual-redundant configuration.
- Processor Module (CP471 or CP461): 2 modules for dual-redundant configuration.
  - A dual-redundant configuration is enabled by using 2 identical modules with same model code (CP471 or CP461).
- I/O Module (*1): Max. 8
  - *1: Non-standard component.
Installation Restrictions
To connect the ESB Bus Node Unit (ANB10) or Optical ESB Bus Node Unit (ANB11) to the FCU, install the ESB Bus Coupler Module (EC401 or EC402) in slots 7 and 8 of the FCU. For the dual-redundant configuration of the processor modules, EC401 or EC402 must be installed in both slot 7 and slot 8. In case ESB Bus has a single configuration, EC401 or EC402 must be installed in slot 7 and keep slot 8 empty.

To install the optical ESB bus node unit and ESB bus node unit in a remote location, use the Optical ESB Bus Repeater Master Module (ANT401 or ANT411) to connect them with an optical fiber cable. To install the optical ESB bus repeater master module in the FCU, install a pair of modules in slots 1 to 6 in order from right to left according to the number of branches. In a single configuration, install the individual modules in slots 1, 3, and 5 in order from right to left. For details, see the “Optical ESB Bus Repeater Module” (GS 33K50F51-50E/GS 33K50F52-50E).

For the limitations and precautions for installing I/O modules, see “FIO System Overview (for Vnet/IP)” (GS 33K50F10-50E).

Power Supply
Specify with the Suffix Code.
Voltage: 100-120 V AC, Frequency: 50/60 Hz
Voltage: 220-240 V AC, Frequency: 50/60 Hz
Voltage: 24 V DC

Power Consumption
100-120 V AC: 200 VA
220-240 V AC: 230 VA
24 V DC: 5.5 A

Weight
Approx. 7 kg (AFV30S)
Approx. 8 kg (AFV30D)

Mounting
19-inch Rack Mounting: Rack mount (M5x8 screws), Insulation bush (accessory)

Connection
Power Supply: M4 screw terminal connection
Grounding: M4 screw terminal connection
FCU Status Contact Output: M4 screw terminal connection
Network: Connect UTP cable (CAT5e or better) to Layer 2 switch.

Regulatory Compliance
For the detailed information of following standards, see “Integrated Production Control System CENTUM VP System Overview (for Vnet/IP) (GS 33K01A10-50E).”

Safety Standards
[CSA] (for 100-120 V AC power supply)
[CE Marking] (for 100-120 V AC, 220-240 V AC, and 24 V DC power supply)
[EAC Marking] (for 100-120 V AC, 220-240 V AC, and 24 V DC power supply)

EMC Conformity Standards
[CE Marking] (for 100-120 V AC, 220-240 V AC, and 24 V DC power supply)
[RCM] (for 100-120 V AC, 220-240 V AC, and 24 V DC power supply)
[KC Marking] (for 100-120 V AC, 220-240 V AC, and 24 V DC power supply)
[EAC Marking] (for 100-120 V AC, 220-240 V AC, and 24 V DC power supply)

Standards for Hazardous Location Equipment
[FM Non-Incendive] (for 100-120 V AC, 220-240 V AC, and 24 V DC power supply)
[Type n] (for 24 V DC power supply)
● System Configuration
This is a configuration example of an FCU and node units, and an ESB bus (including optical ESB bus) that connects them.

LIMITATIONS OF INSTALLATION AND NOTICES FOR INSTALLATION
For installing I/O modules in AFV30S or AFV30D, the quantity and allocation are limited.
Also, when installing a node unit to the dedicated cabinet, there are limitations of installation under the ambient operating temperature conditions.

When modules with built-in barriers are installed in AFV30□, an insulating partition kit (Part No. T9083ND) must be installed.

For details, please refer to “FIO System Overview (for Vnet/IP)” (GS 33K50F10-50E) and “Installation Guidance” (TI 33K01J10-50E).
**EXTERNAL DIMENSIONS**

Unit: mm

- Hole for mounting on a 19-inch rack
- 8 holes for M5 screws

**SOFTWARE REQUIREMENT**

For AFV30S and AFV30D, the Control Function for Field Control Station (LFS1700) is required. Specify this control function with the suffix code.

The number of the connectable node units and the application capacity can be expanded if the Node Expansion Package (LFS1750) is purchased.

For the specifications of LFS1700 and LFS1750, refer to GS 33K15C10-50E.

**REQUIREMENTS FOR USING SEM (Sequence of Events Manager)**

For using SEM, the hardware requires some conditions.

For details, refer to "SEM Sequence of Events Manager (for Vnet/IP and FIO)" (GS 33K30D10-50E).

**STANDARD ACCESSORIES**

The FCU is delivered with the following standard accessories.

<table>
<thead>
<tr>
<th>Parts Names</th>
<th>Parts Numbers</th>
<th>Description</th>
<th>Quantity</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulating bush</td>
<td>S9049PM</td>
<td>–</td>
<td>8</td>
<td>Accessory</td>
</tr>
</tbody>
</table>
### MODELS AND SUFFIX CODES

#### Field Control Unit

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFV30S</td>
<td>Field Control Unit (for Vnet/IP and FIO, 19-inch Rack Mountable)</td>
</tr>
<tr>
<td>-A</td>
<td>Standard type (CP471) (*1)</td>
</tr>
<tr>
<td>-S</td>
<td>Standard type (CP461) (*2)</td>
</tr>
<tr>
<td>3</td>
<td>Dual-redundant Vnet/IP, single power supply</td>
</tr>
<tr>
<td>4</td>
<td>Dual-redundant Vnet/IP, dual-redundant power supply</td>
</tr>
</tbody>
</table>

#### Suffix Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Always 1</td>
</tr>
<tr>
<td>2</td>
<td>100 - 120 V AC power supply (*3)</td>
</tr>
<tr>
<td>3</td>
<td>220 - 240 V AC power supply (*3)</td>
</tr>
<tr>
<td>4</td>
<td>24 V DC power supply (*3)</td>
</tr>
<tr>
<td>5</td>
<td>Basic type with no explosion protection</td>
</tr>
<tr>
<td>6</td>
<td>With ISA Standard G3 option and no explosion protection</td>
</tr>
<tr>
<td>E</td>
<td>Basic type with explosion protection</td>
</tr>
<tr>
<td>F</td>
<td>With ISA Standard G3 option and explosion protection</td>
</tr>
</tbody>
</table>

#### Option Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>/HKU</td>
<td>With HKU interface (*4)</td>
</tr>
<tr>
<td>/ATDOC</td>
<td>Explosion Protection Manual (*5)</td>
</tr>
</tbody>
</table>

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*1: Be sure to apply the software patch for supporting CP471. CP471 can be combined with the style code S3 or later of ESB bus coupler module EC401.

*2: Unavailable for ordering AFV30S with CP461 due to the supply ends on October 19, 2019. Existing CP461 can be replaced with CP471. Replacement from CP461 to CP471 is prohibited to perform by a user. This replacement must be done by the service engineer authorized by Yokogawa Electric Corporation. CP471 can be combined with the style code S3 or later of ESB bus coupler module EC401.

*3: To meet the safety standards and EMC standards, the unit must be installed in a keyed metallic cabinet.

*4: When used in combination with ACUKT, specify this option code “/HKU.”

*5: Select the option code “/ATDOC” to follow the ATEX Directive for use in potentially explosive atmospheres.

#### Duplexed Field Control Unit

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFV30D</td>
<td>Duplexed Field Control Unit (for Vnet/IP and FIO, 19-inch Rack Mountable)</td>
</tr>
<tr>
<td>-A</td>
<td>Standard type (CP471) (*1)</td>
</tr>
<tr>
<td>-S</td>
<td>Standard type (CP461) (*2)</td>
</tr>
<tr>
<td>4</td>
<td>Dual-redundant Vnet/IP, dual-redundant power supply</td>
</tr>
</tbody>
</table>

#### Suffix Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Always 1</td>
</tr>
<tr>
<td>2</td>
<td>100 - 120 V AC power supply (*3)</td>
</tr>
<tr>
<td>3</td>
<td>220 - 240 V AC power supply (*3)</td>
</tr>
<tr>
<td>4</td>
<td>24 V DC power supply (*3)</td>
</tr>
<tr>
<td>5</td>
<td>Basic type with no explosion protection</td>
</tr>
<tr>
<td>6</td>
<td>With ISA Standard G3 option and no explosion protection</td>
</tr>
<tr>
<td>E</td>
<td>Basic type with explosion protection</td>
</tr>
<tr>
<td>F</td>
<td>With ISA Standard G3 option and explosion protection</td>
</tr>
</tbody>
</table>

#### Option Codes

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<tr>
<th>Code</th>
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<tbody>
<tr>
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<tr>
<td>/ATDOC</td>
<td>Explosion Protection Manual (*5)</td>
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*1: Be sure to apply the software patch for supporting CP471. CP471 can be combined with the style code S3 or later of ESB bus coupler module EC401.

*2: Unavailable for ordering AFV30D with CP461 due to the supply ends on October 19, 2019. Existing CP461 can be replaced with CP471. Replacement from CP461 to CP471 is prohibited to perform by a user. This replacement must be done by the service engineer authorized by Yokogawa Electric Corporation. CP471 can be combined with the style code S3 or later of ESB bus coupler module EC401.

*3: To meet the safety standards and EMC standards, the unit must be installed in a keyed metallic cabinet.

*4: When used in combination with ACUKT, specify this option code “/HKU.”

*5: Select the option code “/ATDOC” to follow the ATEX Directive for use in potentially explosive atmospheres.
ORDERING INFORMATION
Specify model and suffix codes.
For selecting the right products for explosion protection, please refer to TI 33Q01J30-01E without fail.

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