MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

YOKOGAWA

AFV30D-A41262

DUPLEXED FIELD CONTROL UNIT

Used with the applicable CENTUM VP configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Yokogawa GS 33J60E10-01EN, pp. 1–3 and 6

General Specifications

GS 33J60E10-01EN

Models AFV30S, AFV30D
Field Control Unit
Duplexed Field Control Unit
(for FIO, 19-inch Rack Mountable Type)

CENTUM VP

[Release 6]

■ 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).

■ STANDARD SPECIFICATIONS

For the installation specifications and the environmental conditions common to the systems, refer to “Integrated Production Control System CENTUM VP System Overview” (GS 33J01A10-01EN).

● Memory Protection During Power Failure

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

● READY 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 Prodction Control Systrm CENTUM VP System Overview" (GS 33J01A10-01EN)

● 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

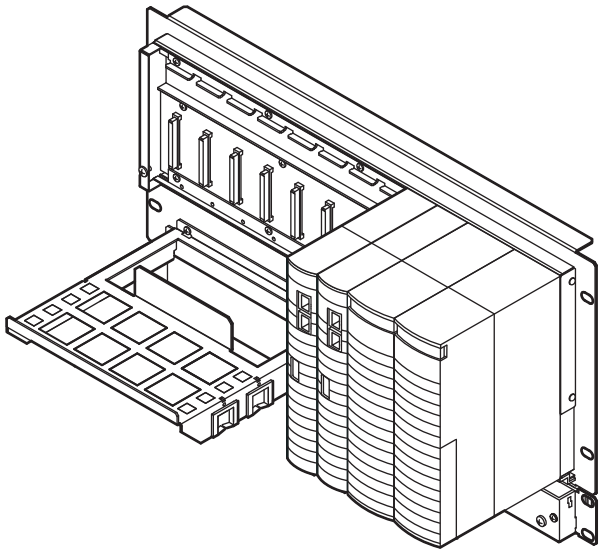
Max. 13/FCU

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.

● Module Configuration

Power Supply Module (PW481, 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.



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[19-inch Rack Mountable Type FCU]

● 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 33J60F51-01EN/GS 33J60F52-01EN).

For the limitations and precautions for installing I/O modules, see “FIO System Overview” (GS 33J60A10-01EN).

● 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

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GS 33J60E10-01EN
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● Power Consumption

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

● Weight

Approx. 7.0 kg (AFV30S)
Approx. 8.0 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
READY Contact Output: M4 screw terminal connection
Network: Connect UTP cable (CAT5e or better) to Layer 2 switch.

● System Configuration

This is a configuration example of an FCU and node units, and an ESB bus (including optical ESB bus) that connects them.

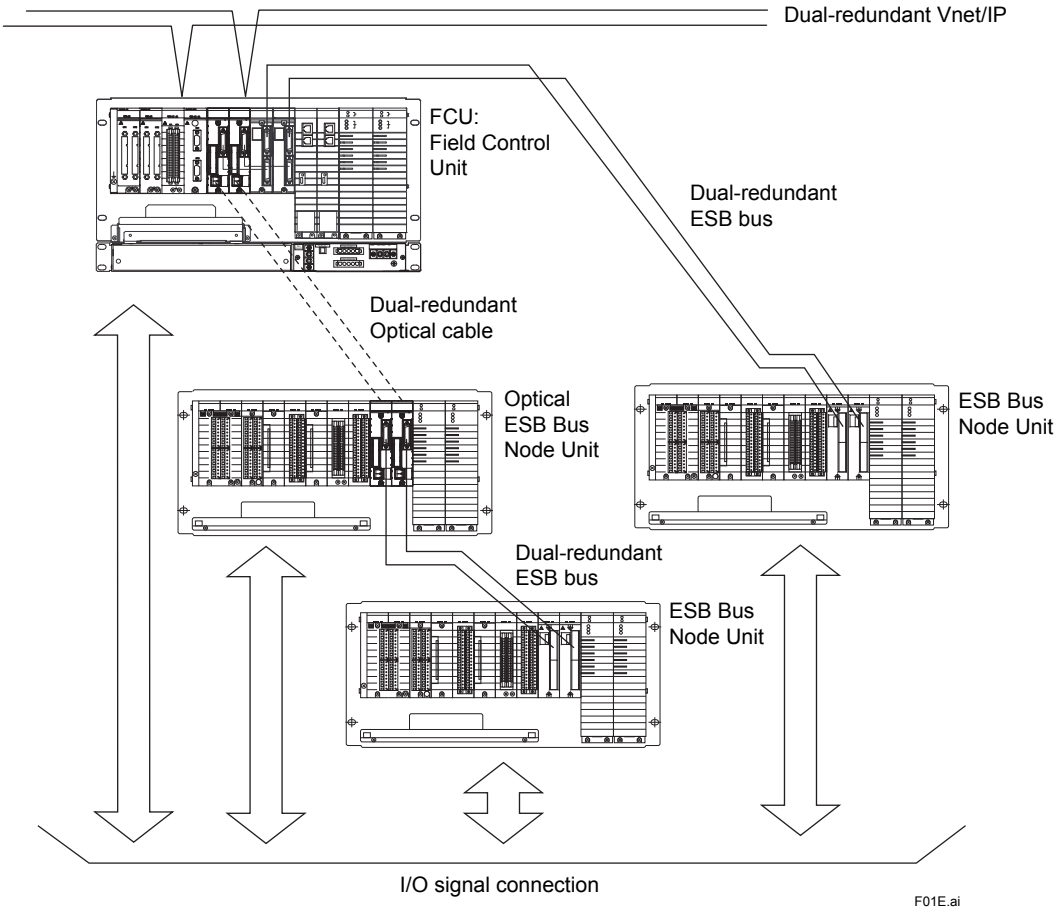


Figure System Configuration

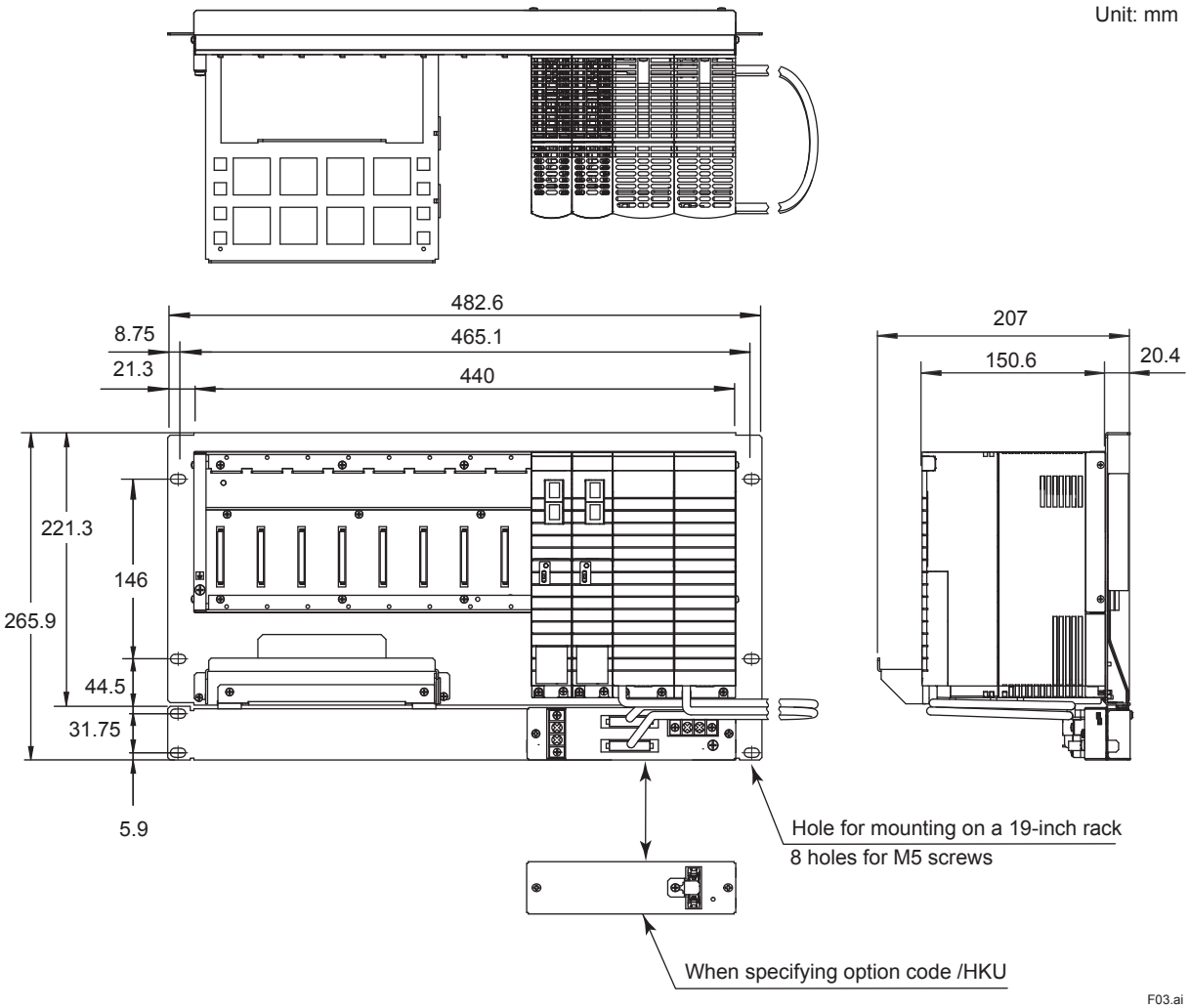
■ LIMITATIONS OF INSTALLATION AND NOTICES FOR INSTALLATION

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” (GS 33J60A10-01EN) and “Installation Guidance” (TI 33J01J10-01EN).

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■ EXTERNAL DIMENSIONS

Unit: mm



Nominal Tolerances :

Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.
The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

■ SOFTWARE REQUIREMENT

A software license is required for AFV30☐ separately. For details, refer to the GS “VP6F1700 Control Function for Field Control Station (for AFV30☐/ AFV40☐)” (GS 33J15C10-01EN) and “VP6F3100 Project I/O License” (GS 33J15A10-01EN).

■ REQUIREMENTS FOR USING SEM (SEQUENCE OF EVENTS MANAGER)

For using SEM, the hardware requires some conditions.
For details, refer to the GS “SEM Sequence of Events Manager (for FIO)” (GS 33J30D10-01EN).

■ STANDARD ACCESSORIES

The FCU is delivered with the following standard accessories.

Parts Names	Parts Numbers	Quantity	Remarks
Insulating bush	S9049PM	8	Accessory

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Duplexed Field Control Unit

		Description
Model	AFV30D	Duplexed Field Control Unit (for Vnet/IP and FIO, 19-inch Rack Mountable)
Suffix Codes	-A	Standard type (for CP471) (*1)
	-S	Standard type (for CP461) (*3)
	4	Dual-redundant Vnet/IP, dual-redundant power supply
	1	Always 1
	1	100 - 120 V AC power supply (*4)
	2	220 - 240 V AC power supply (*4)
	4	24 V DC power supply (*4)
	0	Basic type (*5)
	1	With ISA Standard G3 option (*5)
	5	Basic type with no explosion protection
	6	With ISA Standard G3 option and no explosion protection
	E	Basic type with explosion protection
	F	With ISA Standard G3 option and explosion protection
	1	LFS1700 Control function for field control station (for AFV30☐/AFV40☐, Vnet/IP and FIO) (*6)
	2	Always 2 (R6.01 or later)
Option Codes	/HKU	With HKU interface (*7)
	/ATDOC	Explosion Protection Manual (*8)
	/MRN	With Marine Standards (*2)

Note: The existing AFV30D-☐☐☐☐☐1 for CENTUM VP R5 can be used with CENTUM VP R6.01 or later.

*1: CP471 operates with CENTUM VP R6.01 or later version of Control Function for Field Control Station. Be sure to apply the software patch for supporting CP471 for CENTUM VP R6.01, R6.02, R6.03, and R6.04. CP471 can be combined with the style code S3 or later of ESB bus coupler module EC401. See GS 33J60E30-01EN.
*2: Select the option code "/MRN" if AFV30D with marine standard is required.
*3: 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. See GS 33J60E30-01EN.
*4: To meet the safety standards and EMC standards, the unit must be installed in a keyed metallic cabinet.
*5: These suffix codes are applicable to only AFV30D-S☐☐☐☐☐. They are no longer available.
*6: This suffix code is acceptable to only CENTUM VP R5.
*7: When used in combination with ACUKT☐, specify this option code "/HKU."
*8: Select the option code "/ATDOC" to follow the ATEX Directive for use in potentially explosive atmospheres.

■ APPLICABLE STANDARDS

Refer to the GS "Integrated Production Control System CENTUM VP System Overview (GS 33J01A10-01EN)."

■ ORDERING INFORMATION

Specify model and suffix codes.
For selecting the right products for explosion protection, please refer to TI 33Q01J30-01E without fail.

■ TRADEMARK ACKNOWLEDGMENT

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