MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

YOKOGAWA

ANT512-5F S1

OPTICAL ESB BUS REPEATER SLAVE MODULE

Used with the applicable CENTUM VP configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Yokogawa GS 33J60F52-01EN

General Specifications

GS 33J60F52-01EN

Models ANT411, ANT512 Optical ESB Bus Repeater Modules for 5 km to 50 km (for N-IO/FIO)

CENTUM VP

[Release 6]

■ GENERAL

The Optical ESB Bus Repeater Module for 5 km to 50 km converts the ESB bus to an optical signal and transmits it. The ESB bus transmission distance can be extended within the range from 5 km to 50 km by connecting the ANT411 Optical ESB Bus Repeater Master Module and ANT512 Optical ESB Bus Repeater Slave Module with an optical fiber cable.

The ESB bus transmission distance can be extended within the range of 5 km to 50 km by connecting the ANT411 Optical ESB Bus Repeater Master Module to A2EN501 N-ESB Bus Repeater Slave Module and A2EN501 N-ESB Bus Repeater Slave Module to ANT512 Optical ESB Bus Repeater Slave Module with an optical fiber cable.

● ANT411 Optical ESB Bus Repeater Master Module for 5 km to 50 km

This module can be installed in the Field Control Unit (AFV30☐/AFV40☐/A2FV50☐/A2FV70☐), Unit for Optical ESB Bus Repeater Module (ANT10U), ESB Bus Node Unit (ANB10☐), and Optical ESB Bus Node Unit (ANB11☐).

To connect the ANT411 to the ESB bus, specify “Connector unit for ESB Bus” (option code “/CU1N”). To terminate the ESB bus at the ANT411, specify “Connector unit with terminator for ESB Bus” (option code “/CU1T”).

● ANT512 Optical ESB Bus Repeater Slave Module for 5 km to 50 km

ANT512 is installed as standard in the Optical ESB Bus Node Unit (ANB11☐) as a slave module of the optical ESB bus. It can also be installed in the Unit for Optical ESB Bus Repeater Module (ANT10U).

To connect the ANT512 to the ESB bus, specify “Connector unit with ESB Bus connector” (option code “/BU1A” or “HU1A”). To not connect the ANT512 to the ESB bus, specify “Connector unit” (option code “/BU1B” or “/HU1B”).

To monitor the temperatures and fans in the cabinet, specify “With HKU interface” (option code “/HU1A” or “/HU1B”).

● Installation Position

The following table shows the units and numbers of slots in which the ANT411 and the ANT512 can be installed.

For the installation positions corresponding to the slot numbers, see “FIO System Overview” (GS 33J60A10-01EN), “N-IO System Overview” (GS 33J62A10-01EN), and “Field Control Unit, Cabinet Utility Kit (for RIO System Upgrade)” (GS 33J64E10-01EN).

Table ANT411 Optical ESB Bus Repeater Master Module for 5 km to 50 km

	Installable Unit and Slot Number		
	AFV30☐, AFV40☐, A2FV50☐, A2FV70☐	**ANB10☐, ANB11☐**	**ANT10U**
Single configuration (*1)	IO1, 3, 5	IO1, 3, 5, 7	IO1, 3, 5, 7, B1
Dual-redundant configuration (*2)	IO1 to 6	IO1 to 8	IO1 to 8, B1, 2

*1: A dummy cover is to be attached to the even-numbered slot of a pair of slots in which the module is installed.
*2: Install the module in the slots with the following numbers: IO1-2, IO3-4, IO5-6, IO7-8, and B1-2

Table ANT512 Optical ESB Bus Repeater Slave Module for 5 km to 50 km

	Installable Unit and Slot Number	
	ANB11☐	**ANT10U**
Single configuration (*1)	B1	IO1, 3, 5, 7, B1
Dual-redundant configuration (*2)	B1, 2	IO1 to 8, B1, 2

*1: A dummy cover is to be attached to the even-numbered slot of a pair of slots in which the module is installed.
*2: Install the module in the slots with the following numbers: IO1-2, IO3-4, IO5-6, IO7-8, and B1-2

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GS 33J60F52-01EN
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5th Edition July 5, 2018 (YK)

■ STANDARD SPECIFICATIONS

Function: ESB bus optical transport
Topology: chain and star connection
Maximum number of hops:
2 hops (for chain connection)
Maximum number of hops for each FCU (*1):
AFV30☐ or AFV40☐: 8 hops (for chain and star connection)
A2FV50☐ : 16 hops (for chain and star connection) (*2)
A2FV70☐: 8 hops (for chain and star connection)
Maximum transmission distance: 50 km (one hop)
Optical connector type:
LC (IEC61754-20-compliant)
Number of optical fiber cores: 2
Current consumption: 0.5 A
Weight: Approx. 0.25 kg (main body only)

*1: The number of paired connection between Master Module and Slave Module.
*2: Up to 24 hops are possible only when A2FV50☐ is used for FCU and star connection is configured with ANT4☐1 via EC402. (Supported by CENTUM VP R6.06 or later.)

● Optical Fiber Cable Specifications

		Optical fiber specifications
Optical connector type		LC (compliant with IEC61754-20)
Max. Permissible Optical Loss		3 to 16 dB at 1.55 μm (*1)
Optical fiber	**Type**	Quartz single-mode optical fiber (*2)
	Required number of cores	2
	Max. Length	50 km

*1: When the optical attenuation between the ANT411 and ANT512 is less than 3 dB, use the attenuator to reduce the attenuation by 3 dB.
*2: JIS C 6835 SSMA -9.3/125 or IEC 60793-2-50 B1.1 type

● HKU Interface (ANT512 Option) (*1)

When ANT512's option code /HU1A or /HU1B is specified, the environmental information of the cabinet where the modules are installed can be transmitted to FCU via optical ESB bus.

The FCU monitors the connected cabinet's environmental conditions and displays HKU's operating status as well as system alarm on HIS.

*1: HKU Interface is only available in case of configured with AFV40☐ or AFV30☐ is installed in the Rittal cabinet by using ACUKT1 Cabinet Utility Kit.

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■ MODEL AND SUFFIX CODES

Optical ESB Bus Repeater Master Module

		Description
Model	ANT411	Optical ESB Bus Repeater Master Module 5 - 50 km (for N-IO/FIO)
Suffix Codes	-5	Standard type with no explosion protection
	-E	Standard type with explosion protection
	0	Basic type (only for maintenance purpose)
	3	With ISA Standard G3 option and temperature (-20 ˚C to 70 ˚C) option (only for maintenance purpose)
	E	Basic type (for ANT512-☐E, -☐F, and A2EN501-☐2)
	F	With ISA Standard G3 option and temperature (-20 to 70 ˚C) option (for ANT512-☐E, -☐F, and A2EN501-☐2)
Option Codes	/CU1N	Connector unit for ESB Bus
	/CU1T	Connector unit with terminator for ESB Bus

Optical ESB Bus Repeater Slave Module

		Description
Model	ANT512	Optical ESB Bus Repeater Slave Module 5 - 50 km (for N-IO/FIO)
Suffix Codes	-5	Standard type with no explosion protection
	-E	Standard type with explosion protection
	0	Basic type (only for maintenance purpose)
	3	With ISA Standard G3 option and temperature (-20 ˚C to 70 ˚C) option (only for maintenance purpose)
	E	Basic type (for ANT411-☐E, -☐F, and A2EN501-☐2)
	F	With ISA Standard G3 option and temperature (-20 to 70 ˚C) option (for ANT411-☐E, -☐F and A2EN501-☐☐2)
Option Codes	/BU1A	Connector unit with ESB Bus connector
	/BU1B	Connector unit
	/HU1A	Connector unit with ESB Bus connector and HKU I/F
	/HU1B	Connector unit with HKU I/F

Note: When Optical ESB bus repeater modules are connected via Optical ESB bus, the master side must be paired with one of the slave sides as described below.
- ANT411-☐0 or -☐3 for master side and ANT512-☐0, -☐3, ANB11S-3☐☐, -4☐☐, or ANB11D-4☐☐ for slave side
- ANT411-☐E or -☐F for master side and ANT512-☐E, -☐F, A2EN501-☐2, ANB11S-C☐☐, -D☐☐, or ANB11D-D☐☐ for slave side
- A2EN501-☐☐2 for master side and ANT512-☐E or -☐F for slave side

When using by dual-redundant configuration, the module for ESB bus1 should be the same as the module for ESB bus2.

■ APPLICABLE STANDARDS

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

■ ORDERING INFORMATION

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

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