MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

YOKOGAWA

ANT411-5F S1

OPTICAL ESB BUS REPEATER

Used with the applicable CENTUM VP configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Yokogawa GS 33K50F52-50E, March 2015, including suffix table on page 7

General Specifications

GS 33K50F52-50E

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

[Release 5]

■ 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.

● 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☐), 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

ANT502 or ANT512 are 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 (for Vnet/IP)” (GS33K50F10-50E).

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

	Installable Unit and Slot Number		
	AFV30☐, AFV40☐	**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 33K50F52-50E
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■ STANDARD SPECIFICATIONS

Function: ESB bus optical transport
Connection type: chain type connection and star type connection
Maximum number of connectable stages: 2 (for chain type connection)
Maximum number of connection (*1): 8 (for chain type and star type connection)
Maximum transmission distance: 5 km to 50 km (when using ANT411, ANT512, and ANB11☐)
Current consumption: 0.5 A (for ANT411/ANT512)
Weight: 0.25 kg (main body only) (for ANT411/ANT512)

*1: The number of paired connection between ANT411 and ANT512.

● 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.

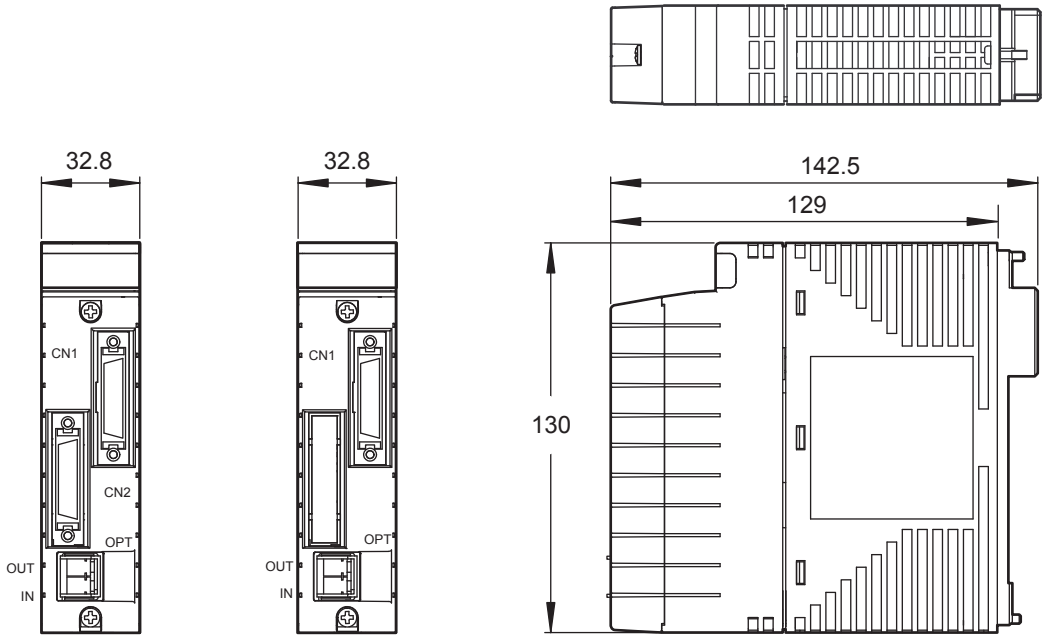
*1: HKU Interface is only available in case of configured with AFV40☐ or AFV30☐ is installed in the Rittal cabinet by using ACUKT1 Cabinet Utility Kit.

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■ EXTERNAL DIMENSION

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

Unit: mm



ANT411-50/CU1N
(Connector unit
for ESB Bus)

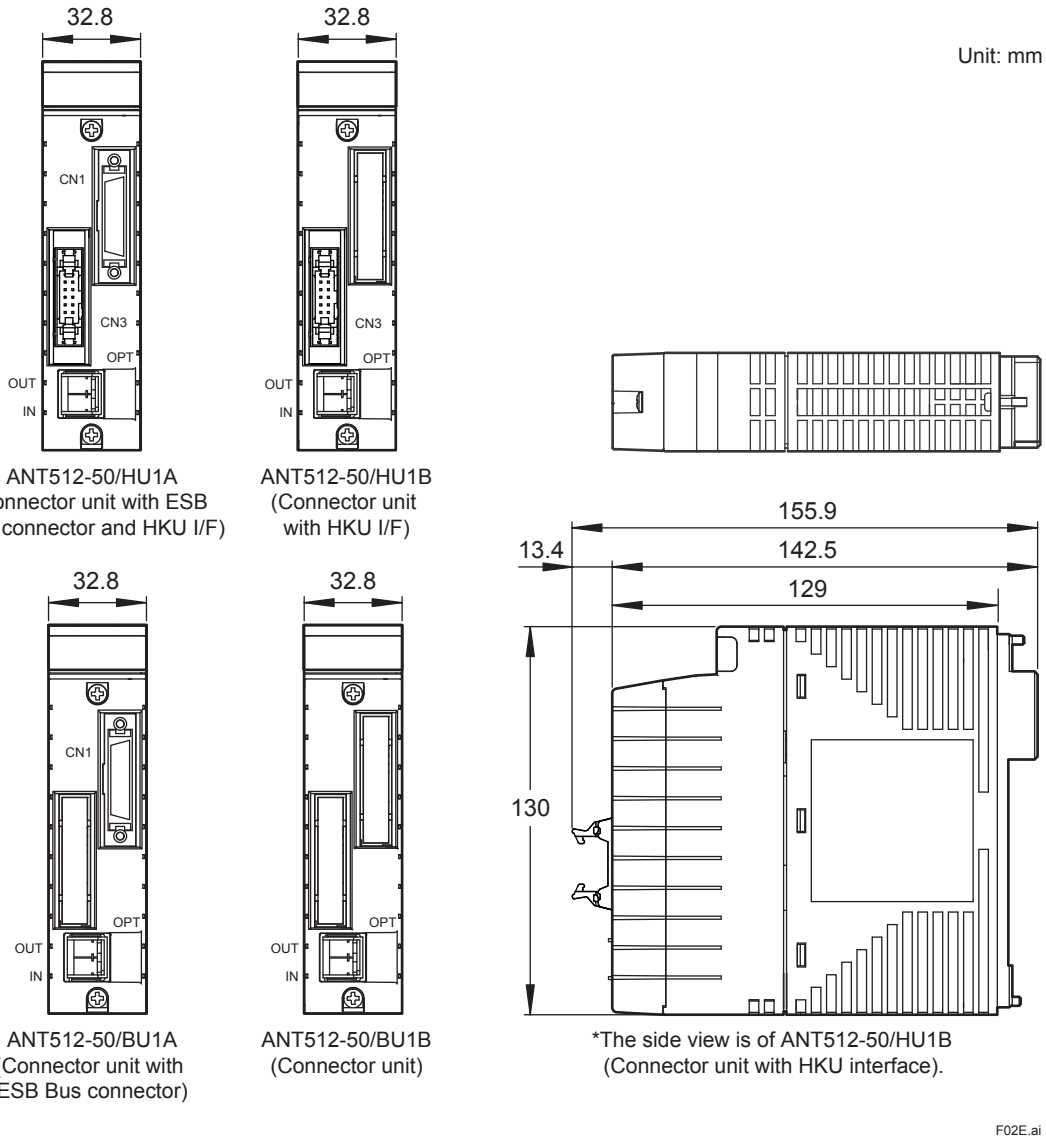
ANT411-50/CU1T
(Connector unit with
terminator for ESB Bus)

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

Unit: mm



ANT512-50/HU1A
(Connector unit with ESB Bus connector and HKU I/F)

ANT512-50/HU1B
(Connector unit with HKU I/F)

ANT512-50/BU1A
(Connector unit with ESB Bus connector)

ANT512-50/BU1B
(Connector unit)

*The side view is of ANT512-50/HU1B (Connector unit with HKU interface).

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■ RESTRICTIONS AND CAUTIONS FOR INSTALLATION

- Dual-redundant modules should be installed in a pair of continuous slots.
- The module for ESB bus 1 should be installed in an odd-numbered slot, and the module for ESB bus 2 in an even-numbered slot.

■ EXAMPLE OF CONNECTION STRUCTURE

● Example of Chain Type Connection

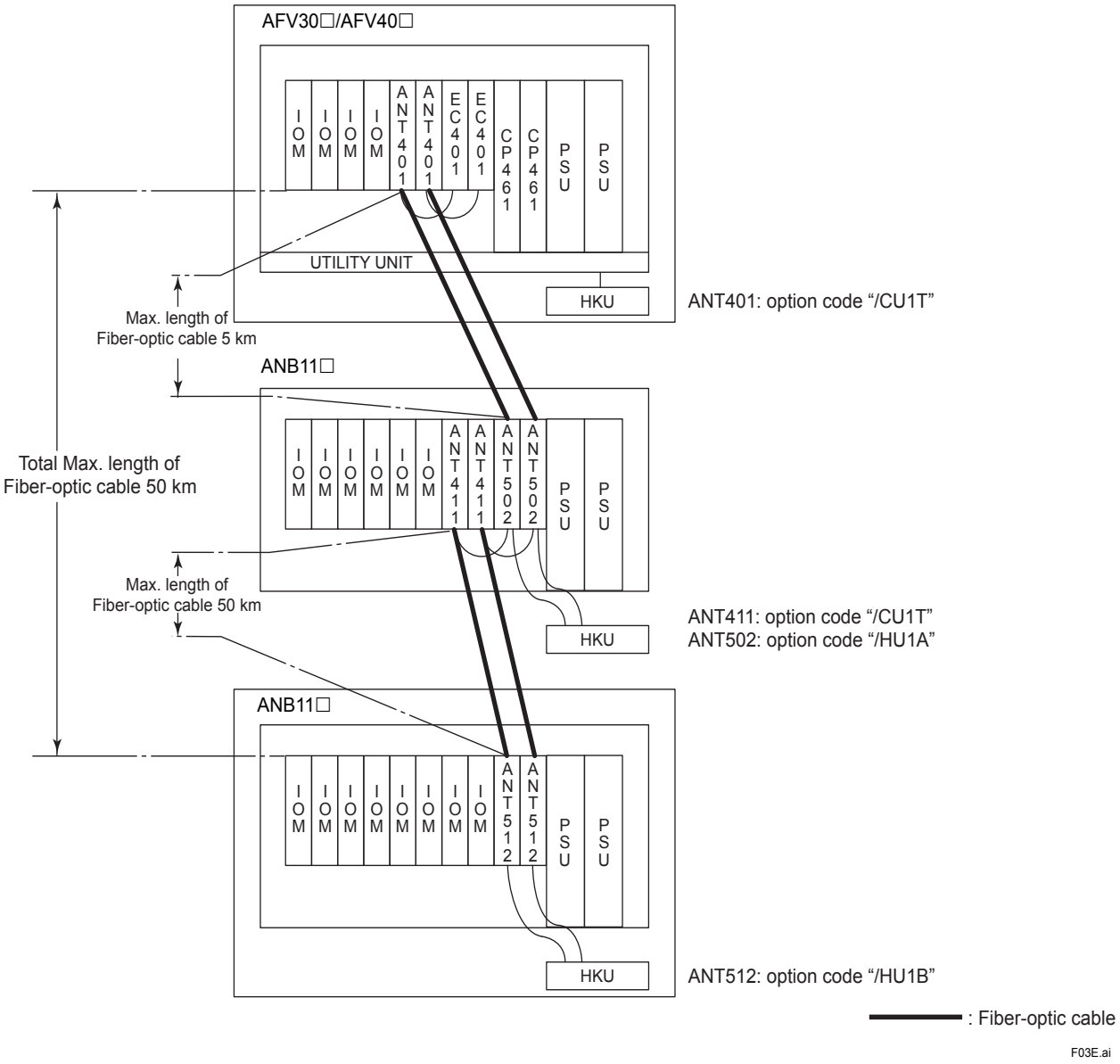
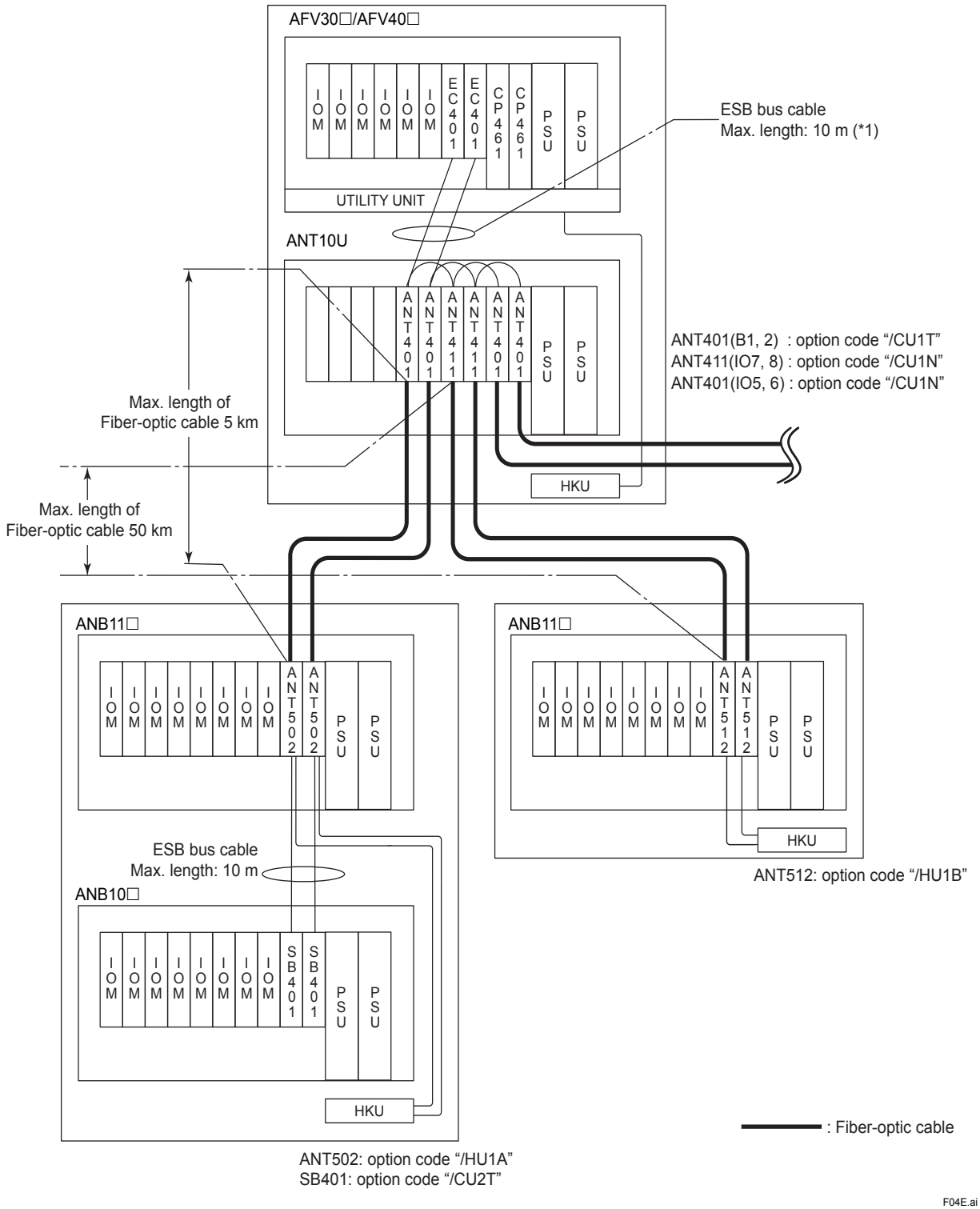


Figure Example of Chain Connection Using HK Function

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● Example of Star Type Connection



*1: The above diagram shows an example of ESB Bus wiring and its termination.
The wiring can be done from left to right or vice versa in between EC401 and ANT401 and among ANT401 modules.

Figure Example of Star Connection Using HK Function

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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)
	F	With ISA Standard G3 option and temperature (-20 to 70 ˚C) option (for ANT502-☐E, -☐F)
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)
	F	With ISA Standard G3 option and temperature (-20 to 70 ˚C) option (for ANT401-☐E, -☐F)
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, ANB11S-C☐☐, -D☐☐, or ANB11D-D☐☐ for slave side

■ 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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