

General Specifications

Models SNT411, SNT511
Optical ESB Bus Repeater Module
5 km to 50 km



GS 32Q06L15-31E

■ GENERAL

The Optical ESB Bus Repeater Module converts ESB Bus, which connects among safety control unit, safety node unit and N-IO node, to optical signal.

ESB Bus transmission distance can be extended by connecting Optical ESB Bus Repeater Master Module (SNT411) and Optical ESB Bus Repeater Slave Module (SNT511) with an optical fiber cable.

The ESB bus transmission distance can be extended within the range of up to 50 km by connecting Optical ESB Bus Repeater Master Module (SNT411) at master side to N-ESB Bus Module (S2EN501) at slave side and N-ESB Bus Module (S2EN501) at master side to Optical ESB Bus Repeater Slave Module (SNT511) at slave side with an optical fiber cable.

● SNT411 Optical ESB Bus Repeater Master Module

This module is connected from ESB Bus Coupler Module (SEC401, SEC402) on the safety control unit or ESB Bus Interface Module (SSB401) on the safety node unit (SNB10D) through ESB Bus cable.

There are two types of ESB Bus Repeater Modules: with or without a terminator.

● SNT511 Optical ESB Bus Repeater Slave Module

This module is connected from Optical ESB Bus Repeater Master Module or N-ESB Bus Module through fiber-optic cable. Furthermore, it is connected through ESB Bus cable to ESB Bus Interface Module (SSB401) on the safety node unit (SNB10D).

■ STANDARD SPECIFICATIONS

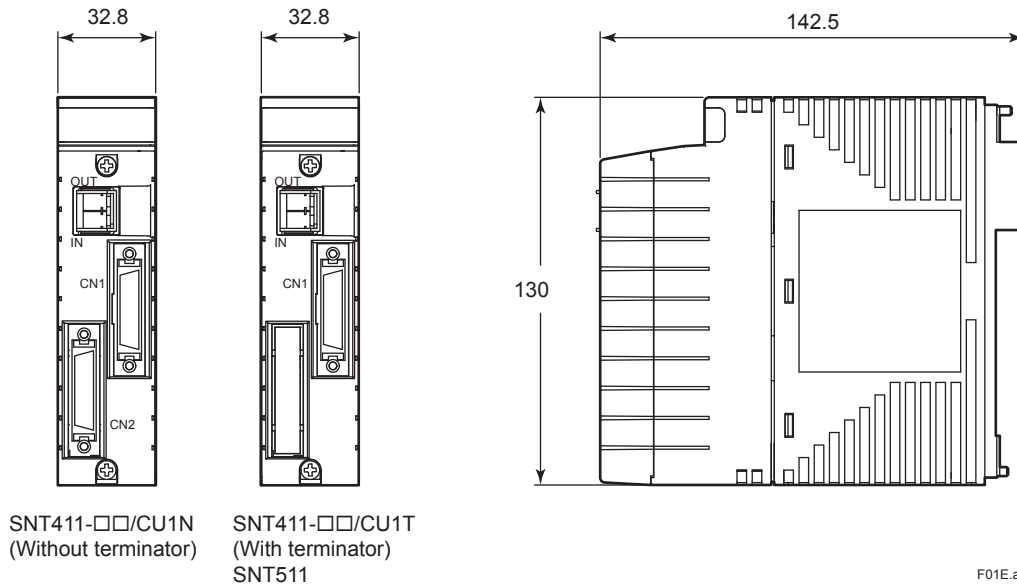
Function:	ESB Bus optical transport function (Vnet/IP only)
Connection method:	Star type connection Chain type connection Available for both star and chain type connection.
Number of connecting stage:	Maximum two
Transmission distance:	5 km to 50 km (total two stages) Attenuate the optical power by 3-4 dB in between SNT411 and SNT511, S2EN501 and SNT511, or SNT411 and S2EN501. When the optical attenuation by the optical fiber cable is less than 3 dB, use an attenuator to reduce the attenuation by 3 dB. (*1)
Current consumption:	0.5 A
Weight:	Approx. 0.3 kg

*1: When both SNT411's and SNT511's style codes are S1, use an attenuator to reduce the attenuation by 1-2 dB.

EXTERNAL DIMENSIONS

SNT411, SNT511 Optical ESB Bus Repeater Module

Unit: mm



Nominal Tolerances :

When the reference dimension is over 0.5 mm and equal or less than 120 mm, its nominal tolerance is ± 0.8 mm, while its combination of nominal tolerance is ± 1.5 mm.

When the reference dimension is over 120 mm, its nominal tolerance is in accordance with JEM 1459.

RESTRICTIONS AND CAUTIONS FOR MOUNTING

- Combination of SNT411 and SNT511 or that of SNT401 and SNT501 can be placed in the same SCS at the same time.
- Mount a set of Optical ESB Bus Repeater Module for duplex on a pair of continuous slots. The module for ESB Bus 1 is always mounted on a slot with odd number, and the module for ESB Bus 2 on a slot with even number.
- When mounting on SNT10D at 60 to 70 °C, leave two slots next to Power supply module and mount one set in every two slots, and leave two slots between one set SNT□11. Unit for Optical Bus Repeater Module (SNT10D) is a unit to install Optical ESB Bus Repeater Modules. Refer to “Unit for Optical Bus Repeater Module (Rack Mountable Type)” (GS 32Q06K11-31E).
- For restrictions regarding mounting S2SC70□, SSC60□, SSC50□ and SNB10D, refer to “ProSafe-RS Outline of I/O Modules (for FIO)” (GS 32P06K60-01EN).
- Serial communication modules (ALR111 and ALR121) cannot be mounted on SNB10D placed more than 5 km away via optical ESB bus repeater module.

System Requirements

Optical ESB Bus Repeater Module can be used from the following revisions or later.

SENG: R1.03

SCS: R1.03

EXAMPLE OF CONNECTION STRUCTURE

● Example of Chain Type Connection

For chain type connection, there are two structures: one is to mount the optical modules on Safety Control Unit and Safety Node Unit; the other is to mount the optical modules on the dedicated SNT10D (Unit for Optical Bus Repeater Module). It is also possible to mix these two structures for connection. There are two occasions: using SNT10D and not using SNT10D.

Example of not using SNT10D

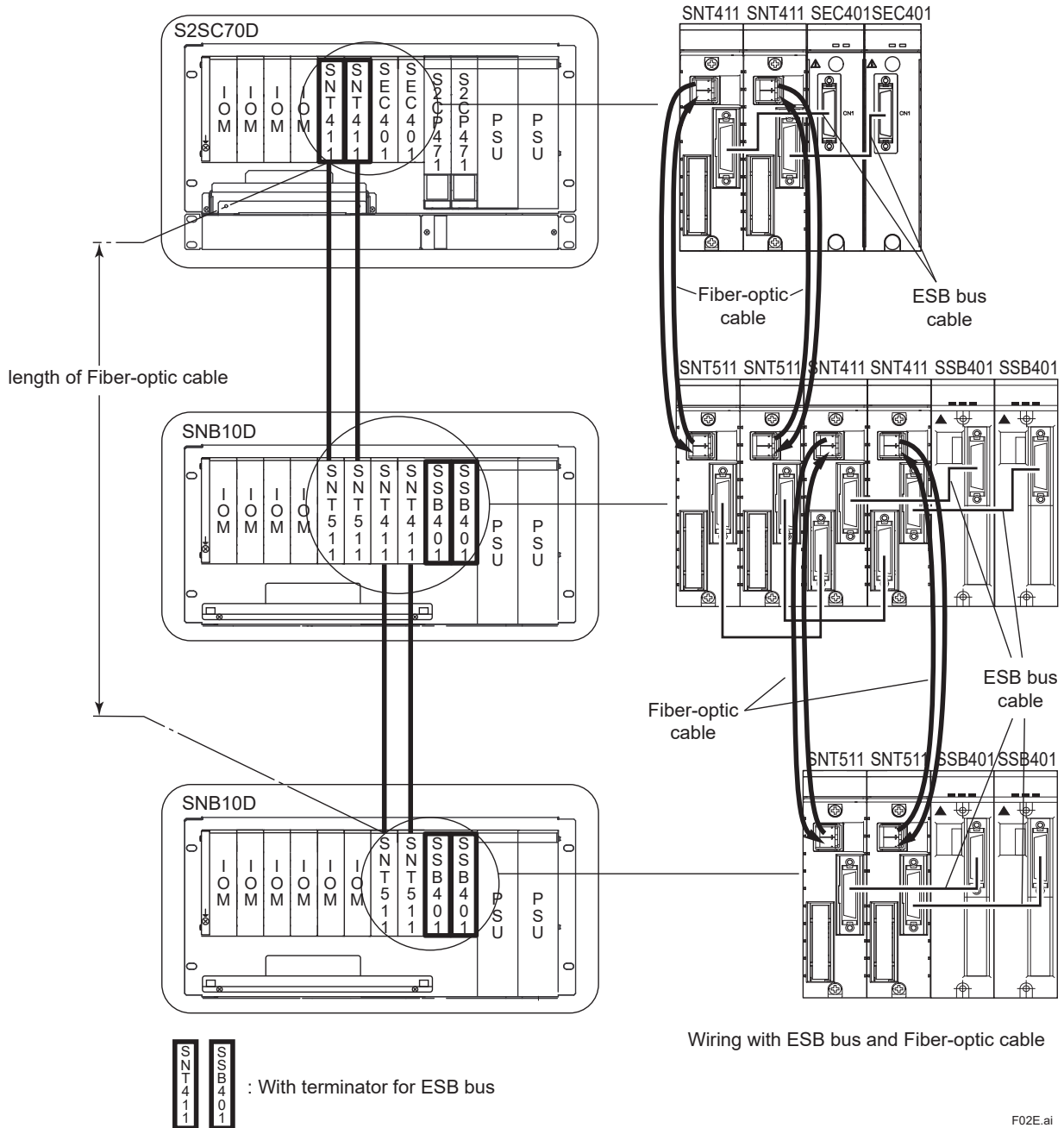
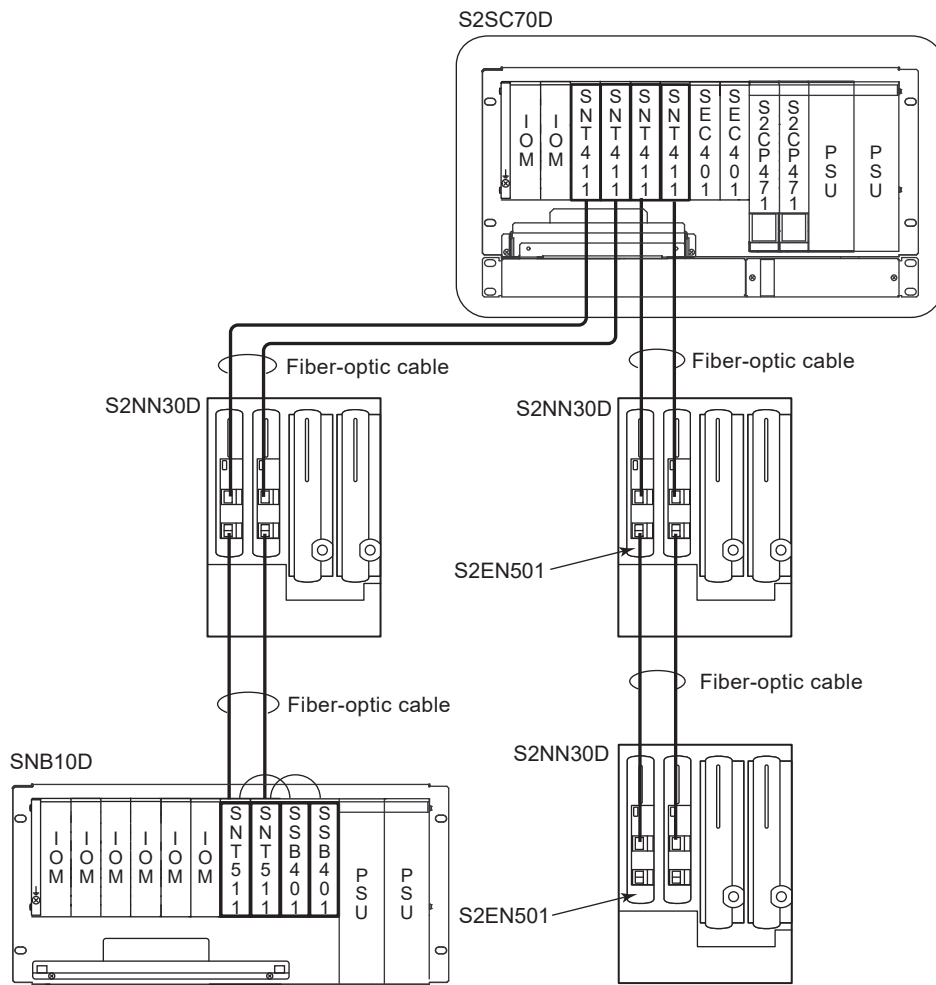


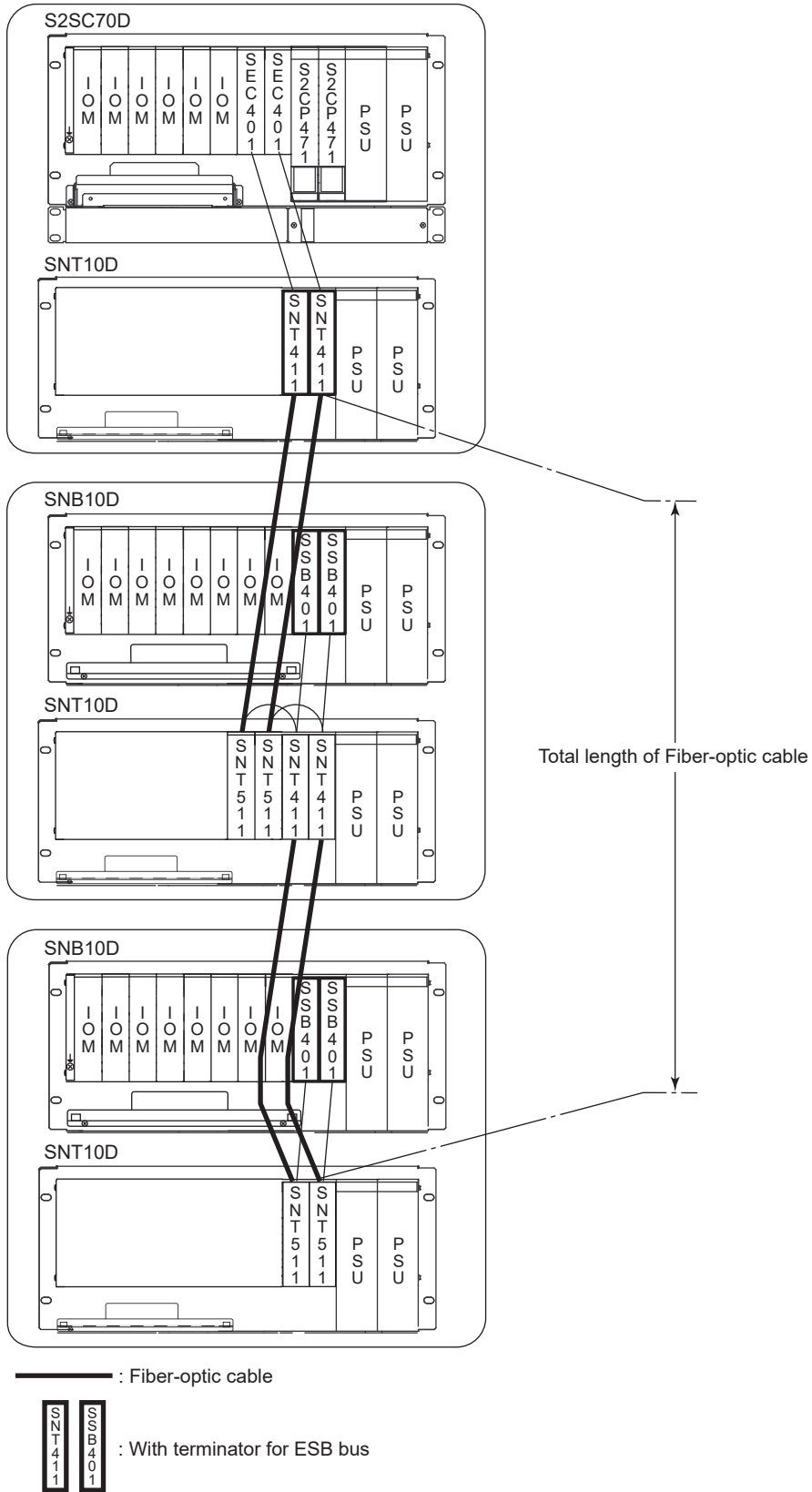
Figure Example of Chain Type Connection



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Figure Example of Chain Type Connection for N-IO node

Example of using SNT10D



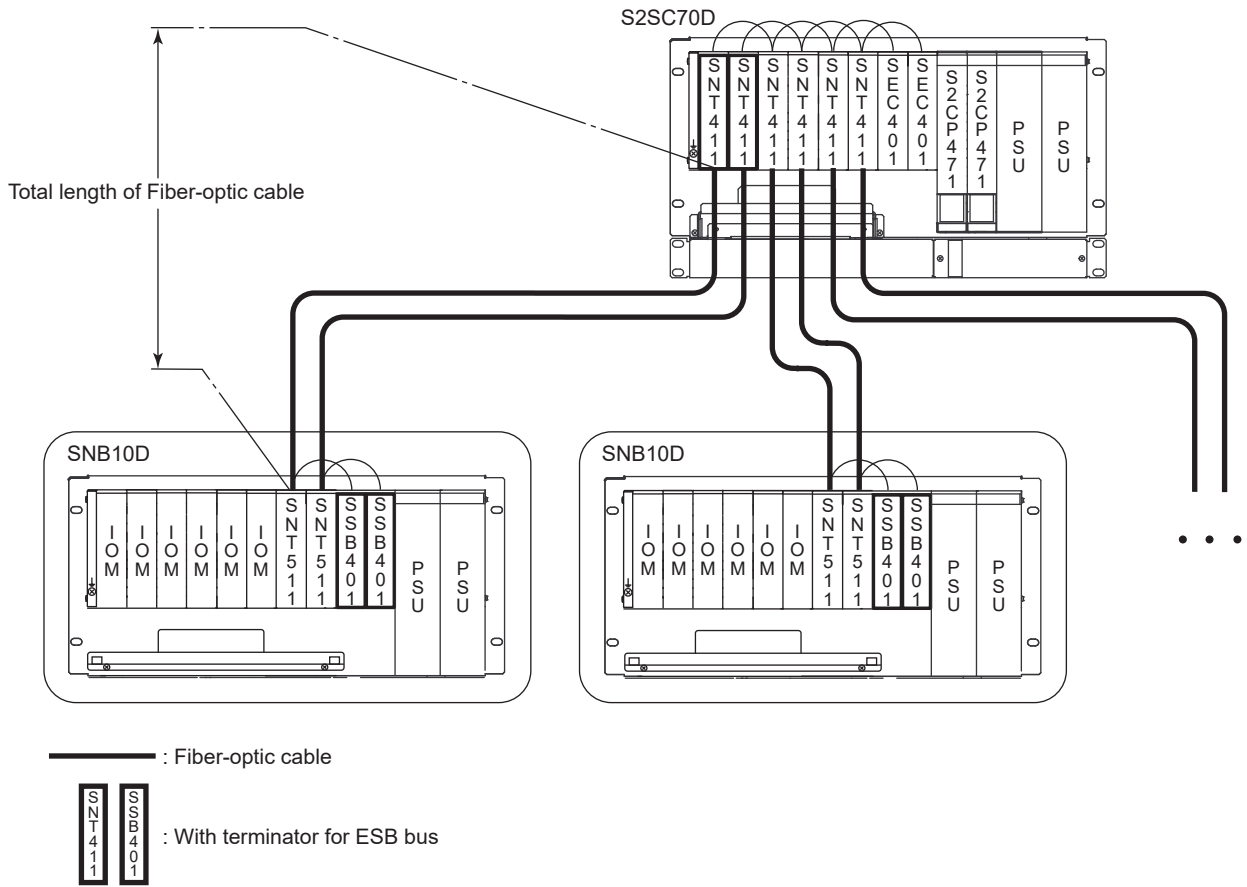
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Figure Example of Chain Type Connection

● Example of Star Type Connection

In star type connection, it is possible to use the dedicated SNT10D (Unit for Optical Bus Repeater Module) as a HUB of ESB Bus. There are two occasions: using SNT10D and not using SNT10D.

Example of not using SNT10D



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Figure Example of Star Type Connection

Example of using SNT10D

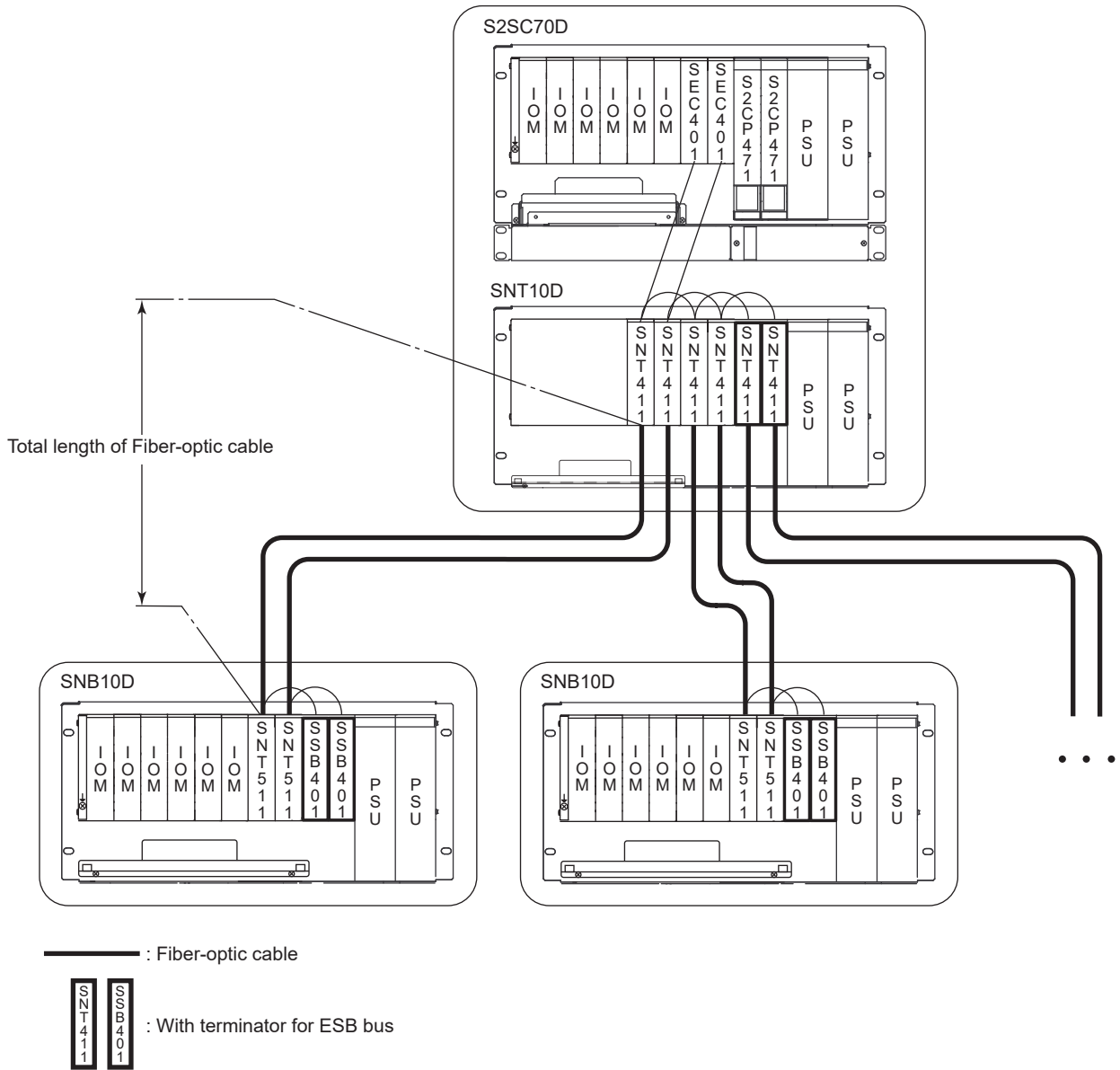


Figure Example of Star Type Connection

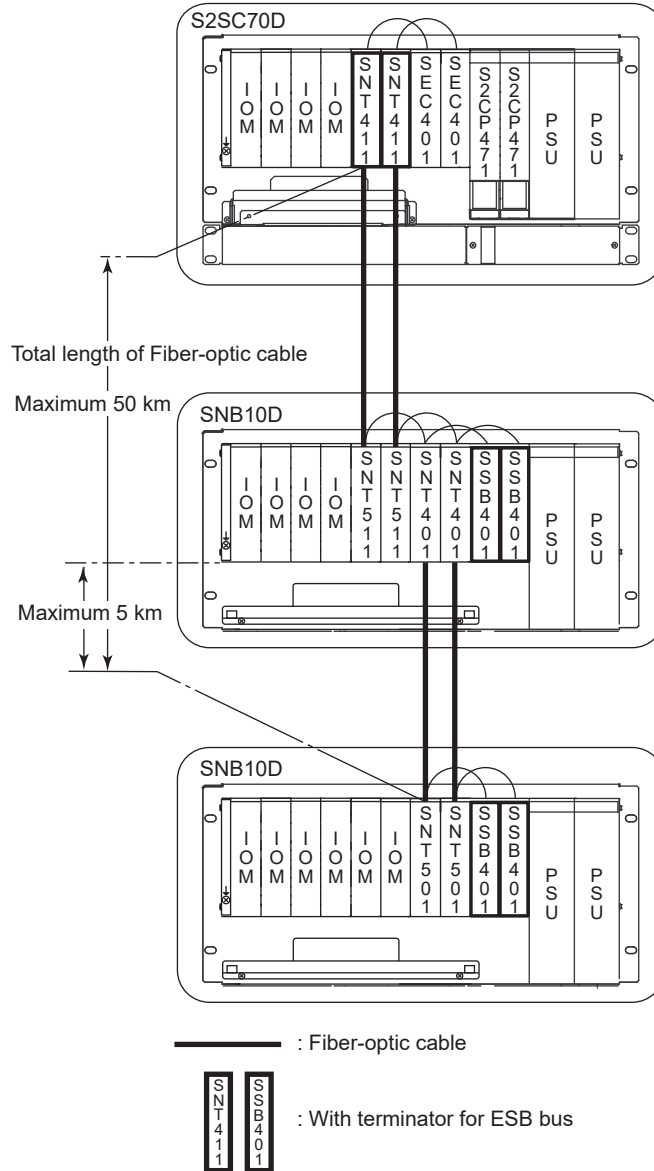
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● Total Length of Fiber-optic Cable

When SNT401/SNT501, SNT411/SNT511 and S2EN501 are mixed, fiber-optic cable is extendable maximum 50 km. There is a following restriction.

Example:

When combination of SNT401 and SNT501 and that of SNT411 and SNT511 are mixed and the length of cable for SNT401 and SNT501 is 5 km, the length of cable for SNT411 and SNT511 must be as long as 45 km (50 km – 5 km).



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■ MODEL AND SUFFIX CODES

		Description
Model	SNT411	Optical ESB Bus Repeater Master Module 5 km to 50 km
Suffix Codes	-5	With no explosion protection
	-E	With explosion protection
	3	ISA Standard G3 and temperature (-20 to 70 °C) (only for maintenance purpose)
	F	ISA Standard G3 and temperature (-20 to 70 °C) (for SNT511-□F and S2EN501-□□□□□□ (*1))
Option Codes	/CU1N	Connector unit for ESB bus [Part Number: S9345FA]
	/CU1T	Connector unit with terminator for ESB bus [Part Number: S9346FA]

		Description
Model	SNT511	Optical ESB Bus Repeater Slave Module 5 km to 50 km
Suffix Codes	-5	With no explosion protection
	-E	With explosion protection
	3	ISA Standard G3 and temperature (-20 to 70 °C) (only for maintenance purpose)
	F	ISA Standard G3 and temperature (-20 to 70 °C) (for SNT411-□F and S2EN501-□□□□□□ (*1))

Note: The suffix code of the module for bus 1 and the module for bus 2 must be same.

Note: When optical ESB bus repeater modules are connected via fiber-optic cable, the master side must be paired with the slave side as described below.

Master side	Slave side
SNT411-□3	SNT511-□3
SNT411-□F	SNT511-□F
SNT411-□F	S2EN501-□2□□□□□
S2EN501-□□2□□□□	SNT511-□F

*1: S2EN501 is a module installed in S2NN30D.

■ CONFORMITY STANDARDS

Refer to "ProSafe-RS Standards Compliant Models" (GS 32P01B60-01EN).

■ ORDERING INFORMATION

Specify the model and suffix codes when ordering.

For selecting the right products for explosion protection, please refer to TI 32S01J30-01E without fail.

■ TRADEMARKS

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