General Specifications

Model ALE111
Ethernet Communication Module

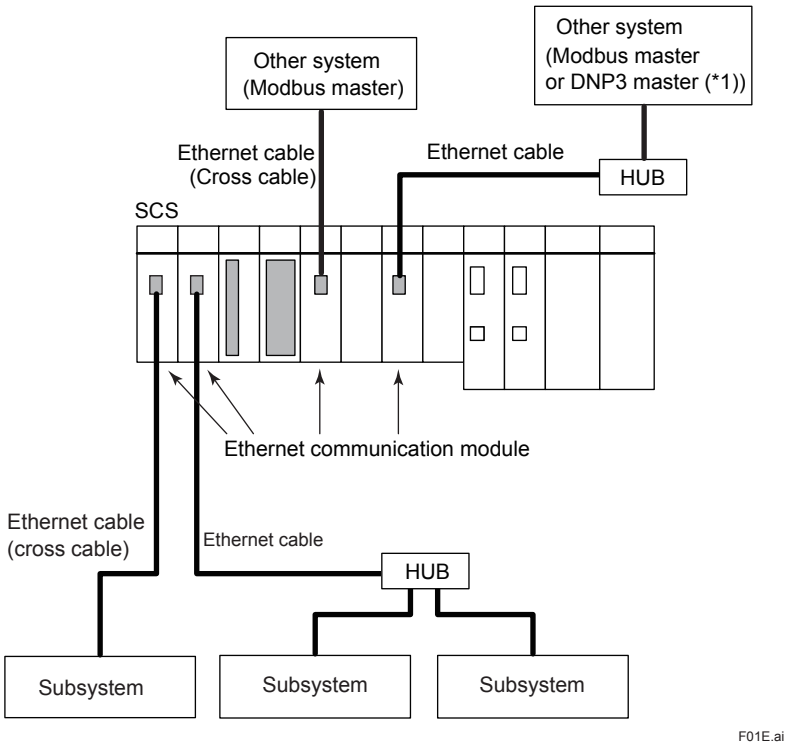
ProSafe-RS

GS 32P06K51-01EN

■ GENERAL

This document describes about Model ALE111 Ethernet communication module used with a safety control station (SCS) for performing Modbus communication and DNP3 communication.

By using the SCS's Modbus slave communication function, the data in SCS can be set or referred to by the Modbus master which is as separate system from SCS via a Ethernet communication module. Furthermore, the subsystem data such as from sequencers can be set or referred to via a Ethernet communication module using SCS's subsystem communication function.
This Ethernet communication module can be mounted on a safety control unit and a safety node unit.



*1: ALE111 communication module mounted on SSC57☐ can be connected to a DNP3 master.

Figure System configuration example of the Ethernet communication module

■ HARDWARE SPECIFICATIONS

Hardware specifications of ALE111 Ethernet communication module are as shown below. This module is interference-free module that has no interference with the safety loop.

Table Ethernet communication module hardware specification

Item	Specifications
Model	**ALE111 (*1)**
Physical layer interface	IEEE 802.3 10BASE-T Half-duplex
Connection method	Point-to-point
Connector	RJ-45
Transmission speed	10 Mbps
Transmission route	100 ohm twisted-pair cable (not shielded)
Transmission distance	1 segment, 100 m (in between SCS and other systems, or SCS and HUB)
Installation method	Mounted on S2SC70☐,SSC60☐, SSC50☐, SSC57☐, or SNB10D
No. of ports	One port
Media access control	CSMA/CD
Communication functions (*2)	Modbus slave communication function, DNP3 slave function, subsystem communication function.
Current consumption	0.5 A
Weight	Approx. 0.3 kg

*1: ALE111 style code S1 and unit revision U:2 or later must be used.
*2: A unit of SCS is capable of handling multiple communication functions: however, different types of communication functions cannot be simultaneously performed on a Ethernet communication module.

■ OPERATING ENVIRONMENT

● For Modbus slave communication function and subsystem communication function

Hardware requirements
The Ethernet communication module runs on the following SCS.

S2SC70S, S2SC70D, SSC60S, SSC60D, SSC50S, SSC50D, SSC57S, SSC57D

Software requirements
The Ethernet communication module runs on the control functions on the following SCS.

RS4F1500 Safety Control Function (for S2SC70☐)
RS4F1300 Safety Control Function (for SSC60☐)
RS4F1100 Safety Control Function (for SSC50☐)
RS4F1170 Safety Control Function (for SSC57☐)

Engineering requirements
Engineering work can be performed with RS4E5100 safety system engineering and maintenance function.

● For DNP3 slave function

Hardware requirements
The Ethernet communication module runs on the following SCS.

SSC57S, SSC57D

Software requirements
The Ethernet communication module for DNP3 communication runs on the control functions on the following SCS.

RS4F1170 Safety Control Function (for SSC57☐)

Engineering requirements
Engineering work can be performed with RS4E5100 safety system engineering and maintenance function with RS4E5700 FAST/TOOLS integration package.

■ INSTALLATION ENVIRONMENT

RS4F1500 safety control function (for S2SC70☐)

No. of communication modules to be mounted (*1)	Max. 2 units/SCS (*2) (for Modbus slave communication function)
	Max. 4 units/SCS (*2) (for subsystem communication function)

*1: Since Modbus slave communication function and subsystem communication function modules can be mounted on the same SCS, the maximum number of communication modules is 6 units/SCS.
*2: This is the sum of ALR111, ALR121, and ALE111.

RS4F1300 safety control function (for SSC60☐)

No. of communication modules to be mounted (*1)	Max. 2 units/SCS (*2) (for Modbus slave communication function)
	Max. 4 units/SCS (*2) (for subsystem communication function)

*1: Since Modbus slave communication function and subsystem communication function modules can be mounted on the same SCS, the maximum number of communication modules is 6 units/SCS.
*2: This is the sum of ALR111, ALR121, and ALE111.

RS4F1100 safety control function (for SSC50☐)

No. of communication modules to be mounted (*1)	Max. 2 units/SCS (*2) (for Modbus slave communication function)
	Max. 4 units/SCS (*2) (for subsystem communication function)

*1: Since Modbus slave communication function and subsystem communication function modules can be mounted on the same SCS, the maximum number of communication modules is 6 units/SCS.
*2: This is the sum of ALR111, ALR121, and ALE111.

RS4F1170 safety control function (for SSC57☐)

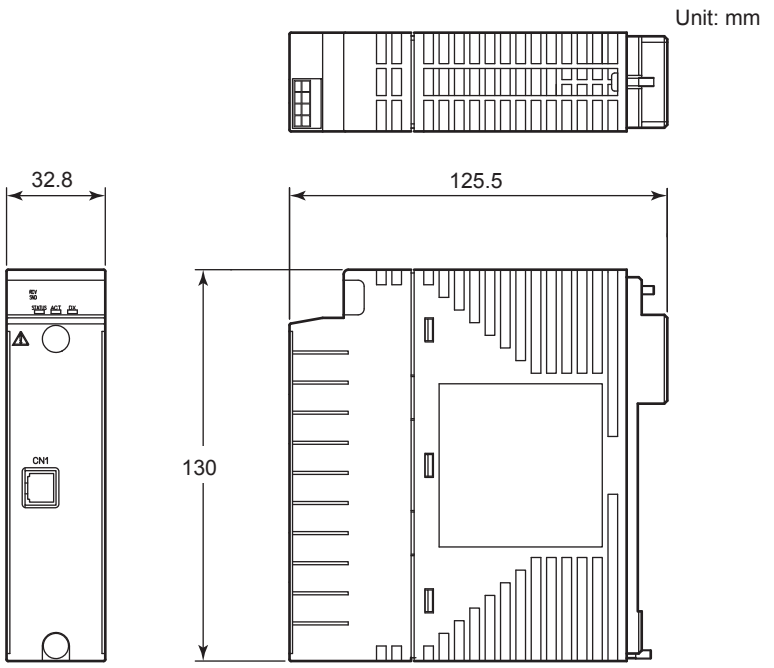
No. of communication modules to be mounted (*1)	Max. 2 units/SCS (*2) (*3) (for Modbus slave communication function)
	Max. 2 units/SCS (*3) (for DNP3 slave function)
	Max. 4 units/SCS (*2) (for subsystem communication function)

*1: Since Modbus slave communication function, DNP3 slave communication function, and subsystem communication function modules can be mounted on the same SCS, the maximum number of communication modules is 8 units/SCS.
*2: This is the sum of ALR111, ALR121, and ALE111.
*3: At ProSafe-RS R4.01 or earlier, only one module of ALE111 for DNP3 slave function is available per SCS.

■ EXTERNAL DIMENSIONS

● ALE111 Ethernet communication module

Unit: mm



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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.

■ MODEL AND SUFFIX CODES

		Description
Model	ALE111	Ethernet Communication Module
Suffix Codes	-S	Standard Type
	5	With no explosion protection
	E	With explosion protection
	1	With ISA Standard G3
	3	With ISA Standard G3 and temperature

■ CONFORMIY STANDARDS

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

■ ORDERING INFORMATION

Specify the model, suffix code(s).
For selecting the right products for explosion protection, please refer to TI 32S01J30-01E without fail.

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