General Specifications

Models ALR111, ALR121
Serial Communication Modules

ProSafe-RS

GS 32Q06K50-31E

■ GENERAL

This document describes about Models ALR111 and ALR121 Serial Communication Modules used with a safety control station (SCS) for performing Modbus 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 serial communication module. Furthermore, the subsystem data such as from sequencers can be set or referred to via a serial communication module using SCS's subsystem communication function.

These serial communication modules can be mounted on SSC60□, SSC50□, SSC57□, and SSC10□ safety control units and SNB10D safety node unit that are connected with safety control units by ESB bus.

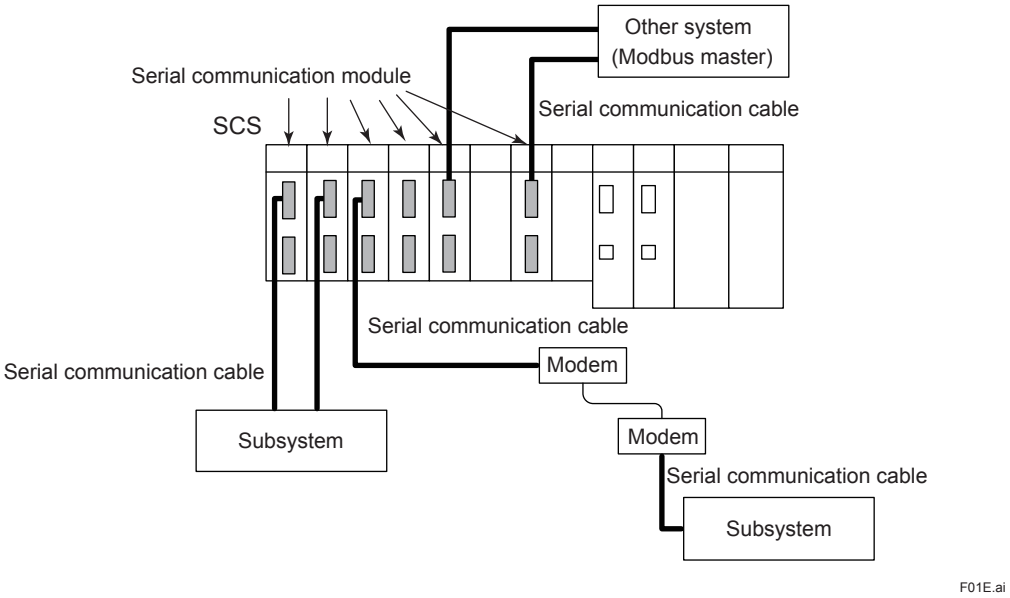

Figure A sample configuration of the serial communication modules

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■ HARDWARE SPECIFICATIONS

Hardware specifications of ALR111 and ALR121 serial communication modules are as shown below. These modules are interference-free modules that have no interference with the safety loop.

Table Serial Communication Module Hardware Specifications

Item	Specifications	
Model	**ALR111**	**ALR121**
Interface	RS-232C	RS-422/RS-485 (4-wire system)
Connection method	Point-to-point	Point-to-point (RS-422) Multipoint (RS-485)
Communication function	Half-duplex	
Synchronization method	Start-stop synchronization	
Transmission speed	1200/2400/4800/9600/19200/38400 bps	
Transmission code	binary	
Character length	8 bits (Fixed to 8 bit on the Modbus slave communication function and the subsystem communication function)	
Stop bit length	1/2 bits (Fixed to 1 bit on the subsystem communication function)	
Parity check	None/even/odd	
Lag time after data transmission	1 ms	
Transmission distance	Maximum 15 m	Maximum 1200 m (total extended length)
Installation method	Mounted on SSC60☐, SSC50☐, SSC57☐, SSC10☐, or SNB10D (*1)	
I/O wiring	AKB131, AKB132, AKB135, AKB136 cables, etc.	Cable with 3-pair shield, AKB161, or AKB162
Wiring connection	D-sub-9-pin (female × 2 ports)	Clamped with terminal block's M4 screws (5 poles × 2 ports)
Communication function (*2)	Modbus slave communication function, subsystem communication function	
Current consumption	0.5 A	0.5 A
Weight	Approx. 0.3 kg	Approx. 0.34 kg

*1: SNB10D connects with SSC60☐, SSC50☐, SSC57☐, or SSC10☐ by ESB bus.
*2: A unit of SCS is capable of handling multiple communication functions: however, different types of communication functions cannot be simultaneously performed on a serial communication module. It means that two ports must have identical communication functions.

■ OPERATING ENVIRONMENT

● Hardware Requirements

The serial communication module runs on the following SCS.

SSC60S, SSC60D, SSC50S, SSC50D, SSC57S, SSC57D, SSC10S, SSC10D

● Software Requirements

The serial communication module runs on the control functions on the following SCS.

CFS1300 Safety Control Functions Package (for SSC60☐ and Vnet/IP): for SSC60☐
CFS1100 Safety Control Functions Package: for SSC50☐/SSC10☐
CFS1170 Safety Control Functions Package: (for SSC57☐ and Vnet/IP-Upstream): for SSC57☐

● Engineering Requirements

Engineering work can be performed with CHS5100 Safety System Generation and Maintenance Function Package.

■ INSTALLATION ENVIRONMENT

CFS1300 Safety Control Functions Package (for SSC60☐ and Vnet/IP)

No. of communication modules to be mounted (*1)	Max. 2 units/SCS (*2) (for Modbus slave communication function)
	Max. 4 units/SCS (*3) (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.
*3: This is the sum of ALR111 and ALR121.

CFS1100 Safety Control Functions Package

No. of communication modules to be mounted (*1)	Max. 2 units/SCS (*2) (for Modbus slave communication function)
	Max. 4 units/SCS (*3) (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.
*3: This is the sum of ALR111 and ALR121.

CFS1170 Safety Control Function Package (for SSC57☐ and Vnet/IP-Upstream)

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

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