

## ■ HARDWARE SPECIFICATIONS

The serial communication modules (ALR111 and ALR121) hardware specifications are as shown below.

**Table Serial Communication Module Hardware Specifications**

Item	Specifications	
	ALR111	ALR121
Model	ALR111	ALR121
Interface	RS-232C	RS-422/RS-485
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 (*1)	
Transmission code	ASCII/binary	
Character length	7/8 bits	
Stop bit length	1/2 bits	
Parity check	None/even/odd	
Lag time after data transmission	1 ms (The lag time to start receiving data again after data transmission.)	
Transmission distance	Maximum 15 m	Maximum 1200 m (total extended length)
Installation method	Mounted on ANB10□, ANB11□, ANR10□, AFF50□, AFV10□, AFV30□, or AFV40□	
I/O wiring	AKB131, AKB132, AKB133, AKB134 cables, etc.	Cable with 3-pair shield, AKB161, or AKB162
Wiring connection	D-sub-9-pin (female x 2)	Clamped with terminal block's M4 screws (5 poles x 2)
Current consumption	0.5A	
Weight	0.3 kg	0.3 kg

\*1: The applicable transmission speed depends on the communication function, subsystems, and connection method.

An FCS collects data from subsystems or sets data with control calculations to subsystems using the builder functions by way of serial communication modules. A communication module selects only one communication function, thus two ports must have identical communication functions. It is not possible to select different communication function for every port. The communication functions and those transmission speeds for each communication module are as shown in the table below.

**Table Communication Functions for Communication Modules**

Communication function	ALR111	ALR121
FA-M3 communication	DR	DR
Modbus communication	DR	DR
MELSEC-A communication	DR	DR
YS communication with direct connection	NIL	SG
YS communication	NIL	SG
SLC500 communication	SG	SG
PLC-S communication	SG	SG

DR: Dual-redundant communication is applicable. SG: Only single communication is applicable. NIL: Not complied

**Table Transmission Speed by the Communication Function**

Communication function	Transmission speed (bps)
FA-M3 communication	1200/2400/4800/9600/19200/38400 (*1)
Modbus communication	1200/2400/4800/9600/19200
MELSEC-A communication	1200/2400/4800/9600/19200
YS communication (direct connection)	9600
YS communication	9600
SLC500 communication	1200/2400/4800/9600/19200
PLC-S communication	1200/2400/4800/9600/19200

\*1: The transmission speed of 38400 bps is not available for some PC link modules.

## ■ OPERATING ENVIRONMENT

### Hardware Requirements

The serial communication module runs on the following FCS.

AFV30S, AFV30D, AFV40S, AFV40D, AFV10S, AFV10D,  
 AFS30S, AFS30D, AFS40S, AFS40D,  
 AFG30S, AFG30D, AFG40S, AFG40D,  
 AFG81S, AFG81D, AFG82S, AFG82, AFG83S, AFG83D, AFG84S, AFG84D,  
 AFF50S, AFF50D

### Software Requirements

The serial communication module runs on the control functions of the following FCS.

LFS1700 Control Function for Field Control Station (for AFV30□/AFV40□, Vnet/IP and FIO):  
 for AFV30□/AFV40□  
 LFS1500 Control Function for Field Control Station (for AFV10□, Vnet/IP and FIO): for AFV10□  
 LFS1300 Control Function for Standard Field Control Station (for V net and FIO): for AFS30□/AFS40□  
 LFS1330 Control Function for Enhanced Field Control Station (for V net and FIO):  
 for AFG30□/AFG40□/AFG8□□  
 LFS1350 Control Function for Compact Field Control Station (for V net and FIO): for AFF50□

### Engineering Requirements

Works on LHS5100/LHMS5100 Standard Builder Function.

## ■ INSTALLATION ENVIRONMENT

### LFS1700 Control Function for Field Control Station (for AFV30□/AFV40□)

No. of ALR111/ALR121/ALE111/ALP111 or ALP121/AGS813/AGP813 modules	Max. 8 units/FCS (Max. 4 pairs for dual-redundant operation) (*1)
No. of ALF111 modules	Max. 30 units/FCS (Max. 15 pairs for dual-redundant operation)
No. of all the communication modules	Max. 30 modules/FCS (*1) (*2)
I/O data capacity for communication	1000 words/ALR111, 1000 words/ALR121
No. of communication definition	128 definitions/ALR111, 128 definitions/ALR121
No. of communication functions	Max. 8 types/FCS (*1) (*3)
Communication I/O data capacity	Max. 8000 words/FCS (incl. data from other communication function)

\*1: ALP111 and ALP121 cannot be mounted on the same FCS together.

\*2: This is the sum of ALR111, ALR121, ALE111, ALF111, ALP111 or ALP121, AGS813, and AGP813 modules.

\*3: This is the sum of communication functions of ALR111, ALR121, ALE111, and ALP111 or ALP121.

### LFS1700 Control Function for Field Control Station (for AFV30□/AFV40□) + LFS1750 Node Expansion Package (for 10 nodes)

No. of ALR111/ALR121/ALE111/ALP111 or ALP121/AGS813/AGP813 modules	Max. 16 units/FCS (Max. 8 pairs for dual-redundant operation) (*1)
No. of ALF111 modules	Max. 32 units/FCS (Max. 16 pairs for dual-redundant operation)
No. of all the communication modules	Max. 48 modules/FCS (*1) (*2)
I/O data capacity for communication	1000 words/ALR111, 1000 words/ALR121
No. of communication definition	128 definitions/ALR111, 128 definitions/ALR121
No. of communication functions	Max. 8 types/FCS (*1) (*3)
Communication I/O data capacity	Max. 8000 words/FCS (incl. data from other communication function)

\*1: ALP111 and ALP121 cannot be mounted on the same FCS together.

\*2: This is the sum of ALR111, ALR121, ALE111, ALF111, ALP111 or ALP121, AGS813, and AGP813 modules.

\*3: This is the sum of communication functions of ALR111, ALR121, ALE111, and ALP111 or ALP121.

**LFS1700 Control Function for Field Control Station (for AFV30□/AFV40□) + LFS1750 Node Expansion Package (for 14 nodes)**

No. of ALR111/ALR121/ALE111/ALP111 or ALP121/AGS813/AGP813 modules	Max. 32 units/FCS (Max. 16 pairs for dual-redundant operation) (*1)
No. of ALF111 modules	Max. 64 units/FCS (Max. 32 pairs for dual-redundant operation)
No. of all the communication modules	Max. 64 modules/FCS (*1) (*2)
I/O data capacity for communication	1000 words/ALR111, 1000 words/ALR121
No. of communication definition	128 definitions/ALR111, 128 definitions/ALR121
No. of communication functions	Max. 8 types/FCS (*1) (*3)
Communication I/O data capacity	Max. 8000 words/FCS (incl. data from other communication function)

\*1: ALP111 and ALP121 cannot be mounted on the same FCS together.

\*2: This is the sum of ALR111, ALR121, ALE111, ALF111, ALP111 or ALP121, AGS813, and AGP813 modules.

\*3: This is the sum of communication functions of ALR111, ALR121, ALE111, and ALP111 or ALP121.

**LFS1500 Control Function for Field Control Station (for AFV10□)**

No. of ALR111/ALR121/ALE111/ALP111/AGS813/AGP813 modules	Max. 8 units/FCS (Max. 4 pairs for dual-redundant operation)
No. of ALF111 modules	Max. 30 units/FCS (Max. 15 pairs for dual-redundant operation)
No. of all the communication modules	Max. 30 modules/FCS (*1)
I/O data capacity for communication	1000 words/ALR111, 1000 words/ALR121
No. of communication definition	128 definitions/ALR111, 128 definitions/ALR121
No. of communication functions	Max. 4 types/FCS (*2)
Communication I/O data capacity	Max. 4000 words/FCS (incl. data from other communication function)

\*1: This is the sum of ALR111, ALR121, ALE111, ALF111, ALP111, AGS813, and AGP813 modules.

\*2: This is the sum of communication functions of ALR111, ALR121, ALE111, and ALP111.

**LFS1500 Control Function for Field Control Station (for AFV10□) + LFS1550 Node Expansion Package (for AFV10□)**

No. of ALR111/ALR121/ALE111/ALP111/AGS813/AGP813 modules	Max. 16 units/FCS (Max. 8 pairs for dual-redundant operation)
No. of ALF111 modules	Max. 32 units/FCS (Max. 16 pairs for dual-redundant operation)
No. of all the communication modules	Max. 48 modules/FCS (*1)
I/O data capacity for communication	1000 words/ALR111, 1000 words/ALR121
No. of communication definition	128 definitions/ALR111, 128 definitions/ALR121
No. of communication functions	Max. 4 types/FCS (*2)
Communication I/O data capacity	Max. 4000 words/FCS (incl. data from other communication function)

\*1: This is the sum of ALR111, ALR121, ALE111, ALF111, ALP111, AGS813, and AGP813 modules.

\*2: This is the sum of communication functions of ALR111, ALR121, ALE111, and ALP111.

**LFS1300 Control Function for Standard Field Control Station (for AFS30□/AFS40□)**

No. of ALR111/ALR121/ALE111 modules	Max. 6 units/FCS (Max. 3 pairs for dual-redundant operation)
Communication I/O data capacity	1000 words/ALR111, 1000 words/ALR121
No. of communication definition	128 definitions/ALR111, 128 definitions/ALR121
No. of communication functions	Max. 4 types/FCS (*1)
Communication I/O data capacity	Max. 4000 words/FCS (incl. data from other communication function)

\*1: This is the sum of communication functions of ALR111, ALR121, and ALE111.

**LFS1330 Control Function for Enhanced Field Control Station (for AFG30□/AFG40□/AFG8□□)**

No. of ALR111/ALR121/ALE111/ALP111/AGS813/AGP813 modules	Max. 16 units/FCS (Max. 8 pairs for dual-redundant operation)
Communication I/O data capacity	1000 words/ALR111, 1000 words/ALR121
No. of communication definition	128 definitions/ALR111, 128 definitions/ALR121
No. of communication functions	Max. 4 types/FCS (*1)
Communication I/O data capacity	Max. 4000 words/FCS (incl. data from other communication function)

\*1: This is the sum of communication functions of ALR111, ALR121, ALE111, and ALP111.

**LFS1350 Control Function for Compact Field Control Station (for AFF50□)**

No. of ALR111/ALR121/ALE111/ALP111/AGS813/AGP813 modules	Max. 8 units/FCS (Max. 4 pairs for dual-redundant operation)
Communication I/O data capacity	1000 words/ALR111, 1000 words/ALR121
No. of communication definition	128 definitions/ALR111, 128 definitions/ALR121
No. of communication functions	Max. 4 types/FCS (*1)
Communication I/O data capacity	Max. 4000 words/FCS (incl. data from other communication function)

\*1: This is the sum of communication functions of ALR111, ALR121, ALE111, and ALP111.

**● Installations to the ER Bus Node Unit (\*1) (\*2)**

No. of ALR111/ALR121/ALE111/ALF111/ALP111 modules: Max. 8 units

- \*1: Mounting on the ER bus node unit is applicable when the FCS's main memory is 32 Mbyte or more and EB401 firmware revision is R3 or later.
- \*2: Field control units (AFV30□ and AFV40□) do not support ER bus node unit (ANR10□).