

General Specifications

Modbus Communication Portfolio



GS 34P02P21-01E

■ GENERAL

This describes Modbus Communication Portfolios (hereinafter referred to as Modbus Communication APPF) for STARDOM. Modbus Communication APPF easily allows FCN/FCJ to be Modbus-capable through serial or Ethernet communications.

■ OPERATING ENVIRONMENT

● Hardware (FCN)

Means of Communication		Module
Serial	RS-232-C	CPU module (*1) (NFCP100, one port) RS-232-C communications module (*2) (*3) (NFLR111, two ports/module)
	RS-422/ RS-485	RS-422/RS-485 communications module (*2) (*3) (NFLR121, two ports/module)
Ethernet	Client	CPU module (NFCP100, 15 channels maximum) (*4)
	Server	CPU module (NFCP100, 4 clients maximum)

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*1: If the CPU module is duplexed, the serial port of the module cannot be used.

*2: The modules allow the CPU module to be duplexed.

*3: Up to eight RS-232-C and RS-422/RS-485 communications modules can be mounted on each FCN.

*4: Up to 15 devices (not including connections to VDS/ASTMAC and other FCNs/FCJs) can be connected via Ethernet with the FCN/FCJ.

● Hardware (FCJ)

Means of Communication		FCJ
Serial (RS-232-C)		Two ports
Ethernet	Client	Up to 15 channels (*1)
	Server	Up to 4 clients

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*1: Up to 15 devices (not including connections to VDS/ASTMAC and other FCNs/FCJs) can be connected via Ethernet with the FCN/FCJ.

■ FUNCTION SPECIFICATIONS

● Modbus Communication Portfolio

Modbus Communication Portfolio is a POU that enables FCN/FCJ autonomous controllers to easily acquire and set data from and to Modbus communications protocol support devices through serial or Ethernet communications. The following communication modes and types are supported:

Means of Communication	Communication mode	Communication type
Serial	ASCII mode	Master/slave
	RTU mode	Master/slave
Ethernet	Modbus / TCP	Client / Server

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■ ACCESSIBLE RANGE

Each device can be accessed in its suited range.

● Accessible Device Ranges as Master or Client

If the FCN/FCJ operates as master or client, its accessible device ranges are:

Device	Bit/Word	Read/Write	Reference No.
Coil	Bit	Read/Write	000001 to 065536
Discrete Input	Bit	Read only	100001 to 165536
Input Register	Word	Read only	300001 to 365536
Holding Register	Word	Read/Write	400001 to 465536
Exception status	Bit	Read only	1 to 8

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● Accessible Device Ranges as Slave or Server

If the FCN/FCJ operates as slave or server, its accessible device ranges from the master device are:

Device	Bit/Word	Read/Write	Reference No.
Coil	Bit	Read/Write	00001 to 09999
Discrete Input	Bit	Read only	10001 to 19999
Input Register	Word	Read only	30001 to 39999
Holding Register	Word	Read/Write	40001 to 49999
Exception status	Bit	Read only	1 to 8

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■ NUMBER OF ACCESSIBLE DATA SETS

The number of data sets accessible in one communication period is:

Function	Function code (Hex)	Bit/Word	Number of points in one communication period		
			ASCII mode Master/Slave	RTU mode Master/Slave	Modbus/TCP Client/Server
Read Coil	1 (0x01)	Bit	976bits	2000bits	2000bits
Read Discrete Input	2 (0x02)	Bit	976bits	2000bits	2000bits
Read Holding Register	3 (0x03)	Word	61 words	125 words	125 words
Read Input Register	4 (0x04)	Word	61 words	125 words	125 words
Write Single Coil (*3)	5 (0x05)	Bit	1bits	1bits	1bits
Write Single Register (*3)	6 (0x06)	Word	1 words	1 words	1 words
Read Exception status	7 (0x07)	Word	1 words	1 words	1 words
Loop-back check (*1)	8 (0x08)	Word	1 words	1 words	1 words
Write Multiple Coils (*3)	15 (0x0F)	Bit	800bits	800bits	800bits
Write Multiple Registers (*3)	16 (0x10)	Word	59 words	100 words	100 words
Read Device Identification	43 (0x2B)	ASCII string	(*2)		

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*1: The diagnostic code when a command is received is 0 (zero).

*2: Only basic device ID numbers, such as vender names, product codes, and revision numbers, are applicable.

*3: These function codes support broadcast communications. If the station parameter for each POU is set to 0 (zero), broadcast communications are executed. Broadcast communications are not supported in Ethernet.

■ LIST OF POU FUNCTIONS

● ASCII Mode Master

POU	Function		Function code	Remarks
SD_CMDBSM_AM_OPEN	ASCII mode master communication task creation		–	–
SD_CMDBSM_AM_BRD	Coil/Discrete Input Reading	Coil	0x01	976 bits max.
		Discrete Input	0x02	
SD_CMDBSM_AM_WRD	Input Register/Holding Register Reading	Input Register	0x04	61 words max.
		Holding Register	0x03	
SD_CMDBSM_AM_BWRS	One Bit Coil Writing	Coil	0x05	–
SD_CMDBSM_AM_WWRS	One Word Holding Register Writing	Holding Register	0x06	–
SD_CMDBSM_AM_REB	Exception Status Reading	Exception Status	0x07	8 bits fixed
SD_CMDBSM_AM_LPBK	Loop-back Check	Command message return	0x08	1 word fixed
SD_CMDBSM_AM_BWR	Coil Writing	Coil	0x0F	800 bits max.
SD_CMDBSM_AM_WWR	Holding Register Writing	Holding Register	0x10	59 words max.
SD_CMDBSM_AM_DID	Device ID Reading	Vendor Name/Product code/Revision number	0x2B	ASCII string

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● ASCII Mode Slave

POU	Function		Function code	Remarks
SD_CMDBSM_AS_OPEN	ASCII mode slave communication task creation		–	–
	Coil/Discrete Input Reading	Coil	0x01	976 bits max.
		Discrete Input	0x02	
		Exception Status	0x07	8 bits fixed
	Input Register/Holding Register Reading	Input Register	0x04	61 words max.
		Holding Register	0x03	
	Coil Writing	Coil	0x05/0x0F	800 bits max.
	Input Register/Holding Register Writing	Holding Register	0x06/0x10	59 words max.
	Loop-back Check	Command message return	0x08	–
Device ID Reading	Vendor Name/Product code/Revision number	0x2B	–	

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● RTU Mode Master

POU	Function		Function code	Remarks
SD_CMDBSM_BM_OPEN	RTU mode master communication task creation		–	–
SD_CMDBSM_BM_BRD	Coil/Discrete Input Reading	Coil	0x01	2000 bits max.
		Discrete Input	0x02	
SD_CMDBSM_BM_WRD	Input Register/Holding Register Reading	Input Register	0x04	125 words max.
		Holding Register	0x03	
SD_CMDBSM_BM_BWRS	One Bit Coil Writing	Coil	0x05	–
SD_CMDBSM_BM_WWRS	One Word Holding Register Writing	Holding Register	0x06	–
SD_CMDBSM_BM_REB	Exception Status Reading	Exception status	0x07	8 bits fixed
SD_CMDBSM_BM_LPBK	Loop-back Check	Command message return	0x08	1 word fixed
SD_CMDBSM_BM_BWR	Coil Writing	Coil	0x0F	800 bits max.
SD_CMDBSM_BM_WWR	Holding Register Writing	Holding Register	0x10	100 words max.
SD_CMDBSM_BM_DID	Device ID Reading	Vendor Name/Product code/Revision number	0x2B	ASCII string

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● RTU Mode Slave

POU	Function		Function code	Remarks
SD_CMDBSM_BS_OPEN	RTU mode slave communication task creation		–	–
	Coil/Discrete Input Reading	Coil	0x01	2000 bits max.
		Discrete Input	0x02	
		Exception Status	0x07	8 bits fixed
	Input Register/Holding Register Reading	Input Register	0x04	125 words max.
		Holding Register	0x03	
	Coil Writing	Coil	0x05/0x0F	800 bits max.
	Input Register/Holding Register Writing	Holding Register	0x06/0x10	100 words max.
Loop-back Check	Command message return	0x08	–	
Device ID Reading	Vendor Name/Product code/Revision number	0x2B	–	

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● Modbus/TCP Client

POU	Function		Function code	Remarks
SD_CMDBSM_BC_OPEN	Modbus/TCP client communication task creation		–	–
SD_CMDBSM_BC_BRD	Coil/Discrete Input Reading	Coil	0x01	2000 bits max.
		Discrete Input	0x02	
SD_CMDBSM_BC_WRD	Input Register/Holding Register Reading	Input Register	0x04	125 words max.
		Holding Register	0x03	
SD_CMDBSM_BC_BWRS	One Bit Coil Writing	Coil	0x05	–
SD_CMDBSM_BC_WWRS	One Word Holding Register Writing	Holding Register	0x06	–
SD_CMDBSM_BC_REB	Exception Status Reading	Exception Status	0x07	8 bits fixed
SD_CMDBSM_BC_LPBK	Loop-back Check	Command message return	0x08	1 word fixed
SD_CMDBSM_BC_BWR	Coil Writing	Coil	0x0F	800 bits max.
SD_CMDBSM_BC_WWR	Holding Register Writing	Holding Register	0x10	100 words max.
SD_CMDBSM_BC_DID	Device ID Reading	Vendor Name/Product code/Revision number	0x2B	ASCII string

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● Modbus/TCP Server

POU	Function		Function code	Remarks
SD_CMDBSE_BS_OPEN	Modbus/TCP server communication task creation		–	–
	Coil/Discrete Input Reading	Coil	0x01	2000 bits max.
		Discrete Input	0x02	
		Exception Status	0x07	8 bits fixed
	Input Register/Holding Register Reading	Input Register	0x04	125 words max.
		Holding Register	0x03	
	Coil Writing	Coil	0x05/0x0F	800 bits max.
	Input Register/Holding Register Writing	Holding Register	0x06/0x10	100 words max.
Loop-back Check	Command message return	0x08	–	
Device ID Reading	Vendor Name/Product code/Revision number	0x2B	–	

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■ MODEL AND SUFFIX CODES

		Description
Model	NT8035J	Modbus Communication Portfolio
Suffix Codes	-L	License
	W	Issued online via the Internet
	1	Always 1
	1	Always 1
	A	Standard

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■ ORDERING INSTRUCTIONS

Specify the model and suffix codes when ordering.

For the type of software media supplied, refer to the separate GS, "Application Portfolios" (publication number GS 34P02P20-01E).

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