■ BASE MODULE

A base module is a chassis on which various function modules such as CPU, power supply, E2 bus interface, SB bus repeat, and I/O modules are mounted to configure a control unit or extension unit.

● Features

Feature of Base Modules

Type	Model	Power Supply Slots	I/O Slots	SB Bus (Internal Backboard Bus)
Long	NFBU200	2 slots	10 slots	Duplex
Short	N2BU051	1 slot	5 slots	Duplex
	NFBU050	1 slot	5 slots	Single
Compact	N2BU030	1 slot	3 slots	Duplex

Number of Mountable Modules on Control unit alone

Usage	Model	Power Supply Modules	CPU Modules (*1)	Extension bus Module	I/O Modules
Control Unit	NFBU200	Single or Duplexed	Single	-	max 8 modules
			Duplex	-	max 6 modules
	N2BU051	Single	Single	-	max 3 modules
	NFBU050	Single	Single	-	max 3 modules
	N2BU030	Single	Single	-	max 1 module

Number of Mountable Modules with E2 bus interface module

Usage	Model	Power Supply Modules	CPU Modules (*1)	E2 bus Interface Modules	I/O Modules
Control Unit	NFBU200	Single or Duplex	Single	Single	max 7 modules
				Duplex	max 6 modules
			Duplex	Single	max 5 modules
				Duplex	max 4 modules
	N2BU051	Single	Single	Single	max 2 modules
				Duplex	max 1 module
	N2BU030	Single	Single	Single	none
Extension Unit	NFBU200	Single or Duplex	-	Single	max 9 modules
				Duplex	max 8 modules
	N2BU051	Single	-	Single	max 4modules
				Duplex	max 3 modules
	N2BU030	Single	-	Single	max 2 modules
				Duplex	max 1 module

Number of Mountable Modules with SB bus repeat module

Usage	Model	Power Supply Modules	CPU Modules (*1)	SB bus Repeat Modules	I/O Modules
Control Unit	NFBU200	Single or Duplex	Single	Single	max 7 modules
				Duplex	max 6 modules
			Duplex	Single	max 5 modules
				Duplex	max 4 modules
Extension Unit	NFBU200	Single or Duplex	-	Single	max 9 modules
				Duplex	max 8 modules

*1: Two slots are occupied for at least one CPU module in the control unit.

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■ CPU MODULE

One CPU module is mounted in each control unit, or two for a duplexed CPU configuration. The CPU module runs a real-time operating system, supports programming languages compliant with the IEC 61131-3 international standard, and serves as a Duolet virtual machine.

● Model and Suffix Codes

		Description
Model	NFCP501	CPU module for FCN (with 2 Ethernet ports)
	NFCP502	CPU module for FCN (with 4 Ethernet ports)
Suffix Codes	-S	With standard functions (*1)
	-W	With extended functions (*1)
	0	Standard type
	1	With Extended Temperature range option
	5	Basic type with no explosion protection
	6	With ISA Standard G3 option and no explosion protection
	E	Basic type with explosion protection
	F	With ISA Standard G3 option and explosion protection

*1: The application portfolio which can be used differs by Standard function type and Extended function type. For details, refer to “FCN Autonomous Controller Functions (FCN-500)” (GS 34P02Q03-01E).

● Specifications

Item		Specification	
Model		NFCP501	NFCP502
Style		S2 (*6)	
Processor		Atom E3815 1.46 GHz	
Memory	Main	256 MB with ECC	
	Static RAM	2 MB with ECC, backed up by battery	
Secondary memory		1 GB on-board flash memory	
External media		SD card 1 slot : SDHC (4 to 32GB) Class 10	
Serial Port (*1)		1 RS-232-C port: D-sub 9 pins, male (*2)	
	Communication method	Full/Half duplex (software settings)	
	Synchronisation	Asynchronous	
	Baud rate	0.3, 1.2, 2.4, 4.8, 9.6, 14.4, 19.2, 28.8, 38.4, 57.6, or 115.2 kbps	
Network interface		2 Ethernet ports: RJ45 modular jacks	4 Ethernet ports: RJ45 modular jacks
	Baud rate	1000, 100, 10 Mbps, (1000BASE-T, 100BASE-TX, 10BASE-T)	
I/O interface		SB bus (duplex)	
RAS features		Watchdog timer, temperature monitor, etc.	
Battery (*3)		1000 mAh graphite fluoride lithium battery (*4)	
Display		3 LEDs for CPU status indication, 2 LEDs for Ethernet status indication, 1 LED for SD LED, 1LED for EXEC LED	
Switches		RESET switch, SHUT DOWN switch, FUNC switch, EXEC switch	
Ptotection		CPU cover (with the hole for wire lock)	
Power supply	Supply voltage	5 V DC ±5%	
	Current consumption	Max. 1200 mA	Max. 1700 mA
Duplex configuration		Possible (*5)	
Weight		0.9 kg	
Size	Dimensions (W x H x D)	65.8 x 130 x 149.3 mm	
	Occupying slots	2	

*1: A serial port cannot be used when CPU modules are configured in redundancy.
*2: Connectors are fastened using inch screw threads (No. 4-40 UNC).
*3: With battery exhaustion detection function
*4: A battery is exchangeable at on-line.
*5: Use a couple of the CPU module of the same type (same Model, same suffix codes and same system software version) for the CPU module duplex configuration. A combination of CPU module styles S1 and S2 is possible.
*6: The CPU module NFCP501/NFCP502 style S2 or later is required to use the E2 bus interface module.

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Appearances

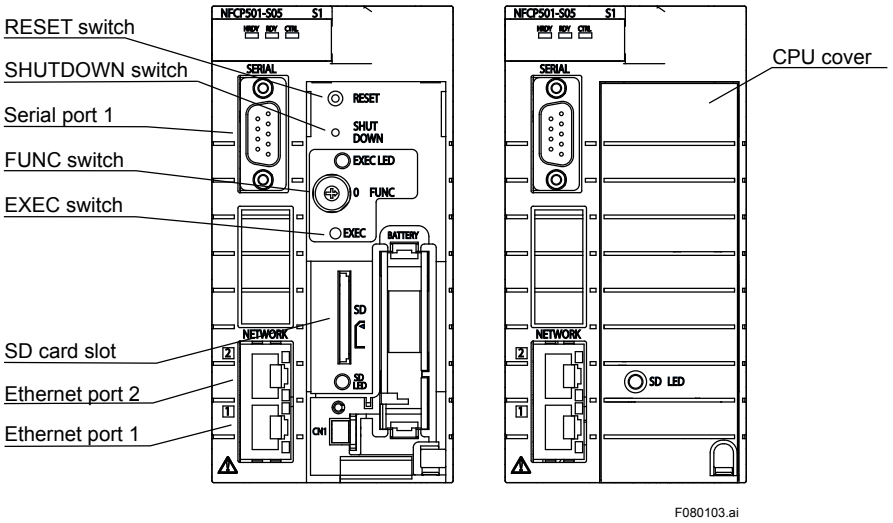


Figure NFCP501 (Left: removed CPU cover, Right: mounted CPU cover)

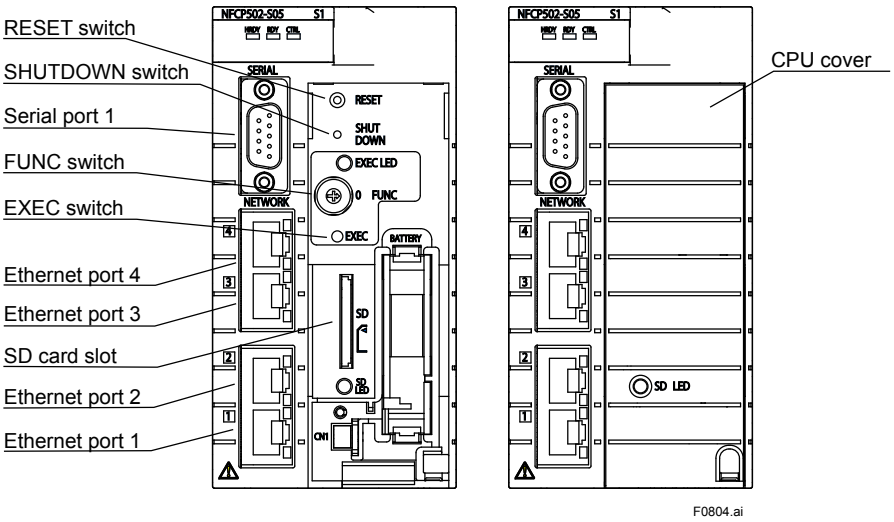


Figure NFCP502 (Left: removed CPU cover, Right: mounted CPU cover)

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■ I/O AND RELATED MODULE

An autonomous controller FCN supports versatile I/O modules in the following table.

● List of FCN's Modules and Compliant Standards, Installation Limitations

Table List of FCN's Modules and Compliant Standards, Installation Limitations (1/4)

Type	Model	Function	Installation Limitations		Safety	EMC		Explosion protection			Marine (*10)		Hazardous Substances
			Temperature [°C]	Altitude [m]	CSA, CE, UKCA, EAC, Cr	CE, UKCA, KC, EAC, Cr	RCM	US (FM) NI, Canada (CSA) NI	ATEX Ex "ec", UKEX Ex "ec"	IECEx Ex "ec", ECAS-Ex Ex "ec"	ABS, BV, LR	DNV	RoHS, UK RoHS, UAE RoHS
Base module	NFBU200	Base module (long)	-20 to +70	2000	X	X	X	X	X	X	X	X	X
	N2BU051	Base module (short, for E2 bus)	-20 to +70		X	X	X	X	X	N.A.	N.A.	N.A.	X
	NFBU050	Base module (short)	-20 to +70		X	X	X	X	X	X	N.A.	N.A.	X
	N2BU030	Base module (compact)	-20 to +70		X	X	X	X	X	N.A.	N.A.	N.A.	X
Power supply module	NFPW441	Power supply module (100 - 120 V AC input)	0 to +55		X	X	–	X	N.A.	N.A.	X	X	X
	NFPW442	Power supply module (220 - 240 V AC input)	0 to +55		X	X	X	N.A.	N.A.	N.A.	X	X	X
	NFPW444	Power supply module (24 V DC input)	-20 to +70 (*6)		X	X	X	X	X	X	X	X	X
CPU module	NFCP501	CPU module for FCN (with 2 Ethernet ports)	-		X	X	X	X	X	X	N.A.	N.A.	X
	-☐0☐	Standard type	0 to +55										
	-☐1☐	With Extended Temperature range option	-20 to +70										
	NFCP502	CPU module for FCN (with 4 Ethernet ports)	-		X	X	X	X	X	X	X	X	X
	-☐0☐	Standard type	0 to +55										
	-☐1☐	With Extended Temperature range option	-20 to +70										
E2 bus interface module	N2EB100	E2 bus interface module	-20 to +70		X	X	X	X	X	N.A.	X	X	X
SB bus repeat module	NFSB100	SB bus repeat module for FCN	0 to +55		X	X	X	X	X	N.A.	N.A.	N.A.	X
Analog I/O Modules (*1)	NFAI141	Analog Input Module (4 to 20 mA, 16-channel, Non-Isolated)	-20 to +70		X	X	X	XX (*2)	X	X	X	X	X
	NFAV141	Analog Input Module (1 to 5 V: differential input, 16-channel, Non-Isolated)	0 to +55		X	X	X	X	X	N.A.	N.A.	N.A.	X
	NFAI841	Analog I/O Module (4 to 20 mA input, 4 to 20 mA output, 8-channel input /8-channel output, Non-Isolated)	-20 to +70 (*7)		X	X	X	XX (*2)	X	X	X	X	X
	NFAB841	Analog I/O Module (1 to 5 V input: differential input, 4 to 20 mA output, 8-channel input/8-channel output, Non-Isolated)	0 to +55		X	X	X	X	X	N.A.	N.A.	N.A.	X
	NFAI143	Analog Input Module (4 to 20 mA, 16-channel, Isolated)	-20 to +70		X	X	X	X	X	X	X	X	X
	NFAI543	Analog Output Module (4 to 20 mA, 16-channel, Isolated)	-20 to +70 (*7)		X	X	X	X	X	X	X	X	X

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