

General Specifications

Digital I/O Modules



GS 34P02Q35-01E

■ GENERAL

This GS covers the hardware specifications of digital input/output modules that can be installed in an FCN autonomous controller.

For connection with field equipment, refer to “Field Connection Specifications” (GS 34P02Q30-01E) and “STARDOM FCN/FCJ Installation Guide” (TI 34P02Q91-01E).

■ STANDARD SPECIFICATIONS

● Digital Input Modules

The Digital Input Modules receive 32-channel or 64-channel 24 V DC ON/OFF signals.

Item Model	Specifications	
	NFDV151	NFDV161
Number of input channels	32	64
Rated input voltage	24 V DC	24 V DC
Input ON voltage	18 to 26.4 V DC	20 to 26.4 V DC
Input OFF voltage	5.0 V DC or less	5.0 V DC or less
Input current (at rated input voltage)	4.1 mA±20 % / channel	2.5 mA±20 % / channel
Instantaneous allowable maximum input voltage	30.0 V DC	30.0 V DC
Withstanding voltage	Between input signal and system: 2000 V AC for 1 minute (*2) Between commons: 500 V AC for 1 minute, common minus (-) side every 16-channel	
Functions		
Status input	Function for detecting ON/OFF status	Function for detecting ON/OFF status
Push button input	Function for counting the push button edge	Function for counting the push button edge (*1)
Input response time	8 ms or less (for status input)	
Minimum ON detection time	20 ms (for push button input)	
Maximum ON/OFF cycle	25 Hz (for push button input)	
Maximum current consumption	500 mA (5 V DC)	550 mA (5 V DC)
Weight	0.3 kg	0.3 kg
External connection	Pressure clamp terminal, MIL connector cable (*2)	MIL connector cable (*2)

*1: Push button input is possible only for input channels from 1 to 32.

*2: The withstanding voltage for using MIL connector cable depends on the electrical specifications of its cable.

● Pulse Width Output Module

The Pulse Width Output Module outputs 4-channel pulse signals.

Model	NFDV532
Number of output channels	4-channel : Up Pulse/Down Pulse
Rated applied voltage	24 V DC
Load voltage (*1)	24 V DC, 25 mA
Field power supply voltage range	20.4 to 26.4 V DC
Output ON voltage maximum value	2 V DC
Leak current maximum value when output OFF	0.1 mA
Output format	Current sink
Maximum load current (*2)	100 mA/1channel, 26.4 V
Withstanding voltage	Between output signal and system : 2000 V AC for 1 minute (*5)
Output fallback (*3) (*4)	HOLD : Reset all the output channels after outputting all pulse signals when a fallback is detected. OFF : Resets all the output channels immediately to off when the fallback action is triggered. NO : Performs no fallback action.
Pulse output accuracy	2 ms Min., 2 ms increments (error: 1 ms Max.)
Maximum current consumption	550 mA (5 V DC) 25 mA (24 V DC, field power supply)
Weight	0.2 kg
External connection	Pressure clamp terminal, MIL connector cable (*5)

*1: An external field power supply (24 V DC) is required for each module.

*2: Connect a spark killer diode when driving DC relay.

*3: The fallback detection time is 4 seconds.

*4: HOLD, OFF, or NO should be chosen for all channels commonly.

*5: The withstanding voltage for using MIL connector cable depends on the electrical specifications of its cable.

● Digital Output Modules

The Digital Output Modules output 32-channel or 64-channel transistor contact signals.

Item	Specifications	
	NFDV551	NFDV561
Number of output channels	32	64
Rated applied voltage	24 V DC	24 V DC
Load voltage (*1)	24 V DC, 50 mA	24 V DC, 100 mA
Field power supply voltage range	20.4 to 26.4 V	20.4 to 26.4 V
Output ON voltage maximum value	2 V DC	2 V DC
Leak current maximum value when output OFF	0.1 mA	0.1 mA
Output format	Current sink	Current sink
Maximum load current (*2)	100 mA/channel, 26.4 V	100 mA/channel, 26.4 V
Withstanding voltage	Between output signal and system: 2000 V AC for 1 minute (*5) Between commons: 500 V AC 1 minute, common minus (-) side every 16-channel	
Functions		
Status output	ON/OFF status output function	ON/OFF status output function
Output fallback (*3) (*4)	HOLD: Holds the current states when the fallback action is triggered. OFF: Resets all the output channels to off when the fallback action is triggered. NO: Performs no fallback action.	
Output response time	3 ms or less (for status output)	
Maximum current consumption	700 mA (5 V DC) 60 mA (24 V DC, field power supply)	780 mA (5 V DC) 120 mA (24 V DC, field power supply)
Weight	0.2 kg	0.3 kg
External connection	Pressure clamp terminal, MIL connector cable (*5)	MIL connector cable (*5)

*1: An external field power supply (24 V DC) is required for each module.

*2: Connect a spark killer diode when driving DC relay.

*3: The fallback detection time is 4 seconds.

*4: HOLD, OFF, or NO should be chosen for all channels commonly.

*5: The withstanding voltage for using MIL connector cable depends on the electrical specifications of its cable.

● **Relay Output Module**

The Relay Output Module outputs the 16-channel relay contact signals.

Item	Specifications
Model	NFDR541
Number of output channels	16
Rated applied voltage (*1)	24 V DC
Maximum load current (*2)	Resistive load: 2.0 A/channel Inductive load: 0.6 A/channel
Withstanding voltage	Between output signal and system: 2000 V AC for 1 minute Between commons: 1350 V AC for 1 minute, common every 8-channel
Functions Status output	ON/OFF status output function
Output fallback (*3) (*4)	HOLD: Holds the current states when the fallback action is triggered. OFF: Resets all the output channels to off when the fallback action is triggered. NO: Performs no fallback action.
Output response time	12 ms or less (for status output)
Maximum current consumption	780 mA (5 V DC)
Weight	0.3 kg
External connection	Pressure clamp terminal

*1: Maximum rated applied voltage is 30 V DC.

*2: Maximum 8 A is allowed per common. Connect a spark killer diode when driving DC relay.

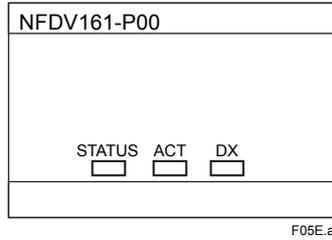
*3: Fallback detection time is 4 seconds.

*4: HOLD, OFF, or NO should be chosen for all channels commonly.

■ LEDs

● Status Indicators

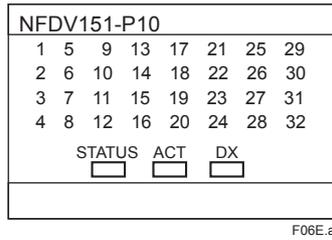
LED Indicator	Color	Description
STATUS	Green	Lights when the hardware is normal
ACT	Green	Lights when input/output actions are carried out
DX	Green	Not used



● Individual Channels' Status Indicators (NFDV151, NFDV532, NFDV551)

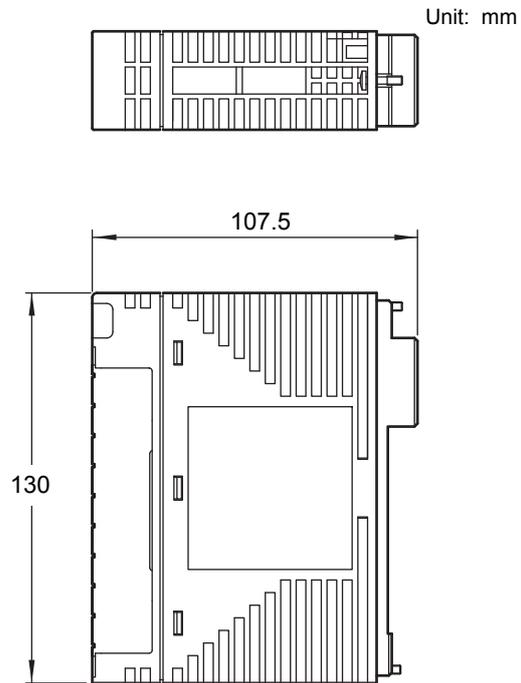
LED Indicator	Color	Description
1 to 32 (*1)	Green	Lights when the respective channels are on

*1: For the NFDV532, the LED only indicates the state from channel 1 to channel 8.

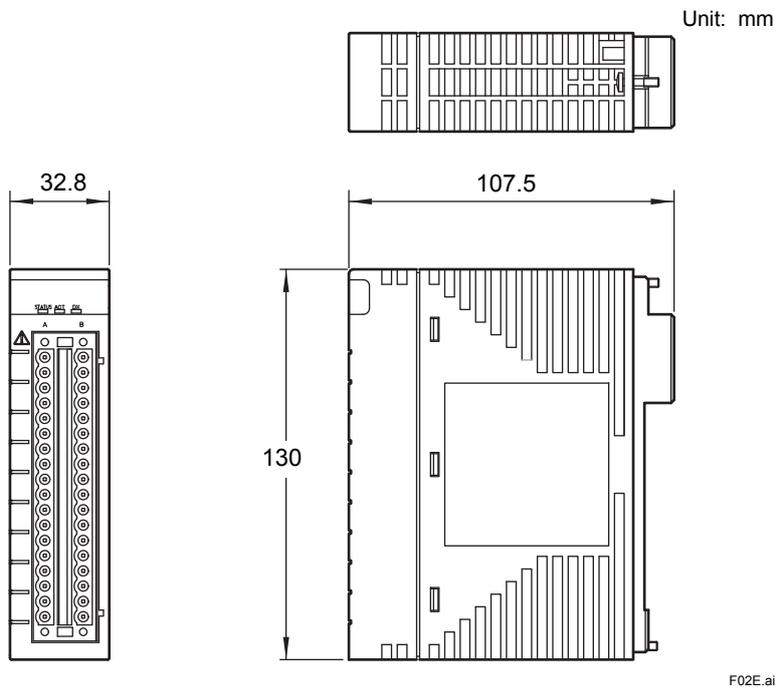


EXTERNAL DIMENSIONS

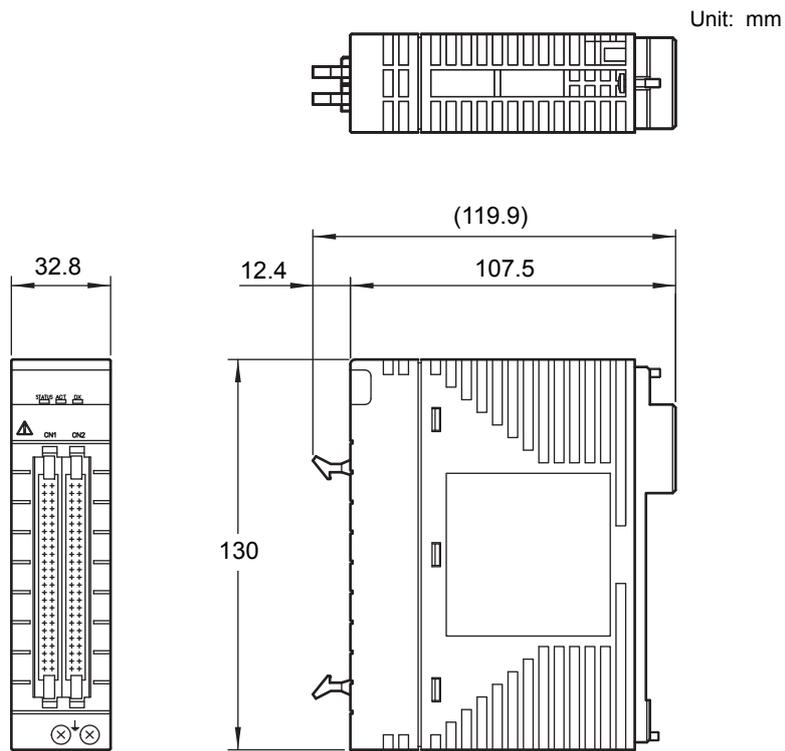
● NFDV151, NFDV532, NFDV551 Digital I/O Module



● NFDR541 Digital I/O Module



● NFDV161, NFDV561 Digital I/O Module



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■ MODELS AND SUFFIX CODES

Digital Input Module

		Description
Model	NFDV151	Digital Input Module (32-channel, 24 V DC, Isolated)
Suffix Codes	-P	With function for counting the push button edge
	6	With status display and no explosion protection
	F	With status display and explosion protection
	0	Basic type
	1	With ISA Standard G3 option
Option Codes	/B5S00	With Pressure Clamp Terminal Block for Digital [Model: NFTB5S-00]
	/B5S10	With Pressure Clamp Terminal Block for Digital (surge absorber) [Model: NFTB5S-10]
	/CCC01	With Connector Cover for MIL Cable [Model: NFCCC01]

		Description
Model	NFDV161	Digital Input Module (64-channel, 24V DC, Isolated)
Suffix Codes	-P	With function for counting the push button edge
	5	General-purpose type with no explosion protection
	0	Basic type
	1	With ISA Standard G3 option

Digital Output Module

		Description
Model	NFDV532	Pulse Width Output Module (4-channel : Up Pulse/Down Pulse, 24 V DC, Isolated)
Suffix Codes	-P	Standard type
	1	With status display
	0	Basic type
	1	With ISA Standard G3 option
Option Codes	/D5S00	With Pressure Clamp Terminal Block for Digital Output [Model : NFTD5S-00]
	/D5S10	With Pressure Clamp Terminal Block for Digital Output (surge absorber) [Model : NFTD5S-10]
	/CCC01	With Connector Cover for MIL Cable [Model : NFCCC01]

		Description
Model	NFDV551	Digital Output Module (32-channel, 24 V DC, Isolated)
Suffix Codes	-P	Standard type
	6	With status display and no explosion protection
	F	With status display and explosion protection
	0	Basic type
	1	With ISA Standard G3 option
Option Codes	/D5S00	With Pressure Clamp Terminal Block for Digital Output [Model : NFTD5S-00]
	/D5S10	With Pressure Clamp Terminal Block for Digital Output (surge absorber) [Model : NFTD5S-10]
	/CCC01	With Connector Cover for MIL Cable [Model : NFCCC01]

		Description
Model	NFDR541	Relay Output Module (16-channel, 24 V DC, Isolated)
Suffix Codes	-P	Standard type
	5	General-purpose type with no explosion protection
	E	General-purpose type with explosion protection
	0	Basic type
	1	With ISA Standard G3 option
Option Code	/C4S70	With Pressure Clamp Terminal Block for Digital Input [Model : NFTC4S-70]

		Description
Model	NFDV561	Digital Output Module (64-channel, 24V DC, Isolated)
Suffix Codes	-P	Standard type
	5	General-purpose type with no explosion protection
	0	Basic type
	1	With ISA Standard G3 option

■ ORDERING INFORMATION

Specify models and suffix codes.

For selecting the right products for explosion protection, please refer to “STARDOM FCN/FCJ Installation Guide” (TI 34P02Q91-01E) without fail.

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