General Specifications

Digital I/O Modules (for FIO)

CENTUM VP

GS 33K50F70-50E

[Release 5]

■ GENERAL

This GS covers the hardware specifications of the Digital I/O Modules (FIO) that can be installed in the ESB Bus Node Unit (ANB10S, ANB10D), Optical ESB Bus Node Unit (ANB11S, ANB11D), the ER Bus Node Unit (ANR10S, ANR10D) and the Field Control Unit (AFV30S, AFV30D, AFV40S, AFV40D, AFF50S, AFF50D, AFV10S, AFV10D).

■ STANDARD SPECIFICATIONS

● Digital Input Modules

The Digital Input Modules receive 32-channel or 64-channel 24 V DC ON/OFF signals.
The ADV151 and ADV161 can be used in dual redundant configuration.

Item	Specifications		
Model	**ADV151-P/ADV151-E (*1)**	**ADV157**	**ADV161**
Number of input channels	32	32	64
Rated input voltage (*2)	24 V DC (sink/source)	24 V DC (sink/source)	24 V DC (sink/source)
Input ON voltage	18 to 26.4 V DC	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	5.0 V DC or less
Input current (at rated input voltage)	4.1 mA±20 % / channel	4.1 mA±20 % / channel	2.5 mA±20 % / channel
Maximum allowable input voltage	30.0 V DC	30.0 V DC	30.0 V DC
Withstanding voltage	Between input signal and system: 2 kV AC, For 1 minute Between commons: 500 V AC, For 1 minute, common every 16-channel (*3)		
Functions			
Status input	Function for detecting ON/OFF status	Function for detecting ON/OFF status	Function for detecting ON/OFF status
Pushbutton input	Function for counting the pushbutton edges	—	Function for counting the pushbutton edges
Input response time	8 ms or less (for status input)		
Minimum ON detection time	20 ms (for pushbutton input)		
Maximum ON/OFF cycle	25 Hz (for pushbutton input)		
Maximum current consumption	500 mA (5 V DC)	350 mA (5 V DC)	550 mA (5 V DC)
Weight	0.3 kg	0.4 kg	0.3 kg
External connection	Pressure clamp terminal, Dedicated cable (AKB331), MIL connector cable	Pressure clamp terminal	Dedicated cable (AKB337), MIL connector cable

*1: ADV151-E cannot be installed in the ER Bus Node Unit.
*2: ADV151, ADV157 and ADV161 are common every 16-channel. All voltage input signals to be connected (24 V DC) must be in the same polarity.
*3: The withstanding voltage for using a dedicated cable is 500 V AC (between input signal and system).
The withstanding voltage for using MIL connector cable depends on the electrical specifications of its cable.

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GS 33K50F70-50E

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● Relay Output Module

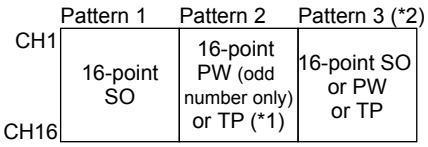
The Relay Output Module outputs the 16-channel relay contact signals.
It can be used in dual redundant configuration.

Item	Specifications
Model	**ADR541**
Number of output channels	16
Rated applied voltage	24 to 110 V DC, 100 to 240 V AC, 50/60 Hz
Maximum load current (*1)	Resistive load: 24 V DC: 2.0 A/channel, 110 V DC: 0.4 A/channel 100 V AC: 2.0 A/channel, 220 V AC: 2.0 A/channel Inductive load: 24 V DC: 0.6 A/channel, 110 V DC: 0.1 A/channel 100 V AC: 1.0 A/channel, 220 V AC: 1.0 A/channel
Withstanding voltage	Between output signal and system: 2 kV AC, For 1 minute Between commons: 1.35 kV AC, For 1 minute, common minus (–) side every 8-channel
Functions	
Status output	ON/OFF status output function
Pulse width output	One-shot pulse width output function
Time-proportioning output	Time-proportioning ON/OFF
Output response time	12 ms or less (for status output) 20 ms or less (for mixed status and pulse outputs)
Pulse width	40 ms to 7200 s
Pulse width resolution	8 ms, but ON/OFF delay added for maximum 10 ms
Maximum current consumption	780 mA (5 V DC)
Weight	0.3 kg
External connection	Pressure clamp terminal, Dedicated cable (AKB334)
Relay switching life	100000 operations (*2)
Standards	Safety standard [CSA], EMC standards [C-Tick Marking], [KC Marking], Standard for Hazardous location equipment [CSA Non-Incendive]

Note: The signals connected the same common should be the same phase when applying AC voltage.

*1: Maximum 8 A is allowed per common. Connect a spark killer diode when driving DC relay.
*2: The relay cannot be replaced with new one. If it comes to the end of its life, the module should be replaced.

ADR541



*1: If an odd-numbered terminal is specified as PW or TP, the next terminal cannot be specified as a different type.
*2: This pattern applies only for direct-connected nodes. Dual redundancy is not possible.

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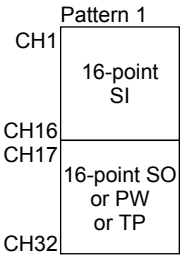
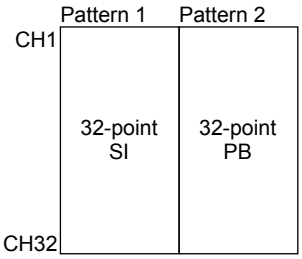
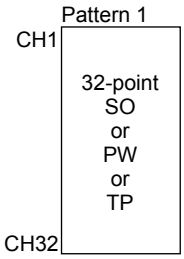
ADV859 (ST2)



ADV159 (ST3)



ADV559 (ST4)



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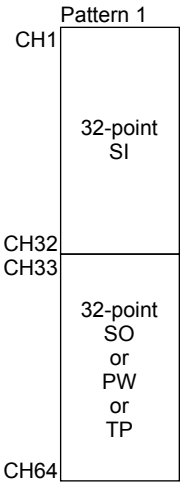
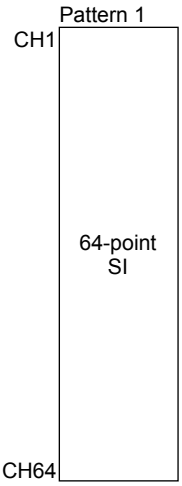
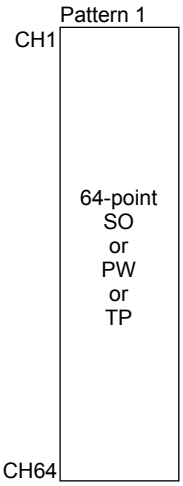
ADV869 (ST5)



ADV169 (ST6)



ADV569 (ST7)



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For PW (pulse width output), use two contiguous terminal numbers; the first of these must be odd-numbered. If both PW and TP (time-proportioning ON/OFF output) are used together, successive pairs of terminals must be either PW or TP terminals, as shown in the example below.

Example:

Terminals 1 and 2	PW (one PW output, two contiguous terminal nos.)
Terminals 3 and 4	TP (two outputs, two contiguous terminal nos.)
Terminals 5 and 6	TP (two outputs, two contiguous terminal nos.)
⋮	⋮
Terminals 15 and 16	PW (one PW output, two contiguous terminal nos.)

For PW output, use two contiguous terminal numbers; the first of these must be odd-numbered. Also if SO and TP terminals are used together with PW, individual terminals that are not PW can be either SO or TP terminals.

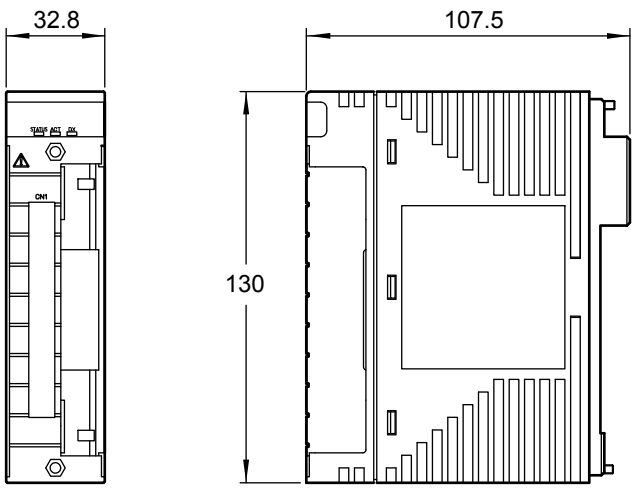
Example:

Terminals 1 and 2	PW (one PW output, two contiguous terminal nos.)
Terminal 3	TP or SO
Terminal 4	TP or SO
⋮	⋮
Terminal 16	TP or SO

■ EXTERNAL DIMENSIONS

● ADV151, ADV551 Digital I/O Module

Unit: mm



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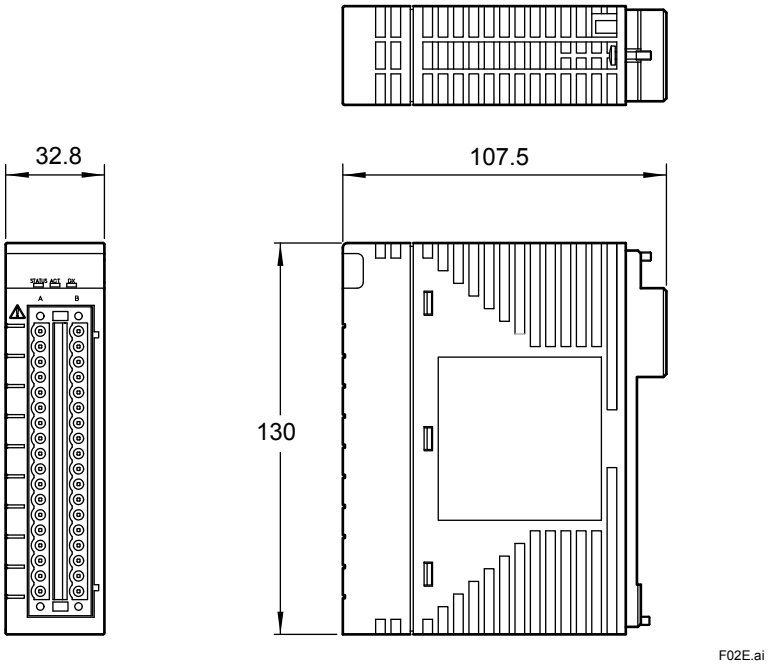
● ADV141, ADV142, ADR541 Digital I/O Module

Unit: mm



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Digital Output Module

		Description
Model	ADV551	Digital Output Module (32-channel, 24 V DC, Isolated)
Suffix Codes	-P	With pulse width output function/time-proportional output function
	5	Without status display; with no explosion protection
	6	With status display; with no explosion protection
	E	Without status display; with explosion protection
	F	With status display; with explosion protection
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/D5A00	With KS Cable Interface Adapter for 32-channel Digital [Model : ATD5A-00]
	/D5S00	With Pressure Clamp Terminal Block for Digital Output [Model : ATD5S-00]
	/D5S10	With Pressure Clamp Terminal Block for Digital Output (surge absorber) [Model : ATD5S-10]
	/D5D00	With Dual Pressure Clamp Terminal Block for Digital Output [Model : ATD5D-00]
	/D5D10	With Dual Pressure Clamp Terminal Block for Digital Output (surge absorber) [Model : ATD5D-10]
	/CCC01	With Connector Cover for MIL Cable [Model : ACCC01]

		Description
Model	ADR541	Relay Output Module (16-channel, 24 to 110 V DC/100 to 240 V AC, Isolated)
Suffix Codes	-P	With pulse width output function/time-proportional output function
	5	Without status display; with no explosion protection
	E	Without status display; with explosion protection
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Code	/C4S70	With Pressure Clamp Terminal Block for Digital Input [Model : ATC4S-70]

		Description
Model	ADV557	Digital Output Module (32-channel, 24 V DC, Pressure Clamp Terminal support only, Isolated)
Suffix Codes	-S	Standard type
	5	With no explosion protection
	E	With explosion protection
	0	Basic type
	1	With ISA Standard G3 option

		Description
Model	ADV561	Digital Output Module (64-channel, 24 V DC, Isolated)
Suffix Codes	-P	With pulse width output function/time-proportional output function
	5	Without status display; with no explosion protection
	E	Without status display; with explosion protection
	0	Basic type
	1	With ISA Standard G3 option