General Specifications

Analog I/O Modules (for FIO)

CENTUM CS 3000 R3

GS 33Q06Q40-31E

■ GENERAL

This GS covers the hardware specifications of the Analog I/O Modules (FIO) that can be installed in the Node Unit for ESB Bus (ANB10S, ANB10D), the Node Unit for ER Bus (ANR10S, ANR10D) and Compact Field Control Unit (for FIO) (AFF50S, AFF50D, AFV10S, AFV10D).

■ STANDARD SPECIFICATIONS

● Current/Voltage Input Modules (Non-Isolated)

These modules mainly receive 4 to 20 mA DC or 1 to 5 V DC standardized signal from 2-wire/4-wire transmitters. They can be used in dual redundant configuration.

Items		Specifications		
Model		**AAI141 (*1)**	**AAV141**	**AAV142**
Number of input channels		16, non-isolated	16, non-isolated (differential input)	16, non-isolated
Input signal		4 to 20 mA DC	1 to 5 V DC (allowable common mode voltage ± 1 V or less)	-10 to 10 V DC
Allowable input current/voltage		27 mA	±7.5 V	±13 V
Withstanding voltage		—	—	—
Input resistance	Power ON	400 Ω (at 20 mA) to 1000 Ω (at 4 mA) (*2)	1 MΩ or more	1 MΩ or more
	Power OFF	500 kΩ or more	340 kΩ or more	660 kΩ or more
Accuracy		±16 μA	±4 mV	±20 mV
Data update period		10 ms		
Step response time		100 ms		
Transmitter power supply		14.8 V or more (at 20 mA) (*3) 26.4 V or less (at 0 mA) (output current limit: 27 mA)	—	—
Setting of 2-wire or 4-wire transmitter		For each channel by setting pin	—	—
Drift due to ambient temperature change		±16 μA/10 °C	±4 mV/10 °C	±20 mV/10 °C
Maximum current consumption		310 mA (5 V DC), 450 mA (24 V DC)	350 mA (5 V DC)	350 mA (5 V DC)
Weight		0.2 kg	0.2 kg	0.2 kg
External connection		Pressure clamp terminal, KS cable, MIL connector cable		
HART communication (*4)		Available	—	—

*1: This module does not allow a Zener barrier to be connected. If the module is to be used in intrinsically safe applications, use an isolation barrier.

*2: Viewed from the terminals, module input resistance is, depending on the current flowing:

$$250\ \Omega + \frac{\text{voltage drop (3 V maximum) in the input protection circuit}}{\text{current value}}$$

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*3: This voltage is developed between connecting terminals for this module's 2-wire transmitter. When calculating if transmitter minimum operating voltage requirement will be satisfied, remember to allow for voltage drop in external wiring.

*4: R3.02 or later version supports HART function. When installing the module with HART function to a remote node, the firmware of EB401 must be Rev 2 or later.
For HART function specifications, refer to "HART Communication Package (for A□I□□□-H) (GS 33Q03L70-31E)."

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GS 33Q06Q40-31E

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● **Current/Voltage I/O Modules (Non-Isolated)**

These modules provide eight inputs and eight outputs to support up to eight loops.

They can be used in dual redundant configuration.

Items		Specifications			
Model		**AAI841 (*1)**		**AAB841 (*6)**	
Number of I/O channels		8-channel input/8-channel output, non-isolated		8-channel input/8-channel output, non-isolated (differential input)	
I/O signal		Input: 4 to 20 mA	Output: 4 to 20 mA	Input: 1 to 5 V (allowable common mode voltage ±1 V or more)	Output: 4 to 20 mA
Allowable input current/voltage		25 mA	—	±7.5 V	—
Withstanding voltage		—		—	
Input resistance	Power ON	400 Ω (at 20 mA) to 1000 Ω (at 4 mA) (*2)	—	1 MΩ or more	—
	Power OFF	500 kΩ or more	—	340 kΩ or more	—
Allowable load resistance		—	0 to 750 Ω (*3)	—	0 to 750 Ω
Circuit-open detection		—	Less than 0.65 mA	—	Less than 0.65 mA
Accuracy		Input: ±16 μA	output: ±48 μA	Input: ±4 mV	output: ±48 μA
Data update period		10 ms			
Input step response time		100 ms			
Output step response time		40 ms			
Transmitter power supply		14.8 V or more (at 20 mA) 26.4 V or less (at 0 mA) (*4)		—	
Setting of 2-wire or 4-wire transmitter		For each channel by setting pin		—	
Temperature drift		±0.1 %/10 °C			
Maximum current consumption		310 mA (5 V DC), 500 mA (24 V DC)		310 mA (5 V DC), 250 mA (24 V DC)	
Weight		0.3 kg			
External connection		Pressure clamp terminal, KS cable, MIL connector cable			
HART communication (*5)		Available		—	

*1: This module does not allow a Zener barrier to be connected. If the module is to be used in intrinsically safe applications, use an isolation barrier.

*2: Viewed from the terminals, module input resistance is, depending on the current flowing:

$$250\ \Omega + \frac{\text{voltage drop (3 V maximum) in the input protection circuit}}{\text{current value}}$$

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*3: When installing to a remote node that conforms to the temperature environment and using it under the temperature environment (60 to 70 ˚C), the allowable load resistance is 200 to 750 Ω.

*4: This voltage is developed between connecting terminals for this module's 2-wire transmitter. When calculating if transmitter minimum operating voltage requirement will be satisfied, remember to allow for voltage drop in external wiring.

*5: R3.02 or later version supports HART function. When installing the module with HART function to a remote node, the firmware of EB401 must be Rev 2 or later.
For HART function specifications, refer to "HART Communication Package (for A□I□□□-H) (GS 33Q03L70-31E)."

*6: The module current output does not allow a Zener barrier to be connected. If the module is to be used in intrinsically safe applications, use an isolation barrier.

● Voltage Output Module (Non-Isolated)

This module outputs -10 to +10 V DC.
It can be used in dual redundant configuration.

Items	Specifications
Model	**AAV542**
Number of output channels	16, non-isolated
Output signal	-10 to 10 V
Withstanding voltage	—
Allowable load resistance	More than 10 kΩ
Accuracy	Larger of ±0.3 %/FS and ±12 mV
Data update period	10 ms
Output step response time	40 ms
Temperature drift	Larger of ±0.1 %/10 °C and ±10 mV/10 °C
Maximum current consumption	450 mA (5 V DC)
Weight	0.2 kg
External connection	Pressure clamp terminal, KS cable, MIL connector cable

● Current Input Modules (Isolated)

This module inputs 4 to 20 mA.
It can be used in dual redundant configuration.

Items		Specifications
Model		**AAI143 (*1)**
Number of input channels		16, isolated
Input signal		4 to 20 mA
Allowable input current		24 mA
Withstanding voltage		Between input and system: 1500 V AC, For 1 minute (*4)
Input resistance	Power ON	270 Ω (20 mA) to 350 Ω (4 mA) (*2)
	Power OFF	500 kΩ or more
Accuracy		±16 μA
Data update period		10 ms
Transmitter power supply		19.0 V or more (at 20 mA) 25.5 V or less (at 0 mA) (output current limit: 25 mA) (*5)
Setting of 2-wire or 4-wire transmitter		For each channel by setting pin
Drift due to ambient temperature change		±16 μA/10˚C
Maximum current consumption		230 mA (5 V DC), 540 mA (24 V DC)
Weight		0.3 kg
External communication		Pressure clamp terminal, MIL connector cable, Dedicated cable (KS1)
HART communication (*3)		Available

*1: This module does not allow a Zener barrier to be connected. If the module is to be used in intrinsically safe applications, use an isolation barrier.

*2: Viewed from the terminals, module input resistance is, depending on the current flowing:

$$250\ \Omega + \frac{\text{voltage drop (0.4 V maximum) in the input protection circuit}}{\text{current value}}$$

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*3: When installing the module with HART function to a remote node, the firmware of EB401 must be Rev 2 or later.
For HART function specifications, refer to “HART Communication Package (for A□I□□□-H) (GS 33Q03L70-31E).”

*4: The withstanding voltage for using the dedicated cable is 500 V AC (between the input signal and the system).
The withstanding voltage for using MIL connector cable depends on the electrical specifications of its cable.

*5: This voltage is developed between connecting terminals for this module’s 2-wire transmitter. When calculating if transmitter minimum operating voltage requirement will be satisfied, remember to allow for voltage drop in external wiring.

● Current Output Modules (Isolated)

This module outputs 4 to 20 mA.
It can be used in dual redundant configuration. (*1)

Items	Specifications	
Model	**AAI543-□0□**	**AAI543-□1□ (*2)**
Number of output channels	16, isolated, standard switch-over response in redundant configuration (*3)	16, isolated, fast switch-over response in redundant configuration (*3)
Output signal	4 to 20 mA	
Withstanding voltage	Between output and system: 1500 V AC, For 1 minute (*4)	
Allowable load resistance	0 to 750 Ω	
Circuit-open detection	Less than 0.65 mA	
Accuracy	±48 μA	
Data update period	10 ms	
Drift due to ambient temperature change	±16 μA/10 ˚C	
Maximum current consumption	230 mA (5 V DC), 540 mA (24 V DC)	
Weight	0.4 kg	
External communication	Pressure clamp terminal, MIL connector cable, Dedicated cable (KS1)	
HART communication (*5)	Available	

*1: Use two modules with the same suffix code for use in dual-redundant configuration.
*2: When AAI543-□1□ is installed in a remote node, the ambient temperature should be 0 to 60 °C.
*3: The time during which the output to the field falls below 4 mA at switch-over is 100 ms at maximum for AAI543-□0□ (standard response) and 2 ms at maximum for AAI543-□1□ (fast response).
When any fast response field devices are connected to dual redundantly configured modules, AAI543-□1□ (fast response) should be used.
*4: The withstanding voltage for using the dedicated cable is 500 V AC (between the input signal and the system).
The withstanding voltage for using MIL connector cable depends on the electrical specifications of its cable.
*5: When installing the module with HART function to a remote node, the firmware of EB401 must be Rev 2 or later.
For HART function specifications, refer to “HART Communication Package (for A□I□□□-H) (GS 33Q03L70-31E).”

● Voltage Input Modules (Isolated)

It can be used in dual redundant configuration.

Items		Specifications	
Model		**AAV144**	
Number of input channels		16, isolated	
Input signal		1 to 5 V	-10 to 10 V
Switching input signals		Input Signals can be set together for CH1 to CH16	
Allowable input voltage		±30 V	
Withstanding isolated voltage		Between input and system: 1500 V AC Withstanding voltage, For 1 minute (*1)	
Input resistance	Power ON	1 MΩ	
	Power OFF	200 kΩ	
Accuracy		±4 mV	±20 mV
Data update period		10 ms	
Drift due to ambient temperature change		±4 mV/10 ˚C	±20 mV/10 ˚C
Maximum current consumption		500 mA (5 V DC)	
Weight		0.2 kg	
External communication		Pressure clamp terminal, MIL connector cable, Dedicated cable (KS1)	

*1: The withstanding voltage for using the dedicated cable is 500 V AC (between the input signal and the system).
The withstanding voltage for using MIL connector cable depends on the electrical specifications of its cable.

● Voltage Output Modules (Isolated)

It can be used in dual redundant configuration.

Items	Specifications
Model	**AAV544**
Number of output channels	16, isolated
Output signal	-10 to 10V
Withstanding voltage	Between output and system: 1500 V AC Withstanding voltage, For 1 minute (*1)
Allowable load resistance	5 kΩ or more
Accuracy	The larger one among ±12 mV or ±0.3 %FS
Data update period	10 ms
Drift due to ambient temperature change	The larger one among ±0.1 %/10 ˚C or ±10 mV/10 ˚C
Maximum current consumption	860 mA (5 V DC)
Weight	0.2 kg
External communication	Pressure clamp terminal, MIL connector cable, Dedicated cable (KS1)

*1: The withstanding voltage for using the dedicated cable is 500 V AC (between the input signal and the system).
The withstanding voltage for using MIL connector cable depends on the electrical specifications of its cable.

● TC Input/RTD Input Modules (Isolated)

These modules receive signals from mV, thermocouple (TC) and RTD.
They can be used in dual redundant configuration.

Items		Specifications	
Model		**AAT141**	**AAR181**
Number of input channels		16, isolated (*7)	12, isolated
Input signal		TC: JIS C1602:1995, IEC584:1995 Type J, K, E, B(*1), R, S, T, N mV: -100 to 150 mV, -20 to 80 mV	RTD: JIS C1604:1997, IEC751:1995 Pt100 (3-wire type)(*6)
Switching input signals		TC/mV can be set individually for CH1 to CH16.	CH1 to CH12 are RTD inputs.
Allowable input voltage		±5 V	±5 V
Withstanding voltage		Between input and system: 1500 V AC, For 1 minute	
Input resistance	Power ON	2 MΩ or more	
	Power OFF	2 MΩ or more	
Accuracy		TC: ±30 μV MV: ±80 μV for span (-100 to 150 mV) ±30 μV for span (-20 to 80 mV)	RTD: ±120 mΩ
Allowable total resistance of signal source plus wiring		1000 Ω or less	40 Ω or less (wiring resistance per wire) (*2)
Effect of allowable signal source resistance (1000 Ω)		±20 μV(*3)	—
Reference junction compensation accuracy		Within ±1 °C (*4) (*5)	—
Measurement current		—	RTD: 1 mA
Temperature drift		±80 μV/10 °C (-100 to 150 mV input) ±30 μV/10 °C (TC/-20 to 80 mV input)	±120 mΩ/10 °C (RTD input)
Data update period		1 s	
Burn-out		All channels can be set together. Setting: Not available/available (UP/DOWN) detection time: 60 s	
Maximum current consumption		450 mA (5 V DC)	450 mA (5 V DC)
Weight		0.2 kg	
External connection		Pressure clamp terminal	

*1: Type B dose not carry out temperature compensation and can not measure under 44 °C
*2: Wiring resistance for the signal cables of IN□A and IN□C must be identical.
*3: In dual redundant configuration, this effect is ±40 μV.
*4: This accuracy changes due to the installation condition.
If measured temperature is lower than 0 °C, multiply the above value by the following coefficient (K):

$$K = \frac{\text{Thermoelectromotive force per degree at 0 °C}}{\text{Thermoelectromotive force per degree at measured temperature}}$$

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*5: Reference junction compensation accuracy varies depending on the temperature environment of pressure clamp terminal.

Specifications for Node only

Temperature Environment	Reference Junction Compensation accuracy
-20 to 15 ˚C	±2 ˚C
15 to 45 ˚C	±1 ˚C
45 to 70 ˚C	±2 ˚C

Specifications for installing in a standard cabinet

Temperature Environment	Reference Junction Compensation accuracy
0 to 50 ˚C	±2 ˚C

*6: AAR181 also supports JPt100.
*7: Please use a non-ground type thermocouple (TC) for AAT141 because it is an isolated module.
Otherwise the multi-point ground that the ground type thermocouple (TC) is used for the multiple channels of the module will cause a temperature error.

● Current Input Module and Current I/O Module (Isolated Channels)

The Current Input Module receives signals of 4 to 20 mA. The Current I/O Module receives and outputs signals of 4 to 20 mA. These two modules are isolated between the field and the system as well as between each channel.

These two modules can be used in dual redundant configuration.

Items		Specifications		
Model		**AAI135 (*1)**	**AAI835 (*1)**	
Number of I/O channels		8-channel input, isolated channels	4-channel input/4-channel output, isolated channels	
I/O signal		4 to 20 mA	Input: 4 to 20 mA	Output: 4 to 20 mA
Allowable input current		25 mA	25 mA	—
Withstanding voltage		Between input and system: 500 V AC, For 1 minute Between input channels: 500 V AC, For 1 minute (*2)	Between input/output and system: 500 V AC, For 1 minute Between input/output channels: 500 V AC, For 1 minute (*2)	
Input resistance	Power ON	290 Ω (at 20 mA) to 450 Ω (at 4 mA) (*3)		
	Power OFF	500 kΩ or more		
Allowable load resistance		—	—	0 to 750 Ω (*4)
Circuit-open detection		—	—	Less than 0.65 mA
Accuracy		±16 μA	Input: ±16 μA	Output: ±48 μA
Data update period		10 ms		
Transmitter power supply		15.0 V or more (at 20 mA) 29.3 V or less (at 0 mA) (*5)	15.0 V or more (at 20 mA) 29.3 V or less (at 0 mA) (*5)	—
Temperature drift		±16 μA/10 °C		
Maximum current consumption		360 mA (5 V DC), 450 mA (24 V DC)	360 mA (5 V DC), 450 mA (24 V DC)	
Weight		0.3 kg		
External connection		Pressure clamp terminal, MIL connector cable, Dedicated cable (KS1)		
HART communication (*6)		Available	Available	

*1: This module does not allow a Zener barrier to be connected. If the module is to be used in intrinsically safe applications, use an isolation barrier.

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

*3: Viewed from the terminals, module input resistance is, depending on the current flowing:

$$250\ \Omega + \frac{\text{voltage drop (0.8 V maximum) in the input protection circuit}}{\text{current value}}$$

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*4: When installing to a remote node that conforms to the temperature environment and using it under the temperature environment (60 to 70 ˚C), the allowable load resistance is 200 to 750 Ω.

*5: This voltage is developed between connecting terminals for this module's 2-wire transmitter. When calculating if transmitter minimum operating voltage requirement will be satisfied, remember to allow for voltage drop in external wiring.

*6: R3.02 or later version supports HART function. When installing the HART compliant module to a remote node, the firmware of EB401 must be Rev 2 or later.
For HART function specifications, refer to "HART Communication Package (for A□I□□□-H) (GS 33Q03L70-31E)."

● TC Input/RTD Input Module (Isolated Channels)

These modules receive signals from mV, thermocouple (TC), RTD, and potentiometer (POT). These are isolated between the field and the system as well as between each channel.

They can be used in dual redundant configuration.

These two modules can be used in dual redundant configuration.

Items		Specifications	
Model		AAT145	AAR145
Number of input channels		16, isolated channels	16, isolated channels
Input signal		TC: JIS C1602:1995 (*1), IEC584:1995 Type J, K, E, B (*2), R, S, T, N mV: -100 to 150 mV, -20 to 80 mV	RTD: JIS C1604:1997 (*3), IEC751:1995 Pt100 (3-wire type) POT: Total resistance 100 Ω to 10 kΩ Span resistance: 50 % or more of total resistance
Switching input signals		TC/mV can be set individually for CH1 to CH16.	RTD/POT can be selected individually for CH1 to CH16.
Allowable input voltage		±5 V	±5 V
Withstanding voltage		Between input and system: 500 V AC (for single card: 1500 V AC), For 1 minute Between input channels: 200 V AC, For 1 minute	
Input resistance	Power ON	1 MΩ or more	
	Power OFF	1 MΩ or more	
Accuracy		±40 μV	RTD: ±150 mΩ POT: ±0.2 %/FS
Allowable total resistance of signal source plus wiring		1000 Ω or less	150 Ω or less (wiring resistance per wire)(*4)
Effect of allowable signal source resistance (1000 Ω)		±20 μV	—
Reference junction compensation accuracy		±1 °C (*5) (6)	—
Measurement current		—	RTD: 1 mA
Data update period		1 s	
Burn-out		All channels can be set together. Setting: not available/available (UP/DOWN) detection time: 60 s	
Temperature drift		±80 μV/10 °C	RTD: ±0.3 Ω/10 °C POT: ±0.4 %/10 °C
Maximum current consumption		350 mA (5 V DC)	350 mA (5 V DC)
Weight		0.3 kg	
External connection		Dedicated cable (KS1)	Dedicated cable (KS8/AKB335)

*1: Model AAT145 is also in compliance with JIS C1602:1981.
*2: Type B dose not carry out temperature compensation and can not measure under 44 °C.
*3: Model AAR145 is also in compliance with JIS C1604:1989 (Pt100, JPt100).
*4: Wiring resistance for the signal cables of IN□A and IN□B must be identical.
*5: This accuracy changes due to the installation condition.
If measured temperature is lower than 0 °C, multiply the above value by the following coefficient (K):

$$K = \frac{\text{Thermoelectromotive force per degree at 0 °C}}{\text{Thermoelectromotive force per degree at measured temperature}}$$

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*6: Reference junction compensation accuracy varies depending on the temperature environment of terminal board (AET4D).

Specifications for Terminal board only

Temperature Environment	Reference Junction Compensation accuracy
-20 to 0 ˚C	±1.5 ˚C
0 to 30 ˚C	±1.0 ˚C
30 to 70 ˚C	±1.5 ˚C

Specifications for installing in a standard cabinet

Temperature Environment	Reference Junction Compensation accuracy
0 to 30 ˚C	±1.0 ˚C
30 to 50 ˚C	±1.5 ˚C

● Pulse Input Module (Isolated Channels)

This module receives contact ON/OFF, voltage pulse and current pulse. This is isolated between the field and the system as well as between each channel.

It can be used in dual redundant configuration.

Items	Specifications
Model	**AAP135**
Number of input channels	8, isolated channels
Input signal (*3)	2-wire type: Contact ON/OFF, voltage pulse, current pulse (possible to supply transmitter power supply) 3-wire type: Power-supply-type voltage pulse
Input frequency	0 to 10 kHz (*4)
Withstanding voltage	Between input and system: 500 V AC, For 1 minute
	Between channels: 500 V AC, For 1 minute (*1)
Minimum input pulse width	40 µs
Input signal level	Contact input Open/close levels of relay contact and transistor contact Open: 100 kΩ or more, Close: 200 Ω or less Contact capacity When supplying 12 V DC: 15 V DC 15 mA or more When supplying 24 V DC: 30 V DC 30 mA or more Voltage/current pulse input (Current input is converted to voltage.) VH (high level): 3 to 24 V DC VL (low level): -1 to 8 V DC VH-VL (swing value): 3 V or more Signal source resistance: 1 kΩ or less
Shunt resistance	Can be selected from none/200/500/1000 Ω. (Open when power is OFF and for the standby side in a dual-redundant configuration)
Pull-up resistance	68 kΩ (12 V DC or 24 V DC)
Filter	Filter for eliminating chattering can be set. (*2)
Data update period	2 ms
Transmitter power supply	Can select 24 V DC/12 V DC. Limiter value 12 V DC ±10 %: 40 mA, 24 V DC ±10 %: 30 mA
Maximum current consumption	300 mA (5 V DC), 400 mA (24 V DC)
Weight	0.3 kg
External connection	Pressure clamp terminal, KS cable, MIL connector cable

*1: The withstanding voltage for using MIL connector cable depends on the electrical specifications of its cable.
*2: When the pulse input signal is dry contact (such as from a mechanical relay) up to 10 Hz, it is possible to eliminate the chattering.
*3: The connection method of the field devices varies depending on the input signal.
For details, please refer to “Installation Guidance (TI 33Q01J10-01E).”
*4: Input frequency is 0 to 800 Hz to receive no-voltage contact signals between terminal B and C.

● Pulse Input Module for compatible PM1

This module receives 16-channel pulse train signals from pulse train input signal conditioner cards, and counts the pulses.

Items	Specifications
Model	**AAP149**
Number of input channels	16, non-isolated
Input signal	Transistor contact (open collector)
Input frequency	0 to 6 kHz
Withstanding voltage	–
Pulse detection edge	Trailing edge
Data update period	2 ms
Maximum current consumption	400 mA (5 V DC)
Weight	0.3 kg
External connection	Dedicated cable (KS2)

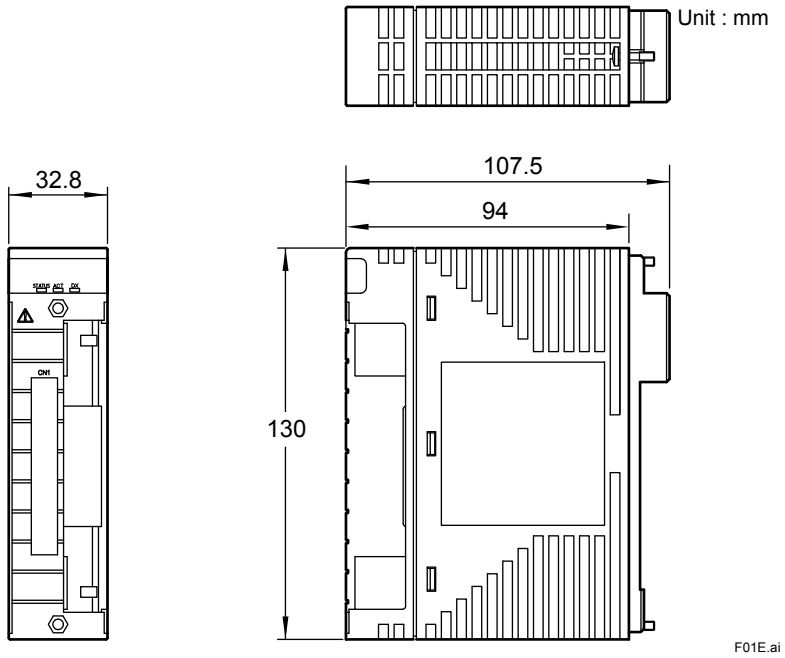
● Pulse Input Module / Analog Output Module for Compatible PAC

This module receives 8-channel pulse train signals, and outputs 4 to 20 mA. It can be used in dual redundant configuration.

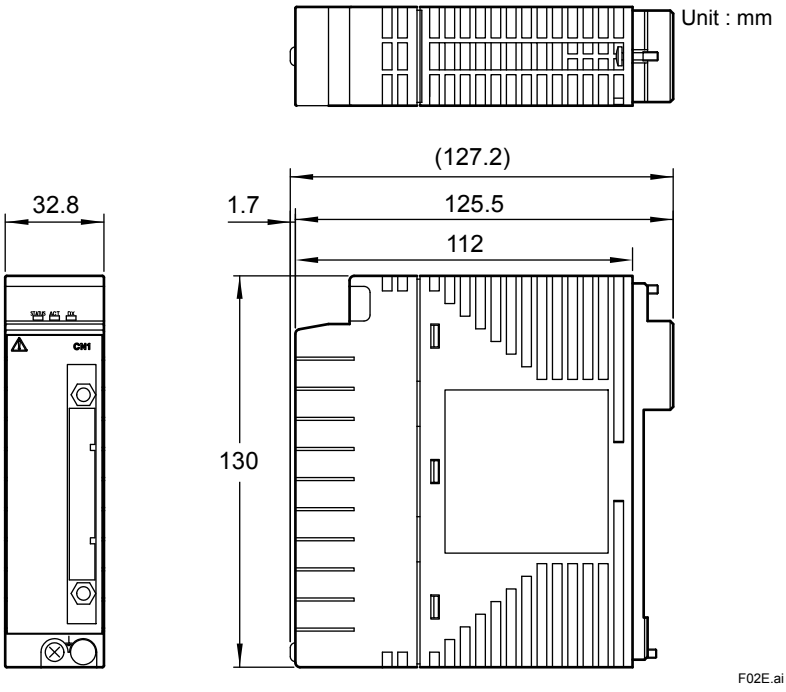
Items	Specifications	
Model	**AAP849**	
Number of I/O channels	8-channel input /8-channel output, not-isolated	
I/O signal	Input: transistor contact (Open collector)	Output: 4 to 20 mA
Input frequency	0 to 12 kHz	–
Pulse detection edge	Trailing edge	–
Allowable load resistance	–	0 to 750 Ω
Circuit-open detection	–	Less than 0.65 mA
Accuracy	–	±48 μA
Data update period	1 ms	10 ms
Output step response time	–	40 ms
Temperature drift	–	±16 μA/10 °C
Maximum current consumption	310 mA (5V DC), 250 mA (24V DC)	–
Weight	0.3 kg	
External connection	Dedicated cable (KS1)	

■ EXTERNAL DIMENSIONS

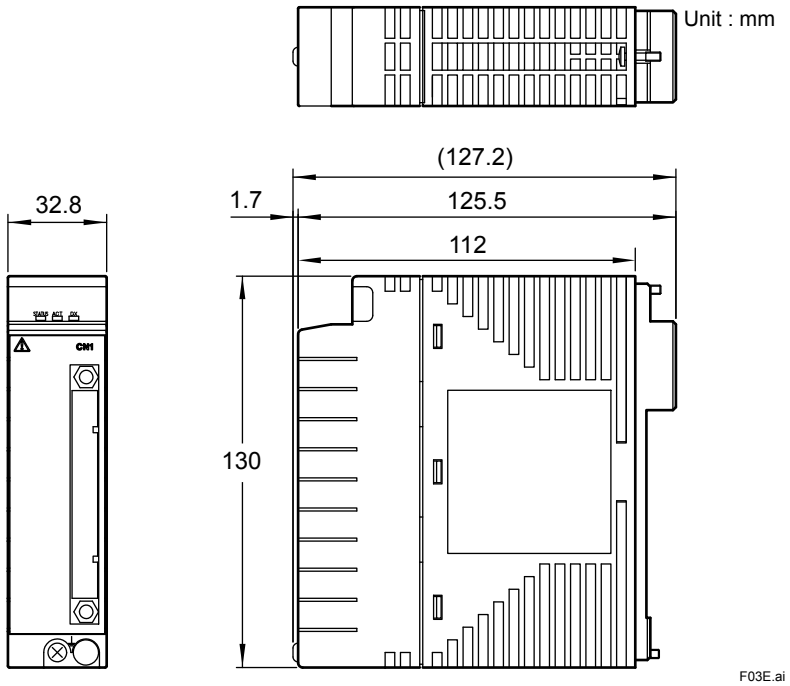
● **AAI141, AAV141, AAV142, AAV144, AAI841, AAB841, AAV542, AAV544, AAI143, AAI543, AAT141, AAR181, AAI135, AAI835, AAP135**



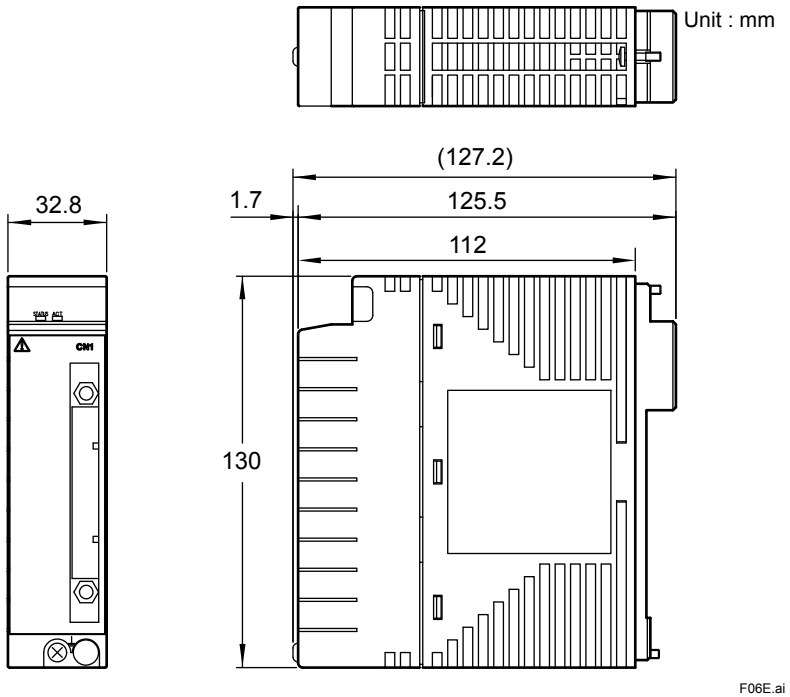
● **AAT145, AAP849**



● **AAR145**



● **AAP149**



■ MODELS AND SUFFIX CODES

		Description
Model	AAI135	Analog Input Module (4 to 20 mA, 8-channel, Isolated channels)
Suffix Codes	-S	Standard type
	-H	With digital communication (HART protocol)
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/13A00	With KS Cable Interface Adapter [Model: ATI3A-00]
	/K4A00	With KS Cable Interface Adapter [Model: ATK4A-00]
	/13S00	With Pressure Clamp Terminal Block for Isolated Analog [Model: ATI3S-00]
	/13S10	With Pressure Clamp Terminal Block for Isolated Analog (surge absorber) [Model: ATI3S-10]
	/13D00	With Dual Pressure Clamp Terminal Block for Isolated Analog [Model: ATI3D-00]
	/13D10	With Dual Pressure Clamp Terminal Block for Isolated Analog (surge absorber) [Model: ATI3D-10]
	/CCC01	With Connector Cover for MIL Cable [Model: ACCC01]

		Description
Model	AAI835	Analog I/O Module (4 to 20 mA, 4-channel input/4-channel output, Isolated channels)
Suffix Codes	-S	Standard type
	-H	With digital communication (HART protocol)
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/B3A00	With KS Cable Interface Adapter [Model: ATB3A-00]
	/K4A00	With KS Cable Interface Adapter [Model: ATK4A-00]
	/13S00	With Pressure Clamp Terminal Block for Isolated Analog [Model: ATI3S-00]
	/13S10	With Pressure Clamp Terminal Block for Isolated Analog (surge absorber) [Model: ATI3S-10]
	/13D00	With Dual Pressure Clamp Terminal Block for Isolated Analog [Model: ATI3D-00]
	/13D10	With Dual Pressure Clamp Terminal Block for Isolated Analog (surge absorber) [Model: ATI3D-10]
	/CCC01	With Connector Cover for MIL Cable [Model: ACCC01]

		Description
Model	AAT145	TC/mV Input Module (16-channel, Isolated channels)
Suffix Codes	-S	Standard type
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option

		Description
Model	AAR145	RTD/POT Input Module (16-channel, Isolated channels)
Suffix Codes	-S	Standard type
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option

		Description
Model	AAP135	Pulse Input Module (8-channel, Pulse count, 0 to 10 kHz, Isolated channels)
Suffix Codes	-S	Standard type
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/13A00	With KS Cable Interface Adapter [Model: ATI3A-00]
	/K4A00	With KS Cable Interface Adapter [Model: ATK4A-00]
	/13S00	With Pressure Clamp Terminal Block for Pulse [Model: ATI3S-00]
	/13S10	With Pressure Clamp Terminal Block for Pulse (surge absorber) [Model: ATI3S-10]
	/13D00	With Dual Pressure Clamp Terminal Block for Pulse [Model: ATI3D-00]
	/13D10	With Dual Pressure Clamp Terminal Block for Pulse (surge absorber) [Model: ATI3D-10]
	/CCC01	With Connector Cover for MIL Cable [Model: ACCC01]

		Description
Model	AAI143	Analog Input Module (4 to 20 mA, 16-channel, Isolated)
Suffix Codes	-S	Standard type
	-H	With HART Communication
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/K4A00	With KS Cable Interface Adapter (For connecting AEA4D Terminal Board) [Model: ATK4A-00]
	/A4S00	With Pressure Clamp Terminal Block [Model: ATA4S-00]
	/A4S10	With Pressure Clamp Terminal Block (surge absorber) [Model: ATA4S-10]
	/A4D00	With Dual Pressure Clamp Terminal Block [Model: ATA4D-00]
	/A4D10	With Dual Pressure Clamp Terminal Block (surge absorber) [Model: ATA4D-10]
	/CCC01	With Connector Cover for MIL Cable [Model: ACCC01]

		Description
Model	AAI543	Analog Output Module (4 to 20 mA, 16-channel, Isolated)
Suffix Codes	-S	Standard type
	-H	With HART Communication
	0	Standard switch-over response in redundant configuration (*1)
	1	Fast switch-over response in redundant configuration (*2)
	0	Basic type
	1	With ISA Standard G3 option
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/K4A00	With KS Cable Interface Adapter (For connecting AEA4D Terminal Board) [Model: ATK4A-00]
	/A4S00	With Pressure Clamp Terminal Block [Model: ATA4S-00]
	/A4S10	With Pressure Clamp Terminal Block (surge absorber) [Model: ATA4S-10]
	/A4D00	With Dual Pressure Clamp Terminal Block [Model: ATA4D-00]
	/A4D10	With Dual Pressure Clamp Terminal Block (surge absorber) [Model: ATA4D-10]
	/CCC01	With Connector Cover for MIL Cable [Model: ACCC01]

*1: If “standard switch-over response in redundant configuration” is selected, “basic type” or “with ISA Standard G3 option and temperature (-20 to 70 °C) option” may be specified.
*2: If “fast switch-over response in redundant configuration” is selected, “basic type” or “with ISA Standard G3 option” may be specified.

		Description
Model	AAV144	Analog Input Module (-10 to +10 V, 16-channel, Isolated)
Suffix Codes	-S	Standard type
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/K4A00	With KS Cable Interface Adapter [Model: ATK4A-00]
	/A4S00	With Pressure Clamp Terminal Block for Analog [Model: ATA4S-00]
	/A4S10	With Pressure Clamp Terminal Block for Analog (surge absorber) [Model: ATA4S-10]
	/A4D00	With Dual Pressure Clamp Terminal Block for Analog [Model: ATA4D-00]
	/A4D10	With Dual Pressure Clamp Terminal Block for Analog (surge absorber) [Model: ATA4D-10]
	/CCC01	With Connector Cover for MIL Cable [Model: ACCC01]

		Description
Model	AAV544	Analog Output Module (-10 to +10 V, 16-channel, Isolated)
Suffix Codes	-S	Standard Type
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/K4A00	With KS Cable Interface Adapter [Model : ATK4A-00]
	/A4S00	With Pressure Clamp Terminal Block for Analog [Model : ATA4S-00]
	/A4S10	With Pressure Clamp Terminal Block for Analog (surge absorber) [Model : ATA4S-10]
	/A4D00	With Dual Pressure Clamp Terminal Block for Analog [Model : ATA4D-00]
	/A4D10	With Dual Pressure Clamp Terminal Block for Analog (surge absorber) [Model : ATA4D-10]
	/CCC01	With Connector Cover for MIL Cable [Model : ACCC01]

		Description
Model	AAT141	TC/mV Input Module (16-channel, Isolated)
Suffix Codes	-S	Standard type
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/T4S00	With Pressure Clamp Terminal Block for Thermocouple/mV [Model: ATT4S-00]
	/T4S10	With Pressure Clamp Terminal Block for Thermocouple/mV (surge absorber) [Model: ATT4S-10]
	/T4D00	With Dual Pressure Clamp Terminal Block for Thermocouple/mV [Model: ATT4D-00]
	/T4D10	With Dual Pressure Clamp Terminal Block for Thermocouple/mV (surge absorber) [Model: ATT4D-10]
	/CCC01	With Connector Cover for MIL Cable [Model: ACCC01]

		Description
Model	AAR181	RTD Input Module (12-channel, Isolated)
Suffix Codes	-S	Standard type
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/R8S00	With Pressure Clamp Terminal Block for RTD [Model: ATR8S-00]
	/R8S10	With Pressure Clamp Terminal Block for RTD (surge absorber) [Model: ATR8S-10]
	/R8D00	With Dual Pressure Clamp Terminal Block for RTD [Model: ATR8D-00]
	/R8D10	With Dual Pressure Clamp Terminal Block for RTD (surge absorber) [Model: ATR8D-10]
	/CCC01	With Connector Cover for MIL Cable [Model: ACCC01]

		Description
Model	AAI141	Analog Input Module (4 to 20 mA, 16-channel, Non-Isolated)
Suffix Codes	-S	Standard type
	-H	With digital communication (HART protocol)
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/K4A00	With KS Cable Interface Adapter [Model: ATK4A-00]
	/A4S00	With Pressure Clamp Terminal Block for Analog [Model: ATA4S-00]
	/A4S10	With Pressure Clamp Terminal Block for Analog (surge absorber) [Model: ATA4S-10]
	/A4D00	With Dual Pressure Clamp Terminal Block for Analog [Model: ATA4D-00]
	/A4D10	With Dual Pressure Clamp Terminal Block for Analog (surge absorber) [Model: ATA4D-10]
	/CCC01	With Connector Cover for MIL Cable [Model: ACCC01]

		Description
Model	AAV141	Analog Input Module (1 to 5 V, 16-channel, Non-Isolated)
Suffix Codes	-S	Standard type
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/K4A00	With KS Cable Interface Adapter [Model: ATK4A-00]
	/A4S00	With Pressure Clamp Terminal Block for Analog [Model: ATA4S-00]
	/A4S10	With Pressure Clamp Terminal Block for Analog (surge absorber) [Model: ATA4S-10]
	/A4D00	With Dual Pressure Clamp Terminal Block for Analog [Model: ATA4D-00]
	/A4D10	With Dual Pressure Clamp Terminal Block for Analog (surge absorber) [Model: ATA4D-10]
	/CCC01	With Connector Cover for MIL Cable [Model: ACCC01]

		Description
Model	AAV142	Analog Input Module (-10 to +10 V, 16-channel, Non-Isolated)
Suffix Codes	-S	Standard type
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/K4A00	With KS Cable Interface Adapter [Model: ATK4A-00]
	/A4S00	With Pressure Clamp Terminal Block for Analog [Model: ATA4S-00]
	/A4S10	With Pressure Clamp Terminal Block for Analog (surge absorber) [Model: ATA4S-10]
	/A4D00	With Dual Pressure Clamp Terminal Block for Analog [Model: ATA4D-00]
	/A4D10	With Dual Pressure Clamp Terminal Block for Analog (surge absorber) [Model: ATA4D-10]
	/CCC01	With Connector Cover for MIL Cable [Model: ACCC01]

		Description
Model	AAV542	Analog Output Module (-10 to +10 V, 16-channel, Non-Isolated)
Suffix Codes	-S	Standard Type
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/K4A00	With KS Cable Interface Adapter [Model : ATK4A-00]
	/A4S00	With Pressure Clamp Terminal Block for Analog [Model : ATA4S-00]
	/A4S10	With Pressure Clamp Terminal Block for Analog (surge absorber) [Model : ATA4S-10]
	/A4D00	With Dual Pressure Clamp Terminal Block for Analog [Model : ATA4D-00]
	/A4D10	With Dual Pressure Clamp Terminal Block for Analog (surge absorber) [Model : ATA4D-10]
	/CCC01	With Connector Cover for MIL Cable [Model : ACCC01]

		Description
Model	AAI841	Analog I/O Module (4 to 20 mA input , 4 to 20 mA output, 8-channel input/8-channel output, Non-Isolated)
Suffix Codes	-S	Standard type
	-H	With digital communication (HART protocol)
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/K4A00	With KS Cable Interface Adapter [Model : ATK4A-00]
	/A4S00	With Pressure Clamp Terminal Block for Analog [Model : ATA4S-00]
	/A4S10	With Pressure Clamp Terminal Block for Analog (surge absorber) [Model : ATA4S-10]
	/A4D00	With Dual Pressure Clamp Terminal Block for Analog [Model : ATA4D-00]
	/A4D10	With Dual Pressure Clamp Terminal Block for Analog (surge absorber) [Model : ATA4D-10]
	/CCC01	With Connector Cover for MIL Cable [Model : ACCC01]

		Description
Model	AAB841	Analog I/O Module (1 to 5 V input, 4 to 20 mA output, 8-channel input/8-channel output, Non-Isolated)
Suffix Codes	-S	Standard type
	0	Always 0
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option
Option Codes	/K4A00	With KS Cable Interface Adapter [Model : ATK4A-00]
	/M4A00	With MAC2 Compatible Adapter [Model : ATM4A-00]
	/V4A00	With VM2 Compatible Adapter [Model : ATV4A-00] (*1)
	/A4S00	With Pressure Clamp Terminal Block for Analog [Model : ATA4S-00]
	/A4S10	With Pressure Clamp Terminal Block for Analog (surge absorber) [Model : ATA4S-10]
	/A4D00	With Dual Pressure Clamp Terminal Block for Analog [Model : ATA4D-00]
	/A4D10	With Dual Pressure Clamp Terminal Block for Analog (surge absorber) [Model : ATA4D-10]
	/CCC01	With Connector Cover for MIL Cable [Model : ACCC01]

*1: When using this adapter, 4 to 20 mA output (8-channel) of AAB841 varies to 1 to 5 V output.

		Description
Model	AAP149	Pulse Input Module PM1 compatible (16-channel, Pulse count, 0 to 6 kHz, Non-Isolated)
Suffix Codes	-S	Standard type
	0	Always 0
	0	Basic type
	1	With ISA Standard G3 option

		Description
Model	AAP849	Pulse Input Module/ Analog Output Module for compatible PAC (Pulse count Input, 4 to 20 mA output, 8-channel input / 8-channel output, Non-Isolated)
Suffix Codes	-S	Standard type
	0	Always 0
	0	Basic type
	1	With ISA Standard G3 option

■ ORDERING INFORMATION

Specify models and suffis codes.

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