

General Specifications

Analog I/O Modules (for FIO)



GS 33K50F60-50E

[Release 5]

■ GENERAL

*This document describes about hardware specifications of Analog I/O Modules (for FIO) to be installed in the ESB bus node units (ANB10S and ANB10D), Optical ESB bus node units (ANB11S and ANB11D), ER bus node units (ANR10S and ANR10D) (*1), and field control units (for FIO) (AFV30S, AFV30D, AFV40S, AFV40D, AFV10S, AFV10D, AFF50S, and AFF50D).*

These analog I/O modules function as signal converters; by inputting field analog signals into these modules, it converts them to internal data for field control stations (FCS), or the FCS's internal data to analog signals for outputs.

*1: Field control units (AFV30□ and AFV40□) do not support ER bus node unit (ANR10□).

■ STANDARD SPECIFICATIONS

● Current/Voltage Input Modules (Non-Isolated)

These modules provide 16 inputs of mainly 4 to 20 mA DC or 1 to 5 V DC standardized signals from 2-wire/4-wire transmitters.

They can be used in dual-redundant configuration.

Items		Specifications			
Model		AAI141 (*1)	AAV141	AAV142	AAB141(*1) (*4)
Number of input channels		16, non-isolated	16, non-isolated (differential input)	16, non-isolated	16, non-isolated When the voltage input is selected the differential input is applied.
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	Voltage input : 1 to 5 V DC (allowable common mode voltage ± 1 V or less) Current input : 4 to 20 mA DC(*5)
Allowable input current/voltage		27 mA	± 7.5 V	± 13 V	Voltage input : ± 7.5 V Current input : 25 mA
Withstanding voltage		—			
Input resistance	Power ON	400 Ω (at 20 mA) to 1000 Ω (at 4 mA) (*2)	1 M Ω or larger	1 M Ω or larger	Voltage input : 1 M Ω or larger Current input : 290 Ω (at 20 mA) to 450 Ω (at 4 mA) (*6)
	Power OFF	500 k Ω or larger	340 k Ω or larger	660 k Ω or larger	Voltage input : 340 k Ω or larger Current input : 500 k Ω or larger
Accuracy		± 16 μ A	± 4 mV	± 20 mV	Voltage input : ± 4 mV Current input : ± 16 μ A
Data update period		10 ms			
Step response time		100 ms			
Transmitter power supply		14.8 V or higher (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 μ A/10 $^{\circ}$ C	± 4 mV/10 $^{\circ}$ C	± 20 mV/10 $^{\circ}$ C	± 0.1 %/10 $^{\circ}$ C
Maximum current consumption		310 mA (5 V DC), 450 mA (24 V DC)	350 mA (5 V DC)	350 mA (5 V DC)	480 mA (5 V DC), 120 mA (24 V DC)
Weight		0.2 kg	0.2 kg	0.2 kg	0.3 kg
External connection		Pressure clamp terminal, KS cable, MIL connector cable			KS cable
HART communication (*7)		Available	—	—	Available (at current input)

*1: A Zener barrier is not allowed to be connected with this module. Use an isolation barrier when the module is used in intrinsically safe application.

*2: The module input resistance viewed from the terminals depends on the current strength as calculated as below:

$$250 \, \Omega + \frac{\text{voltage drop in the input protection circuit}}{\text{current value}} \quad \text{F01E.ai}$$

*3: This voltage is generated between the connecting terminals for 2-wire transmitters for this module. When calculating the minimum operating voltage for transmitters, consider to allow margins for voltage drop in external wiring.

*4: This module can be used only with the following FCSs – AFG30□, AFG40□, AFG8□□, AFF50□, AFV10□, AFV30□, or AFV40□.

*5: Input mode for each channel is selectable by software.

*6: The module input resistance viewed from the terminals depends on the current strength as calculated as below:

$$250 \, \Omega + \frac{\text{voltage drop in the input protection circuit}}{\text{current value}} \quad \text{F02E.ai}$$

*7: When this module is installed to a ER bus node unit with HART function, the EB401 firmware must be rev. 2 or later.

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

These modules provide 8 inputs and 8 outputs to support up to 8 loops. They can be used in dual-redundant configuration.

Items		Specifications					
Model		AAI841 (*1)		AAB841 (*5)		AAB842 (*5) (*6)	
Number of I/O channels		8-channel input/8-channel output, non-isolated		8-channel input/8-channel output, non-isolated (differential input)		8-channel input/8-channel output, non-isolated When the voltage input is selected the differential input is applied.	
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 less)	Output: 4 to 20 mA	Input (*7) Voltage input: 1 to 5 V DC (allowable common mode voltage ±1 V or less) Current input: 4 to 20 mA DC	Output: 4 to 20 mA
Allowable input current/voltage		25 mA	—	±7.5 V	—	Voltage input : ±7.5 V Current input : 25 mA	—
Withstanding voltage		—					
Input resistance	Power ON	400 Ω (at 20 mA) to 1000 Ω (at 4 mA) (*2)	—	1 MΩ or larger	—	Voltage input: 1 MΩ or larger Current input: 290 Ω (at 20 mA) to 450 Ω (at 4 mA) (*2)	—
	Power OFF	500 kΩ or larger	—	340 kΩ or larger	—	Voltage input: 340 kΩ or larger Current input: 500 kΩ or larger	—
Allowable load resistance		—	0 to 750 Ω (*3)	—	0 to 750 Ω	—	0 to 750 Ω (*4)
Circuit-open detection		—	Less than 0.65 mA	—	Less than 0.65 mA	—	Less than 0.65 mA
Accuracy		Input: ±16 μA	output: ±48 μA	Input: ±4 mV	output: ±48 μA	Voltage input : ±4 mV Current input : ±16 μA	±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 higher (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)		410 mA (5 V DC), 290 mA (24 V DC)	
Weight		0.3 kg					
External connection		Pressure clamp terminal, KS cable, MIL connector cable					KS cable
HART communication (*8)		Available		—		Available (at Current input and output)	

*1: A Zener barrier is not allowed to be connected with this module. Use an isolation barrier when the module is used in intrinsically safe application.

*2: The module input resistance viewed from the terminals depends on the current strength as calculated as below:

$$250 \, \Omega + \frac{\text{voltage drop in the input protection circuit}}{\text{current value}}$$

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*3: When this module is used in the ambient temperature of 60 to 70 $^{\circ}$ C by being installed in a node unit that conforms to the temperature environment, the allowable load resistance is 200 to 750 Ω .

*4: This voltage is generated between the connecting terminals for 2-wire transmitters for this module. When calculating the minimum operating voltage for transmitters, consider to allow margins for voltage drop in external wiring.

*5: A Zener barrier is not allowed to be connected with this module for current output. Use an isolation barrier when the module is used in intrinsically safe application.

*6: A Zener barrier is not allowed to be connected with this module for current input. Use an isolation barrier when the module is used in intrinsically safe application. And this module can be used only with the following FCSs – AFG30□, AFG40□, AFG8□□, AFF50□, AFV10□, AFV30□, or AFV40□.

*7: Input mode for each channel is selectable by software.

*8: When this module is installed to a ER bus node unit with HART function, the EB401 firmware must be rev. 2 or later.

● Voltage Output Module (Non-Isolated)

This module provides 16 outputs of -10 to +10 V DC signal. 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	10 kΩ or larger
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 provides 16 inputs of 4 to 20 mA signal. 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
	Power OFF
	270 Ω (20 mA) to 350 Ω (4 mA) (*2)
	500 kΩ or larger
Accuracy	±16 μA
Data update period	10 ms
Transmitter power supply	19.0 V or higher (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: A Zener barrier is not allowed to be connected with this module. Use an isolation barrier when the module is used in intrinsically safe application.

*2: The module input resistance viewed from the terminals depends on the current strength as calculated as below:

$$250 \, \Omega + \frac{\text{voltage drop in the input protection circuit}}{\text{current value}}$$

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*3: When this module is installed to a ER bus node unit with HART function, the EB401 firmware must be rev. 2 or later.

*4: When the dedicated cable is used, the withstanding voltage is 500 V AC (between the input signal and the system). When the ML connector cable is used, the withstanding voltage depends on the electrical specifications of the cable.

*5: This voltage is generated between the connecting terminals for 2-wire transmitters for this module. When calculating the minimum operating voltage for transmitters, consider to allow margins for voltage drop in external wiring.

● Current Output Module (Isolated)

This module provides 16 outputs of 4 – 20 mA signal. It can be used in dual-redundant configuration. (*1)

Items	Specifications	
Model	AAI543-□5□/-□E□	AAI543-□6□/-□F□ (*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: A dual-redundant configuration is enabled by using two identical modules with the same suffix codes.

*2: When AAI543-□6□/-□F□ is installed in a node unit that conforms to the temperature environment, use it in the ambient temperature within 0 to 60 °C range.

*3: When a switch over from control to stand-by module takes place in the dual-redundant configuration, the maximum period of time when the field output falls below 4 mA is 100 ms for AAI543-□5□/-□E□ (standard switch-over response) and 2 ms for AAI543-□6□/-□F□ (fast switch-over response). In case of connecting fast response type field devices, use AAI543-□6□/-□F□ (fast switch-over response) in the dual-redundant configuration.

*4: When the dedicated cable is used, the withstanding voltage is 500 V AC (between the input signal and the system). When the ML connector cable is used, the withstanding voltage depends on the electrical specifications of the cable.

*5: When this module is installed in a ER bus node unit with HART function, the EB401 firmware must be rev. 2 or later.

● Voltage Input Module (Isolated)

This module is for 16 inputs of 1 to 5 V or -10 to 10 V signal. 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: When the dedicated cable is used, the withstanding voltage is 500 V AC (between the input signal and the system). When the ML connector cable is used, the withstanding voltage depends on the electrical specifications of the cable.

● Voltage Output Modules (Isolated)

This module is for 16 outputs of -10 to 10V signal. It can be used in dual-redundant configuration.

Items	Specifications
Model	AAV544
Number of output channels	16, isolated
Output signal	-10 to 10 V
Withstanding voltage	Between output and system: 1500 V AC withstanding voltage, for 1 minute (*1)
Allowable load resistance	5 k Ω or larger
Accuracy	The larger of ± 12 mV or ± 0.3 % FS
Data update period	10 ms
Drift due to ambient temperature change	The larger of ± 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: When the dedicated cable is used, the withstanding voltage is 500 V AC (between the input signal and the system). When the ML connector cable is used, the withstanding voltage depends on the electrical specifications of the cable.

● TC/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 larger	
	Power OFF	2 MΩ or larger	
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 does not carry out temperature compensation and temperature under 44 °C is not measurable.

*2: Wiring resistance for the signal cables of IN□A and IN□C must be identical.

*3: In dual-redundant configuration, it is ±40 μV.

*4: This figure varies depending on the installation conditions.
When the measured temperature is below 0 °C, multiply the following coefficient (K) with the above value.

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

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*5: The reference junction compensation accuracy varies depending on the ambient temperature of the pressure clamp terminal.

By the Node Unit 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

Installed in the Standard Cabinet

Temperature Environment	Reference Junction Compensation Accuracy
0 to 50 °C	±2 °C

*6: AAR181 also supports JPt 100.

*7: Use a non-ground type thermocouple (TC) because AAT141 is an isolated type module. When the ground type TC is used with the module's multiple channels, it causes a temperature error due to the multi-point ground.

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

The current input module receives signal of 4 to 20 mA, and the current I/O module sends and receives signals of 4 to 20 mA. These modules are isolated between the field and the system as well as in between each channel. They 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 larger	
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 higher (at 20 mA) 29.3 V or less (at 0 mA) (*5)	15.0 V or higher (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: A Zener barrier is not allowed to be connected with this module. Use an isolation barrier when the module is used in intrinsically safe applications.

*2: When the ML connector cable is used, the withstanding voltage depends on the electrical specifications of the cable.

*3: The module input resistance viewed from the terminals depends on the current strength as calculated as below:

$$250 \, \Omega + \frac{\text{voltage drop in the input protection circuit}}{\text{current value}}$$

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*4: When this module is used in the ambient temperature of 60 to 70 °C by being installed in a ER bus node unit that conforms to the temperature environment, the allowable load resistance is 200 to 750 Ω.

*5: This voltage is generated between the connecting terminals for 2-wire transmitters for this module. When calculating the minimum operating voltage for transmitters, consider to allow margins for voltage drop in external wiring.

*6: When this module is installed to a ER bus node unit with HART function, the EB401 firmware must be rev. 2 or later.

● TC/RTD Input Modules (Isolated Channels)

These modules receive signals from mV, thermocouple (TC), RTD, and potentiometer (POT), and they are isolated between the field and the system as well as in between each channel. They 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 larger 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 larger	
	Power OFF	1 MΩ or larger	
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: AAT145 also complies with JIS C1602:1981.

*2: Type B does not carry out temperature compensation and temperature under 44 °C is not measurable.

*3: AAR145 also complies with JIS C1604:1989 (Pt100, JPt100).

*4: Wiring resistance for the signal cables of IN□A and IN□C must be identical.

*5: This figure varies depending on the installation conditions.

When the measured temperature is below 0 °C, multiply the following coefficient (K) with the above value.

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

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*5: The reference junction compensation accuracy varies depending on the ambient temperature of the terminal board (AET4D).

By the 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

Installing in the 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 signals. It is isolated between the field and the system as well as in between each channel, and 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 μ s
Input signal level	Contact input Open/close levels of relay contact and transistor contact Open: 100 k Ω or larger, Close: 200 Ω or less Contact capacity When supplying 12 V DC: 15 V DC 15 mA or higher When supplying 24 V DC: 30 V DC 30 mA or higher 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 higher Signal source resistance: 1 k Ω 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 k Ω (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 $\pm$ 10 %: 40 mA, 24 V DC $\pm$ 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: When the ML connector cable is used, the withstanding voltage depends on the electrical specifications of the cable.
 *2: When the pulse input signal is a dry contact (e. g. mechanical relay) up to 10 Hz, chattering can be eliminated.
 *3: Connection methods with field devices vary by the input signals. Refer to the Installation Guidance (TI 33K01J10-50E) for details.
 *4: The input frequency is 0 to 800 Hz in between terminals B and C to receive non-voltage contact signals.

● Pulse Input Module Compatible with PM1

This module counts pulses by receiving 16-channel pulse train signal from pulse train input signal conditioner cards.

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)