

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

YOKOGAWA

A2SAT105-S000

THERMOCOUPLE RTD INPUT ADAPTOR

Used with the applicable CENTUM VP N-IO configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: CENTUM VP N-IO manufacturer technical reference

General Specifications

I/O Adaptors (for N-IO)



GS 33J62F30-01EN

[Release 6]

■ GENERAL

This General Specifications (GS) describes the hardware specifications of I/O adaptors that enable extended functions setting for analog digital I/O module (A2MMM843) and the digital I/O module (A2MDV843); such as I/O signal conversion and isolation can be set by the channels. The adaptors are used by mounting to the base plate for adaptor (A2BN3D).

■ STANDARD SPECIFICATIONS

For the installation environmental standards and combination of base plates, I/O modules, I/O adaptors, and I.S. barriers for mounting of this product, refer to the GS "N-IO System Overview" (GS 33J62A10-01EN).

Type of I/O adaptor

Model	Name	Extended function
A2SAM105	Current input/voltage input adaptor	Current input, voltage input, and isolated channels
A2SAM505	Current output/voltage output adaptor	Current output, voltage output, and isolated channels
A2SAT105	mV/TC/RTD input adaptor	mV input, TC input, RTD input, and isolated channels
A2SAP105	Pulse input signal adaptor (0 to 10 kHz)	Contact ON/OFF, voltage pulse, current pulse, and isolated channels
A2SDV105	Digital input adaptor (24 V DC voltage input, dry contact input)	Voltage input, dry contact input, and isolation (*1)
A2SDV505	Digital output adaptor (24 V DC, current source: 0.5A)	24 V DC/0.5 A output, current source, and isolation (*1)
A2SDV506	Relay output adaptor (24 V DC, dry contact output: 0.5A)	24 V DC/0.5 A relay contact (dry contact NO/NC), and isolated channels
A2SMX801	Pass-through I/O signal adaptor	Used to use the basic functions of I/O, and non-isolated (*2)
A2SMX802	Pass-through I/O signal adaptor (with field power output)	Used to use the basic functions of I/O, and non-isolated (*2) (*3)

Note: For mounting I/O adaptors, refer to "LIMITATIONS AND PRECAUTIONS FOR INSTALLATION" in the GS of "N-IO System Overview" (GS 33J62A10-01EN).

Note: For signal connection to the base plate for adaptor (A2BN3D) using an I/O adaptor, refer to the TI "CENTUM VP installation guidance" (TI 33J01J10-01EN).

*1: Isolated from an I/O module, but not isolated among channels.

*2: Non-isolated from an I/O module.

*3: When the A2SMX802 is mounted, channels among A2SDV105, A2SDV505, and A2SMX801 are not isolated.

● mV/thermocouple/RTD input adaptor

Item	Specifications			
Model	A2SAT105			
Input signal	mV	Thermocouple (*1) · JIS C 1602, IEC 60584-1 (ITS-90) Type J, K, E, B, R, S, T, N(*2)	RTD (3-wire type) (*3) · JIS C 1604, IEC 60751 (ITS-90) Pt100, Pt200, Pt500 (*4) · DIN 43760-1987 : Ni100 · Minco : Ni120	3-wire potentiometer
Input range	-50 to 150 mV	-50 to 150 mV	400 Ω range : 0 to 400 Ω 2000 Ω range: 0 to 2000 Ω	Total resistance: · 100 to 2000 Ω Span resistance: · 50% or higher of the total resistance (*5)
Allowable input voltage	-0.5 to 4.0 V DC (between terminals A and B)		—	
Input resistance	1 MΩ (at power-on), 10 kΩ (at power-off)		—	
Accuracy rating	±20 μV	±20 μV	400 Ω range : ±0.08 Ω 2000 Ω range : ±0.40 Ω	±0.2 %
Data update period	For A2SAT105 alone : 124 ms (*6)			
Signal source resistance	1000 Ω or lower		150 Ω or lower (wiring resistance per wire)	
RJC accuracy	—	±1.0 °C (*7) (*8)	—	
Measuring current	—		400 Ω range : 1.0 mA 2000 Ω range : 0.2 mA	—
Burnout detection	Select from UP, DOWN, or OFF			
Burnout detection time	60 s or lower			
Burnout detection current	0.1 μA			
Withstanding voltage	Between input signal and system: 1500 V AC for 1 minute, 42 V DC (*9) Between I/O adaptors: 500 V AC for 1 minute, 42 V DC			
Mounting	Mounted on the Base Plate for Adaptor (A2BN3D)			
Maximum Current consumption	24 V DC system power supply: 12 mA 5 V DC internal power supply: 10 mA (*10)			
Input linearization	None	Available	Available	None
Influence of signal source resistance/wiring resistance (burnout is OFF)	For 1 kΩ signal source resistance: Input conversion ±20 μV or lower		For wiring resistance 10 Ω of terminals A and C: Input conversion ±40 mΩ or lower (wiring of terminals A and C must have the same resistance)	—
Influence by Drift due to ambient temperature change	For 10 °C change: ±20 μV		For 10 °C change: 400 Ω range : ±0.16 Ω 2000 Ω range : ±0.8 Ω	For 10 °C change: ±0.4% of span
Input signal setting	Input signals and input signal ranges are set by the software setting.			
Weight	0.10 kg or less			
Current limitation	—		1.5 mA or lower	

Note: A2MMM843 style 2 or later and A2BN3D style 2 or later must be used in combination.

Note: Do not use a multi-core cable in common with a digital-input/output signal. The accuracy of A2SAT105 is interfered by capacitive coupling.

*1: For using a thermocouple input, A2SAT105 must be mounted on the A2BN3D-□□□□1.

*2: Type B does not perform reference junction compensation.

*3: 400 Ω range is applicable for input range of Pt100, Ni100, or Ni120. 2000 Ω range is applicable for input range of Pt200 or Pt500.

*4: A2SAT105 also supports JIS C 1604: 1989 JPt100.

*5: The permissible input range is defined as 0 to 30 kΩ; however, using the A2SAT105 within the input range is suggested for maintaining the accuracy rating.

*6: The data update cycle is max. 132 ms, when the A2SAT105 is used with the I/O module.

*7: When the measuring temperature is under 0 °C, multiply the following coefficient (K) with the above value.

$$K = \frac{(\text{Thermo-electromotive force per degree at } 0\text{ °C})}{(\text{Thermo-electromotive force per degree at measured temperature})}$$

*8: The reference junction compensation accuracy varies depending on the ambient temperature.

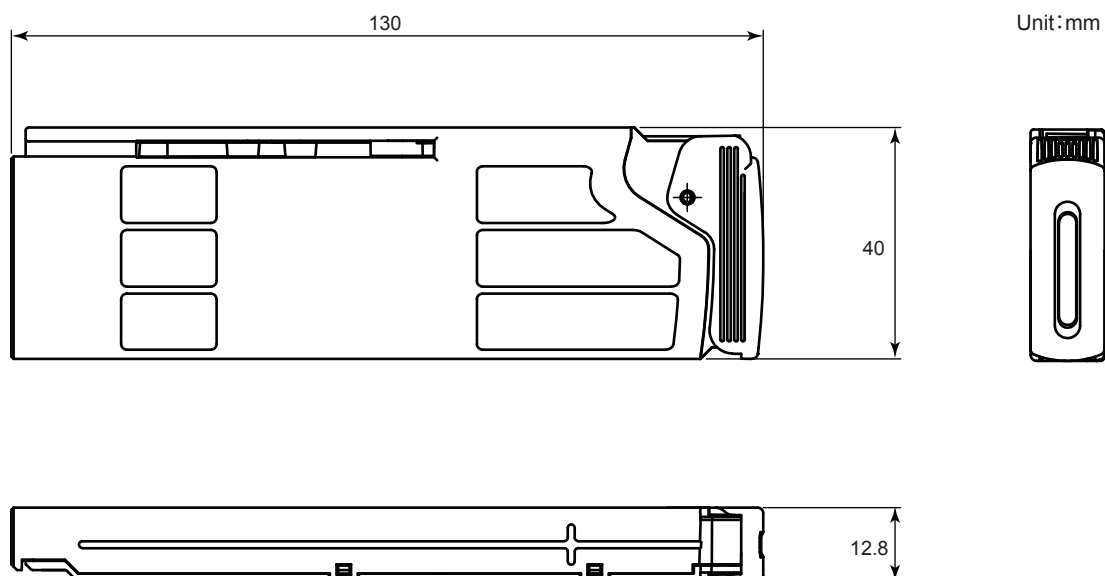
Temperature environment	Reference junction compensation accuracy
-40 to 0 °C	±1.5 °C
0 to 50 °C	±1.0 °C
50 to 70 °C	±1.5 °C

When A2SAM105, A2SAM505, A2SAP105, A2SDV505, A2SDV506, A2SMX802 are mounted on the adjacent channels, or a heating device is placed directly under the base plate for adaptor without heat shield, the reference junction compensation accuracy is ±1.5 °C. The reference junction temperature sensor is mounted on the base plate for adaptor (A2BN3D).

*9: For the withstanding voltage when connecting a field power supply, refer to the GS "Base plates (for N-IO)" (GS 33J62F40-01EN).

*10: The internal power supply is a power supply which draws power from the I/O module.

■ EXTERNAL DIMENSIONS



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Nominal tolerances :

Nominal tolerance is ± 0.8 mm for the dimensions of 0.5 mm or more and 120 mm or less, and the combined nominal tolerance is ± 1.5 mm.

The nominal tolerance is in accordance with JEM 1459 for the dimensions over 120 mm.

■ MODELS AND SUFFIX CODES

Current input/voltage input adaptor

		Description
Model	A2SAM105	Current input/voltage input adaptor
Suffix Codes	-H	With digital communication (HART protocol)
	0	With no explosion protection
	0	Basic type
	1	With ISA standard G3 option
	2	With temperature (-40 to 70 °C) option
	3	With ISA standard G3 option and temperature (-40 to 70 °C) option
	0	Always 0

Current output/voltage output adaptor

		Description
Model	A2SAM105	Current output/voltage output adaptor
Suffix Codes	-H	With digital communication (HART protocol)
	0	With no explosion protection
	0	Basic type
	1	With ISA standard G3 option
	2	With temperature (-40 to 70 °C) option
	3	With ISA standard G3 option and temperature (-40 to 70 °C) option
	0	Always 0

mV/TC/RTD input adaptor

		Description
Model	A2SAT105	mV/TC/RTD input adaptor
Suffix Codes	-S	Standard type
	0	With no explosion protection
	0	Basic type
	1	With ISA standard G3 option
	2	With temperature (-40 to 70 °C) option
	3	With ISA standard G3 option and temperature (-40 to 70 °C) option
	0	Always 0

Pulse input signal adaptor

		Description
Model	A2SAP105	Pulse input signal adaptor (0 to 10 kHz)
Suffix Codes	-S	Standard type
	0	With no explosion protection
	1	With explosion protection
	0	Basic type
	1	With ISA standard G3 option
	2	With temperature (-40 to 70 °C) option
	3	With ISA standard G3 option and temperature (-40 to 70 °C) option
	0	Always 0

Digital input adaptor

		Description
Model	A2SDV105	Digital input adaptor (24 V DC voltage input, dry contact input)
Suffix Codes	-S	Standard type
	0	With no explosion protection
	1	With explosion protection
	0	Basic type
	1	With ISA standard G3 option
	2	With temperature (-40 to 70 °C) option
	3	With ISA standard G3 option and temperature (-40 to 70 °C) option
	0	Always 0

Digital output adaptor

		Description
Model	A2SDV505	Digital output adaptor (24 V DC, current source: 0.5 A)
Suffix Codes	-S	Standard type
	0	With no explosion protection
	1	With explosion protection
	0	Basic type
	1	With ISA standard G3 option
	2	With temperature (-40 to 70 °C) option
	3	With ISA standard G3 option and temperature (-40 to 70 °C) option
	0	Always 0