MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

YOKOGAWA

AAI841-H00 S2

ANALOG CURRENT I/O MODULE

Used with the applicable CENTUM CS / CENTUM VP FIO configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Yokogawa GS 33Q06Q40-31E, pp. 1-2 and 17.

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:

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

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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:

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

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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.

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		Description
Model	AAV142	Analog Input Module (-10 to +10 V, 16-channel, Non-Isolated)
Suffix Codes	-S	Standard type
	5	With no explosion protection
	E	With explosion protection
	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
	5	With no explosion protection
	E	With explosion protection
	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)
	5	With no explosion protection
	E	With explosion protection
	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]

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