Yokogawa AAI135-H50

8-Channel HART Analog Input Module

Yokogawa AAI135-H50 brings eight 4–20 mA field measurements into a CENTUM FIO control system. It is intended for process transmitters where each input requires isolation from the system and from the other channels. The HART version carries the analog process value while providing access to digital information from compatible field instruments. AAI135-H50 also supports dual-redundant configurations, making its channel isolation, transmitter requirements and installed redundancy arrangement important checks when selecting a maintenance spare.



Technical Specifications

Product Identity	
Manufacturer	Yokogawa
Complete model	AAI135-H50
Dimensions (W × H × D)	32.8 × 130 × 107.5 mm; module only
Functional Configuration	
Function	Analog input with HART communication
Input channels	8; isolated between channels and from the system
Input signal	4–20 mA DC
Redundancy	Dual-redundant configuration supported
Performance & Power	
Allowable input current	25 mA
Accuracy	±16 µA
Data update period	10 ms
Transmitter supply	At least 15.0 V at 20 mA; allow for wiring voltage drop
Maximum current consumption	360 mA at 5 V DC; 450 mA at 24 V DC
Environment	
Protection option	Standard version without explosion protection

Selected original manufacturer pages follow on pages 3–5.

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Compatibility & Selection Guide

System compatibility. AAI135-H50 is part of the CENTUM FIO family. The Release 6 application environment includes AFV30/AFV40 field control stations with VP6F1700 control functions and VP6E5100 engineering. Preserve the complete -H50 code when replacing a module: H identifies HART, 5 identifies the non-explosion-protected version and 0 the basic type. Confirm the installed system release and terminal-adapter option.

Wiring & Installation Reference

Signal and connection checks

Signal. 4–20 mA DC · Maximum allowable current 25 mA

Transmitter supply. ≥15.0 V at 20 mA · Allow for cable voltage drop

Barrier selection. Isolation barrier · Do not connect a Zener barrier

Module fit and configuration

Confirm the system position.. Match the field control unit, node type, complete module code and existing configuration before replacement.

Match termination and dimensions.. Use the specified terminal/cable interface and check the module envelope against the installed assembly.

Verify the configured function.. Confirm -H50, channel isolation, hardware Style and the installed terminal adapter; -S versions do not provide HART.

Installation precautions. Do not connect a Zener barrier. Use the appropriate isolation barrier for an intrinsically safe application. Choose the specified terminal or cable interface; cable electrical ratings can limit the complete installation isolation rating.

View connection specifications (PDF) · PDF page 3 | View mounting dimensions (PDF) · PDF page 4

Manufacturer sources: Analog I/O Modules (for FIO).

● 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
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) (*4)	15.0 V or higher (at 20 mA) 29.3 V or less (at 0 mA) (*4)	—
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		Approx. 0.30 kg		
External connection		Pressure clamp terminal, MIL connector cable, dedicated cable (KS1)		
HART communication		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:

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

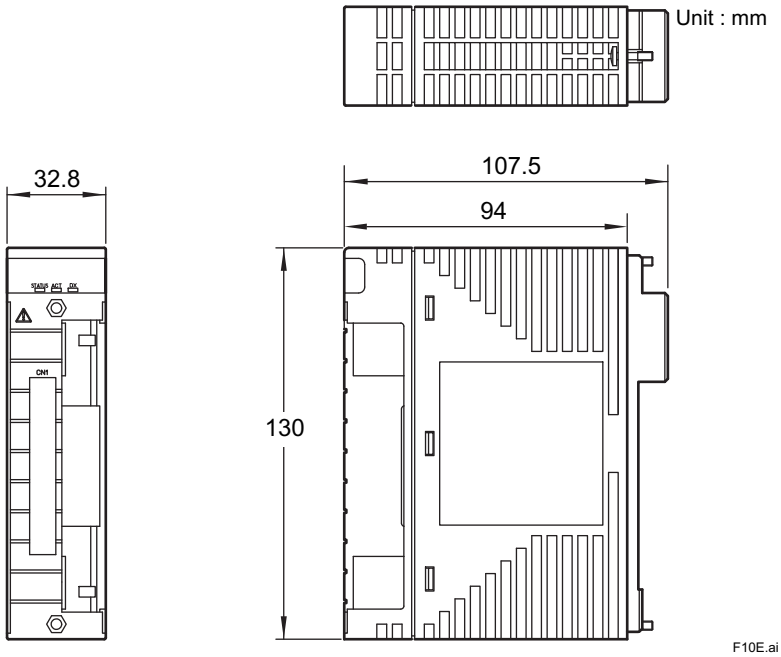
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*4: This voltage is generated between the connecting terminals for 2-wire transmitters for this module. When calculating the minimum operating voltage for transmitters, consider to allow margins for voltage drop in external wiring.

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■ EXTERNAL DIMENSIONS

● AAI141, AAV141, AAV144, AAI841, AAB841, AAV544, AAI143, AAI543, AAI135, AAI835, AAP135, AAB141, AAB842

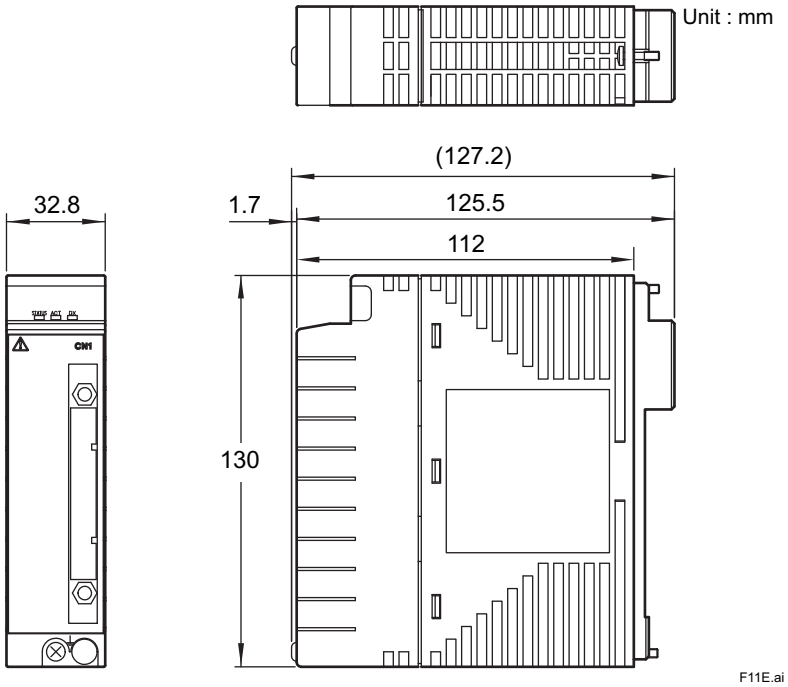


Nominal Tolerances :

When the reference dimension is over 0.5 mm and equal or less than 120 mm, its nominal tolerance is ± 0.8 mm, while its combination of nominal tolerance is ± 1.5 mm.

When the reference dimension is over 120 mm, its nominal tolerance is in accordance with JEM 1459.

● AAT145, AAP849



Nominal Tolerances :

When the reference dimension is over 0.5 mm and equal or less than 120 mm, its nominal tolerance is ± 0.8 mm, while its combination of nominal tolerance is ± 1.5 mm.

When the reference dimension is over 120 mm, its nominal tolerance is in accordance with JEM 1459.

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		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)
	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	/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)
	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	/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
	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

		Description
Model	AAR145	RTD/POT Input Module (16-channel, Isolated channels)
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

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