

# RS-485 I/O Modules: ADAM-4000/4100

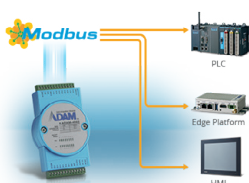
## Introduction

The ADAM-4000/ 4100 series feature rugged industrial-grade cases which are specially designed for reliable operation in harsh environments. Built-in microprocessors independently provide intelligent signal conditioning, analog I/O, digital I/O, data display, and RS-485 communication through Modbus protocols.

## Feature Highlights

### The most used protocol for industrial automation development

The new ADAM-4000/ 4100 modules feature Modbus/RTU remote data transmission protocol.



#### Standardized protocol

- One of the most widely used standard communication protocols for eAutomation development

#### Centralized control

- Universal remote I/O modules operate the system via Modbus

#### Easy integration

- We provide sample code and commands for user programming

### Non-stop monitoring with watchdog timer and protection

For stable and constant performance, ADAM-4000/ 4100 features a Watchdog Timer and maximum protection to ensure the highest level of system reliability.



#### Noise protection

- Data accuracy assured by enhanced ESD / EFT / Surge Protection

#### Module stability ensured

- Once a problem is detected, the Watchdog Timer automatically recovers the system

#### Save on maintenance costs

- The Watchdog Timer enhances system stability and reduces maintenance costs

### Various interfaces to meet your needs

Integration with embedded systems or PLC systems via USB or RS-485



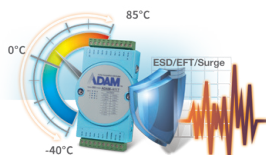
#### Friendly L-shaped cable design\*

- Optional 90 degree input micro USB to a Type-A USB cable with locking mechanism.

#### Micro USB interface\*

- New ADAM-4100 series can be powered and transmit data via micro USB interface

### Robust design for industrial IoT applications

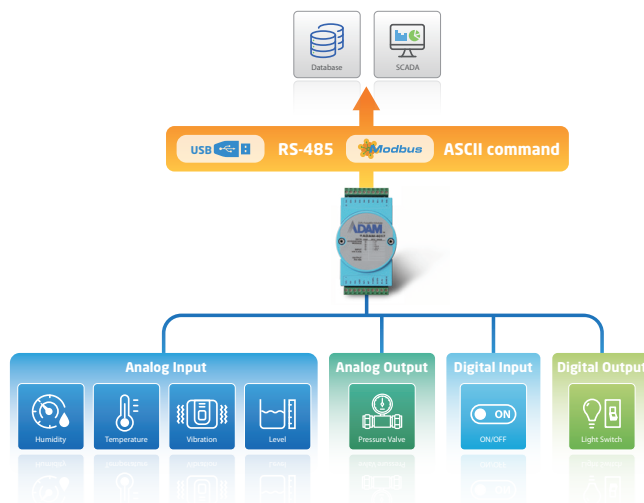


- Level-4 ESD/EFT/ surge & isolation protection
- Wide operating temperature support, up to -40°C ~ +85°C
- Wide power input range, up to 10 ~ 48 V<sub>DC</sub>

## ADAM-4000/4100 Series Comparison

Series Name	ADAM-4000 Series	ADAM-4100 Series
Operation Temperature	-10 ~ 70°C	-40 ~ 85°C
Power Input	10 ~ 30V <sub>DC</sub>	10 ~ 48V <sub>DC</sub>
ESD	8KV Air, 4KV contact	8KV Air, 6KV contact
EFT	2KV	4KV
Surge	0.5KV	4KV
Communication Interface	RS-485	✓
	USB	-

## Application Structure



# RS-485 I/O Modules: ADAM-4000/4100

## Analog Input



Model	ADAM-4015	ADAM-4017	ADAM-4017+	ADAM-4018+	ADAM-4019+	
Resolution	16 bit					
Analog Input	Channels	6 differential	8 differential	8 differential	8 differential	8 differential
	Sampling Rate		10 Hz		10 Hz	10 Hz
	Voltage Input	-	0 ~ 150 mV, 0 ~ 500 mV, 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V, ±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V	0 ~ 150 mV, 0 ~ 500 mV, 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V, ±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V	-	0 ~ 100 mV, 0 ~ 500 mV, 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V, ±100 mV, ±500 mV, ±1 V, ±5 V, ±10 V
	Current Input	-	0 ~ 20, ±20 mA	0 ~ 20, 4 ~ 20, ±20 mA	4 ~ 20, ±20 mA	0 ~ 20, 4 ~ 20, ±20 mA
	Direct Sensor Input	RTD	-	-	J, K, T, E, R, S, B thermocouple	J, K, T, E, R, S, B thermocouple
	Burnout Detection	✓	-	-	✓	✓ (4 ~ 20 mA and all T/C)
	Channel Independent Configuration	✓	-	✓	✓	✓
Isolation Voltage	3,000 V <sub>DC</sub>					
Watchdog Timer	✓ (system and comm.)	-	✓ (system and comm.)	✓ (system and comm.)	✓ (system and comm.)	
Modbus Support *	✓	-	✓	✓	✓	
Certification	UL, CE, FCC	UL, CE, FCC	UL, CE, FCC	UL, CE, FCC	UL, CE, FCC	

\*All ADAM-4000 I/O modules support ASCII commands

## Analog Output



Model	ADAM-4021	ADAM-4024	
Resolution	12 bit	12 bit	
Analog Output	Channels	1	4
	Voltage Output	0 ~ 10 V	±10 V
	Current Output	0 ~ 20, 4 ~ 20 mA	0 ~ 20, 4 ~ 20 mA
Digital I/O	Input Channels	-	4
	Output Channels	-	-
	Alarm Settings	-	✓
Isolation Voltage	3,000 V <sub>DC</sub>	3,000 V <sub>DC</sub>	
Digital LED Indicator	-	-	
Watchdog Timer	✓ (system)	✓ (system and comm.)	
Safety Setting	-	✓	
Modbus Support *	supported after F version	✓	
Certification	UL, CE, FCC	UL, CE, FCC	

\*All ADAM-4000 I/O modules support ASCII commands  
 ✓: supported, -: not supported, △: optional

## Digital Input/Output



Model	ADAM-4050	ADAM-4051	ADAM-4052
Resolution	-	-	-
Channels	-	-	-
Voltage Input	-	-	-
Current Input	-	-	-
Input Channels	7	16	8
Output Channels	8	-	-
Alarm Settings	-	-	-
Isolation Voltage	-	2,500 V <sub>DC</sub>	5,000 V <sub>RMS</sub>
Digital LED Indicator	-	Yes	-
Watchdog Timer	✓ (system)	✓ (system and comm.)	✓ (system)
Safety Setting	-	-	-
Modbus Support *	supported after E version	✓	-
Certification	UL, CE, FCC	UL, CE, FCC	UL, CE, FCC

- 1 IoT Software Solutions
- 2 Intelligent Systems
- 3 SKY Servers
- 4 AI & Advanced Computer Vision
- 5 Intelligent HMI and Monitors
- 6 Automation Computers
- 7 Intelligent Transportation Platforms
- 8 Mission Critical CompactPCI Platforms
- 9 Utility and Energy Solutions
- 10 EtherCAT Solutions and Automation Controllers
- 11 Intelligent Motion Control Solutions
- 12 High Speed DAQ Solutions
- 13 Industrial Communication
- 14 Intelligent Edge DAQ Devices
- 15 Remote I/O, Wireless I/O & Sensors
- 16 Serial Communication

# RS-485 I/O Modules: ADAM-4000/4100

## Digital Input/Output

## Relay Output

## Counter



Model		ADAM-4053	ADAM-4055	ADAM-4056SO	ADAM-4060	ADAM-4068	ADAM-4069	ADAM-4080
Resolution		-	-	-	-	-	-	-
Analog Input	Channels	-	-	-	-	-	-	-
	Sampling Rate	-	-	-	-	-	-	-
	Voltage Input	-	-	-	-	-	-	-
	Current Input	-	-	-	-	-	-	-
	Direct Sensor Input	-	-	-	-	-	-	-
	Burnout Detection	-	-	-	-	-	-	-
	Channel Independent Configuration	-	-	-	-	-	-	-
Analog Output	Channels	-	-	-	-	-	-	-
	Voltage Output	-	-	-	-	-	-	-
	Current Output	-	-	-	-	-	-	-
Digital I/O	Input Channels	16	8	-	-	-	-	-
	Output Channels	-	8	12	4-ch relay	8-ch relay	8-ch power relay	2
	Alarm Settings	-	-	-	-	-	-	Yes
Counter (32-bit)	Channels	-	-	-	-	-	-	2
	Input Frequency	-	-	-	-	-	-	50 kHz
Isolation Voltage		-	2,500 V <sub>dc</sub>	5,000 V <sub>dc</sub>	-	-	-	2,500 V <sub>RMS</sub>
Digital LED Indicator		-	✓	✓	-	✓	-	-
Watchdog Timer		✓ (system)	✓ (system and comm.)	✓ (system and comm.)	✓ (system)	✓ (system and comm.)	✓ (system and comm.)	✓ (system)
Safety Setting		-	✓	-	✓	✓	✓	-
Modbus Support *		supported after E version	✓	✓	supported after E version	✓	✓	supported in E version
Certification		UL, CE, FCC	UL, CE, FCC	UL, CE, FCC	UL, CE, FCC	UL, CE, FCC	UL, CE, FCC	UL, CE, FCC

\*All ADAM-4000 I/O modules support ASCII commands  
 ✓: supported, -: not supported, Δ: optional

# RS-485 I/O Modules: ADAM-4000/4100



Model		ADAM-4115	ADAM-4117	ADAM-4118	ADAM-4150	ADAM-4168
Resolution		16 bits	16 bits		-	-
Analog Input	Channels	6	8 differential		-	-
	Sampling Rate	10/100 Hz (Total)	10/100 Hz (total)		-	-
	Voltage Input	-	0 ~ 150 mV, 0 ~ 500 mV, 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V, 0 ~ 15 V, ±150 mV, ±500 mV, ±1 V, ±5 V, ±10 V, ±15V	0 ~ 15 mV, 0~ 50 mV, 0 ~ 100 mV, 0 ~ 500 mV, 0 ~ 1 V, 0 ~ 2.5 V, ±15 mV, ±50 mV, ±100 mV, ±500 mV, ±1 V, ±2.5 V	-	-
	Current Input	-	0 ~ 20, 4 ~ 20, ±20 mA	0 ~ 20, 4 ~ 20, ±20 mA	-	-
	Direct Sensor Input	Pt100,Pt1000,Ni 50, Ni 508	-	J, K, T, E, R, S, B Thermocouple	-	-
	Burnout Detection	-	✓ (mA)	✓ (mA and All T/C)	-	-
	Channel Independent Configuration	✓	✓	✓	-	-
Digital I/O	Input Channels	-	-	-	7	-
	Output Channels	-	-	-	8	8-ch relay
Counter	Channels	-	-	-	7	-
	Input Frequency	-	-	-	3 kHz	-
Isolation Voltage		3,000 V <sub>DC</sub>				
Digital LED Indicator		Communication and power				
Watchdog Timer		Yes (system & communication)				
Safety Setting		✓	-	-	✓	✓
Communication Protocol		ASCII command/Modbus				
Power Requirements		10 ~ 48 V <sub>DC</sub>				
Operating Temperature		-40 ~ 85°C (-40 ~ 185°F)				
Storage Temperature		-40 ~ 85°C (-40 ~ 185°F)				
Operating Humidity		5 ~ 95% RH				
Power Consumption		1.2 W @ 24 V <sub>DC</sub>	1.2 W @ 24 V <sub>DC</sub>	0.5 W @ 24 V <sub>DC</sub>	0.7 W @ 24 V <sub>DC</sub>	1.8 W @ 24 V <sub>DC</sub>
Communication Interface		RS-485, Micro USB				
Certification		UL, CE, FCC	UL, CE, FCC	UL, CE, FCC	UL, CE, FCC	UL, CE, FCC

✓ : supported, - : not supported, Δ : optional

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