

ADAM-3000 Series



Features

- 1,000 V_{DC} three-way isolation
- Easy input/output range configuration
- Flexible DIN-rail mounting
- Linearized thermocouple/RTD measurement
- Low power consumption
- Wide input bandwidth

Introduction

The ADAM-3000 Series consist of the most cost-efficient, field configurable, isolation-based, signal conditioners on the market today. The modules are easily installed to protect your instruments and process signals from the harmful effects of ground loops, motor noise, and other electrical interferences.

Affordable Signal Isolation Solution

Featuring optical isolation technology, the ADAM-3000 modules provide three-way (input/output/power) 1,000 V_{DC} isolation. Optical isolation provides pin-point accuracy and stability over a wide range of operations at minimal power consumption.

Flexible Analog Data Conversion

The input/output range for the ADAM-3000 modules can be configured through switches located inside the module. The modules accept voltage, current, thermocouple or RTD as input, and pass voltage or current as output.

Thermocouple input is handled by the built-in input thermocouple linearization circuitry and a cold junction compensation function. These ensure accurate temperature measurement and accurate conversion of this information to the voltage or current output.

Configuration

The ADAM-3000 modules use 24 V_{DC} power. This electrical power wiring can be acquired from adjacent modules, which greatly simplifies wiring and maintenance. The I/O configuration switches are located inside the modules. To reach the switches, simply remove the modules from the DIN-rail bracket by sliding the modules downward.

Modular Industrial Design

The ADAM-3000 modules can be easily mounted on a DIN-rail, and signal wires can be connected through screw terminals. The screw terminals and input/output configuration switches are built inside the industrial grade plastic casing. With simple two-wire input/output cables, wiring is easy and reliable in harsh industrial environments.

Applications

- Signal isolation
- Signal transmitters
- Thermocouple/RTD/strain gauge measurements
- Signal amplifiers
- Noise filter

Common Specifications

- **Isolation** 1,000 V_{DC}
- **Indicators** Power LED indicator
- **Power Requirement** 24 V_{DC} ± 10%
- **Case** ABS
- **Screw Terminal** Accepts 0.5 mm² ~ 2.5 mm²
1- #12 or 2- #14 ~ #22 AWG
- **Operating Temperature** 0 ~ 70°C (32 ~ 158°F)
(ADAM-3011: 0 ~ 50°C (32 ~ 122°F))
- **Storage Temperature** -25 ~ 85°C
(-13 ~ 185°F)

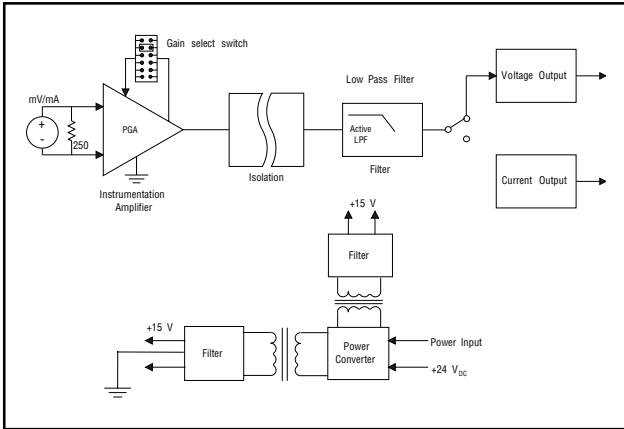
Isolated Signal Conditioning Modules

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Block Diagram



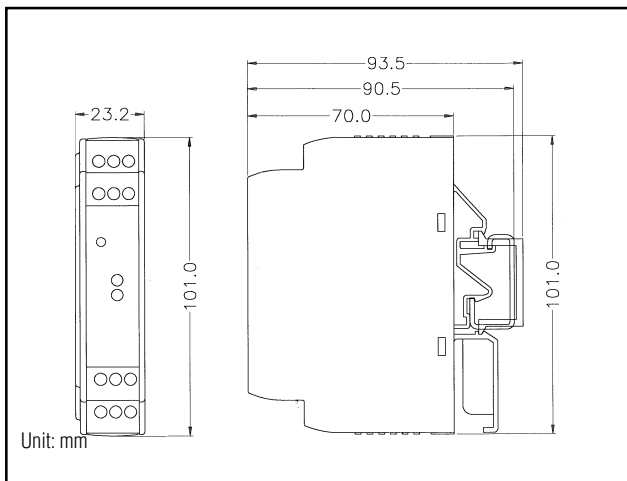
Block Diagram of ADAM-3014



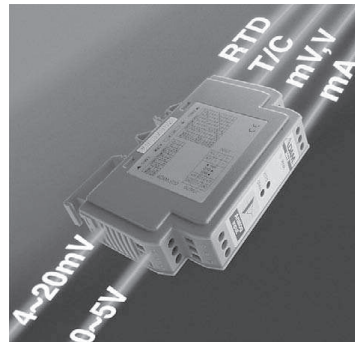
Three-way Signal Isolation

Three-way (input/output/power)
1,000 V_{dc} isolation.

Dimensions

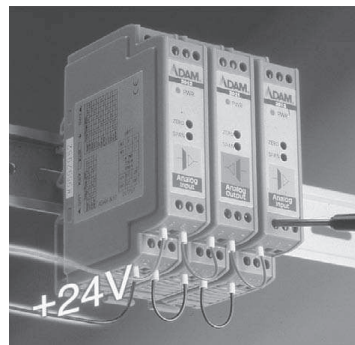


ADAM-3000 Series Modules



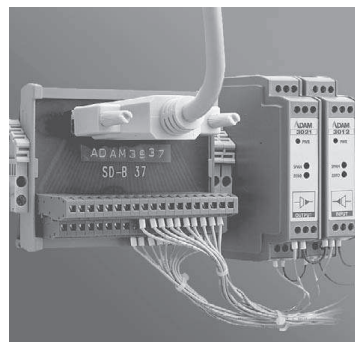
Field Configurable I/O Range

The I/O range can be configured on site with switches inside the module.



Easy Daisy Chain Power Wiring

Power can be connected conveniently from adjacent modules.



Interfacing to DAQ Cards

A wiring adapter can connect modules to a data acquisition card.

ADAM-3011

ADAM-3013

ADAM-3014

Isolated Thermocouple Input Module

Isolated RTD Input Module

Isolated DC Input/Output Module



ADAM-3011



Specifications

Thermocouple Input

- Common Mode Rejection 115 dB min
- Input Type

T/C type	Temperature Range (°C)	Accuracy at 25°C (°C)
J	-40 ~ 760	±2
K	0 ~ 1,000	±2
T	-100 ~ 400	±2
E	0 ~ 1,000	±2
S	500 ~ 1,750	±4
R	500 ~ 1,750	±4
B	500 ~ 1,800	±4

- Isolation (Three-way) 1,000 V_{DC}
- Output Impedance 0.5 Ω
- Stability (Temperature Drift) ±2°C
- Voltage Output 0 ~ 10 V

General

- Connectors Screw terminal
- Enclosure ABS
- Indicators Power LED indicator
- Isolation 1,000 V_{DC}
- Power Consumption 1.4 W
- Power Input 24 V_{DC} ± 10%
- Operating Temperature 0 ~ 50°C (32 ~ 122°F)
- Storage Temperature -25 ~ 85°C (-13 ~ 185°F)

Ordering Information

- ADAM-3011 Isolated Thermocouple Input Module



ADAM-3013



Specifications

RTD Input

- Accuracy ±0.1% of full range (voltage) or +/- 0.15°C (voltage) ±0.2% of full range (current)
- Bandwidth 4 Hz
- Input CMR at DC 92 dB min.
- Input Connections 2, 3 or 4 wires
- Input Type

RTD type	α	Temperature Range (°C)
Pt	0.00385	-100 ~ 100
Pt	0.00385	0 ~ 100
Pt	0.00385	0 ~ 200
Pt	0.00385	0 ~ 600
Pt	0.00385	-100 ~ 0
Pt	0.00385	-100 ~ 200
Pt	0.00385	-50 ~ 50
Pt	0.00385	-50 ~ 150
Pt	0.00392	-100 ~ 100
Pt	0.00392	0 ~ 100
Pt	0.00392	0 ~ 200
Pt	0.00392	0 ~ 600
Ni	N/A	0 ~ 100
Ni	N/A	-80 ~ 100

- Output Range 0 ~ 5 V, 0 ~ 10 V, 0 ~ 20 mA
- Output Resistance < 5 Ω
- Temperature Drift ± 30 ppm of full range

General

- Connectors Screw terminal
- Enclosure ABS
- Indicators Power LED indicator
- Isolation 1,000 V_{DC}
- Power Consumption < 0.95 W
- Power Input 24 V_{DC} ± 10%
- Operating Temperature 0 ~ 70°C (32 ~ 158°F)
- Storage Temperature -25 ~ 85°C (-13 ~ 185°F)

Ordering Information

- ADAM-3013 Isolated RTD Input Module



ADAM-3014



Specifications

I/O

- Accuracy ±0.1% of full range (typical)
- Common Mode Rejection > 100 dB @ 50 Hz/60 Hz
- Current Input Bipolar: ±20 mA Unipolar: 0 ~ 20 mA Input impedance: 250 Ω
- Current Output 0 ~ 20 mA
- Stability (Temperature Drift) 150 ppm (typical)
- Voltage Input Bipolar input: ±10 mV, ±50 mV, ±100 mV, ±0.5 V, ±1.0 V, ±5 V, ±10 V Unipolar input: 0 ~ 10 mV, 0 ~ 50 mV, 0 ~ 100 mV, 0 ~ 0.5 V, 0 ~ 1 V, 0 ~ 5 V, 0 ~ 10 V Input impedance: 2 MΩ Input bandwidth: 2.4 kHz (typical)
- Voltage Output Bipolar: ±5 V, ±10 V Unipolar: 0 ~ 10 V Impedance: < 50 Ω Drive: 10 mA max.

General

- Connectors Screw terminal
- Enclosure ABS
- Indicators Power LED indicator
- Isolation (Three-way) 1,000 V_{DC}
- Power Consumption 0.85 W (voltage output) 1.2 W (current output)
- Power Input 24 V_{DC} ± 10%
- Operating Temperature -10 ~ 70°C (14 ~ 158°F)
- Storage Temperature -25 ~ 85°C (-13 ~ 185°F)

Ordering Information

- ADAM-3014 Isolated DC Input/Output Module

ADAM-3016

ADAM-3112

ADAM-3114

Isolated Strain Gauge Input Module

Isolated AC Voltage Input Module

Isolated AC Current Input Module



ADAM-3016



ADAM-3112



ADAM-3114



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Specifications

I/O

- **Accuracy** $\pm 0.1\%$ of full range
- **Bandwidth** 2.4 kHz (typical)
- **Isolation Mode Rejection** > 100 dB @ 50 Hz/60 Hz
- **Current Output** Current: 0 ~ 20 mA
Current load resistor: 0 ~ 500 Ω (Source)
- **Stability (Temperature Drift)** 150 ppm (typical)
- **Voltage Specifications** Electrical input: ± 10 mV, ± 20 mV, ± 30 mV, ± 100 mV
Excitation voltage: 1 ~ 10 V_{DC} (60 mA max)
- **Voltage Output** Bipolar: ± 5 V, ± 10 V
Unipolar: 0 ~ 10 V
Impedance: $< 50 \Omega$

General

- **Connectors** Screw terminal
- **Enclosure** ABS
- **Indicators** Power LED indicator
- **Isolation (Three-way)** 1,000 V_{DC}
- **Power Consumption** ≤ 1.85 W (voltage output)
 ≤ 2.15 W (current output)
- **Power Input** 24 $V_{DC} \pm 10\%$
- **Operating Temperature** $-10 \sim 70^\circ\text{C}$ ($14 \sim 158^\circ\text{F}$)
- **Storage Temperature** $-25 \sim 85^\circ\text{C}$ ($-13 \sim 185^\circ\text{F}$)

Ordering Information

- **ADAM-3016** Isolated Strain Gauge Input Module

Specifications

Voltage Input

Full Range Mode		400 V	250 V	120 V
Input Voltage	AC (V_{RMS})	0 ~ 400	0 ~ 250	0 ~ 120
	DC (V)	0 ~ 400	0 ~ 250	0 ~ 120
Input Impedance		48 k	30 k	14.4 k

Voltage Output

- **Output Signal** 0 ~ 5 V_{DC}
- **Accuracy** $< \pm 1.0\%$ for full range
- **Output Impedance** $< 10 \Omega$ @ operating frequency < 60 Hz
- **Load** > 10 k Ω
- **Ripple** < 120 mVp-p
- **Temperature Coefficient** 400 ppm/ $^\circ\text{C}$
- **Input Bandwidth** 6 kHz

Power Consumption

- **Supply Voltage** 24 $V_{DC} \pm 10\%$
- **Current Consumption** 40 mA

General

- **Isolation Protection** 1,000 V_{DC} (output to power)
2,500 V_{RMS} (input to output, input to power)
- **Operating Temperature** $0 \sim 60^\circ\text{C}$ ($32 \sim 140^\circ\text{F}$)
- **Storage Temperature** $-20 \sim 70^\circ\text{C}$ ($-4 \sim 158^\circ\text{F}$)
- **Storage Humidity** 5 ~ 95 %

Ordering Information

- **ADAM-3112** Isolated AC Voltage Input Module

Specifications

Current Input

- **AC Current Input** 0 ~ 5 A_{RMS}
- **DC Current Input** 0 ~ 5 A

Voltage Output

- **Output Signal** 0 ~ 5 V_{DC}
- **Accuracy** $< \pm 1.0\%$ for full range
- **Output Impedance** $< 10 \Omega$ @ operating frequency < 60 Hz
- **Load** > 10 k Ω
- **Ripple** < 120 mVp-p
- **Temperature Coefficient** 400 ppm/ $^\circ\text{C}$
- **Input Bandwidth** 10 kHz

Power Consumption

- **Supply Voltage** 24 $V_{DC} \pm 10\%$
- **Current Consumption** 40 mA

General

- **Isolation Protection** 1,000 V_{DC} (output to power)
2,500 V_{RMS} (input to output, input to power)
- **Operating Temperature** $0 \sim 60^\circ\text{C}$ ($32 \sim 140^\circ\text{F}$)
- **Storage Temperature** $-20 \sim 70^\circ\text{C}$ ($-4 \sim 158^\circ\text{F}$)
- **Storage Humidity** 5 ~ 95 %

Ordering Information

- **ADAM-3114** Isolated AC Current Input Module