

ADAM-3012

Isolated DC-input Signal Conditioning Module

Features

- 1000V, fully isolated
- Optical isolation technique
- Easy input/output range configuration
- Flexible DIN-rail mounting
- Configurable input bandwidth
- Low power consumption, 0.8W
- Temperature range -10 to 70°C
- Operates from single +24Vdc

Introduction

The ADAM-3012 is one of the most cost-effective, field-configurable, isolation-based signal conditioners available for protecting processed signals from harmful effects of ground loop, motor noise, and other electrical interference.

The ADAM-3012 features the new optical isolation technique providing 1000Vdc isolation with low power consumption and extreme accuracy and stability within a wide range of operating environments. ADAM-3012 has a maximum $\pm 177.7 \mu\text{V}/^\circ\text{C}$ temperature drift and up to 1KHz input bandwidth using only 0.8W of power. The ADAM-3012 offers superior performance at the lowest price for any signal conditioner or in-house design. A wide variety of input and output ranges can be configured to scale and transmitted; therefore, stock investment for spare parts can be reduced and the most system flexibility can be achieved.

The ADAM-3012 features three-way isolation. The power supply that drives the module's input circuitry and output circuitry is internally isolated, enabling ADAM-3012 to offer true channel-to-channel isolation.

ADAM-3012's input bandwidth can be configured as 5 Hz or 1 KHz by using two stages of low pass filter. The ADAM-3012 is powered by a single +24Vdc. Power can be easily connected from the adjacent modules, making the wiring simple and easy to maintain. The ADAM-3012 can be mounted on a DIN-Rail and operate in environments with high humidity and wide temperature variation.

Applications

- Signal isolation
- Signal conversion for DCS and PLC
- Signal transmitter (0-20mA)
- Signal amplifier
- Noise filter

Specifications

Input

Voltage input

- **Bipolar input:** $\pm 10\text{mV}$, $\pm 50\text{mV}$, $\pm 0.5\text{V}$, $\pm 2.5\text{V}$, $\pm 5\text{V}$
- **Unipolar input:** 0-20mV, 0-100mV, 0-1V, 0-5V, 0-10V
- **Input impedance:** 800K Ω
- **Input bandwidth:** 5Hz, 1KHz (switch selectable)

Current input

- **Bipolar:** $\pm 20\text{mA}$; unipolar: 0-20mA
- **Input impedance:** 250 Ω

Output

Voltage output

- **Bipolar:** $\pm 5\text{V}$; unipolar: 0-10V
- **Impedance:** $< 50\Omega$
- **Drive:** 10 mA maximum

Current output

- **Current:** 0-20mA
- **Current load resistor:** 0-500 Ω (source)

General

- **Isolation (three-way):** 1000Vdc
- **Accuracy:** $\pm 0.1\%$ of full range (typical)
- **Stability (temperature drift):** $\pm 177.7 \mu\text{V}/^\circ\text{C}$
- **Common Mode Rejection:** 100 dB @ 50 Hz / 60 Hz
- **Operating Temperature Range:** -10 to 70°C

Power

- **Range:** 24 Vdc $\pm 10\%$
- **Consumption:** 0.85W

Ordering Information

- ☐ **ADAM-3012:** Isolated DC-input Signal Conditioning Module
- ☐ **ADAM-3920:** 20-pin Wiring Adapter
- ☐ **ADAM-3937:** 30-pin Wiring Adapter
- ☐ **ADAM-4350:** Intelligent Calibrator
- ☐ **PWR-245:** Switching Power Supply for DIN Rail Mounting

Configuration

Figure 1 shows the terminal wiring of ADAM-3012. Positive power terminals 9 and 7 are internally connected, as are negative terminals 12 and 10. Power can be connected through the adjacent modules, making wiring much easier. ADAM-3012 uses single +24 V_{DC}. The tables below show the switch positions to configure input and output range. The I/O configuration switches are located inside the module. To reach the switches, you need to remove the DIN-rail bracket by sliding it down.

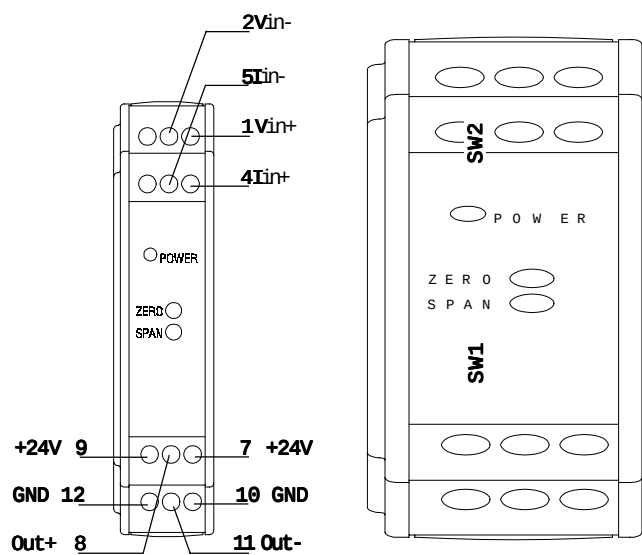


Figure 1: Terminal Wiring Diagram

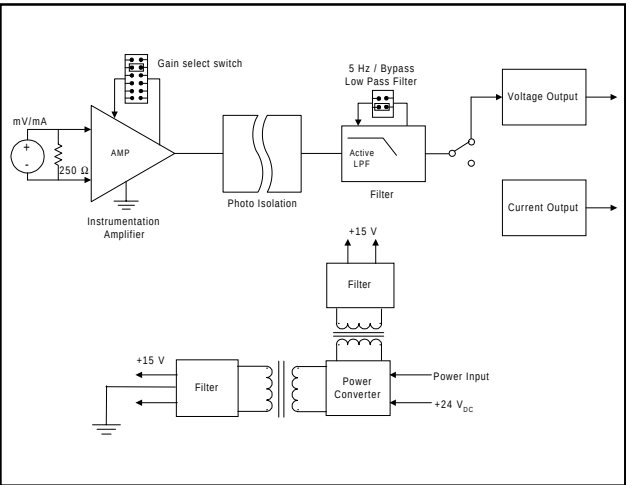


Figure 2: Block Diagram

Calibration

- 1 Disconnect power and set the input range (SW2) and output range (SW1) to the desired setting.
- 2 Apply the power and input the minimum input signal; adjust the variable resistor (VR) of zero for the minimum output signal.
- 3 Apply the maximum input signal and adjust the VR of span until the maximum output signal is reached.
- 4 Repeat steps 2 and 3 for maximum accuracy.

Note: ADAM-4350 provides a quick and easy way for calibration.

Table 1: Input Range Setting (SW2)

Range	1	2	3	4	5	6	7	8
±10 mV		■						■
±50 mV		■					■	
±0.5 V		■				■		
±2.5 V		■			■			
±5 V		■		■				
0-20 mV			■					■
0-100mV			■				■	
0-1 V			■			■		
0-5 V			■		■			
0-10 V			■	■				
±20 mA	■	■						
0-20 mA	■		■		■			

Table 2: Output Range Setting (SW1)

Range	1	2	3	4	5	6	7	8
±5 V	■		■		■			
0-10 V	■		■			■		
0-20 mA		■		■		■		

Table 3: Input Bandwidth Setting (SW1)

Range	1	2	3	4	5	6	7	8
5 Hz							■	■
1 KHz								

Switch key: ■ = ON

Dimensions

