

Isolated Analog Signal Converter 70V to 20mA AC-70V-420

The AC-70V-420 is an industrial precision high-voltage analog signal conditioner designed to convert 0–70V DC voltage levels into an industry-standard, isolated 4–20mA active current loop signal. Built with a pure linear analog isolation amplifier without PWM conversion or digital reconstruction, it achieves an ultra-fast response time (< 1 ms) and exceptional signal fidelity ($< \pm 0.1\%$ output ripple). With a robust 4.25 kV RMS galvanic isolation barrier between high-voltage input and low-voltage control circuitry, it safely translates 48V telecom battery banks, motive battery packs, and solar DC lines into noise-immune 4–20mA current loops for long-distance transmission to PLCs, RTUs, and SCADA systems.



Key Features

- 0–70V DC input to 4–20mA isolated linear conversion
- 4.25 kV RMS galvanic isolation between input and output
- 1.5 kV RMS isolation between input and auxiliary power
- Ultra-fast response time (< 1 ms) for battery and bus telemetry
- Drives loop loads up to 500Ω with $\pm 0.2\%$ full-scale accuracy
- Pure analog linear amplifier topology with zero digital sampling artifacts
- Front-panel multi-turn Zero and Span calibration potentiometers
- 24V DC auxiliary power supply (18V to 30V DC operating range)
- Compact 22 mm DIN rail and wall mountable enclosure
- Dimensions: 100 mm $\times$ 76 mm $\times$ 22 mm

Ordering Information

Product Code	Description
AC-70V-420	Isolated High Voltage Converter 0–70V DC to 4–20mA (24V DC, 4.25kV Isolation)
AC-70V-10V	Isolated High Voltage Converter 0–70V DC to 0–10V DC
AC-150V-420	Isolated High Voltage Converter 0–150V DC to 4–20mA
SPD-20MA	4–20mA Surge Protection Device
USS20M24V-D	Current Source Simulator 0/4 to 20mA with Digital Display
SPD-24V-DC	Surge Protection Device 24V DC SPD

Applications

- **Telecom –48V DC Power Plant Telemetry:** Transmitting 48V battery string voltage readings over long factory cable runs as a 4–20mA current loop.
- **48V Motive & Forklift Battery Systems:** Safe battery string voltage sensing for industrial electric vehicle charging stations.
- **Solar Off-Grid Power Systems:** Converting 48V photovoltaic battery voltage into a noise-immune current loop for SCADA integration.
- **Industrial Automation & Process Control:** Reliable signal interfacing across long cable runs with floating ground potentials.
- **Control Panel Building:** Space-efficient 22 mm DIN rail installation for DC distribution switchboards.

Specifications

Parameter	Value
Mounting Type	35 mm DIN Rail & Wall Mounting
Dimensions	100 mm x 76 mm x 22 mm (L x H x W)
Weight	100 g
Enclosure Material	Industrial Grade ABS
Operating Temperature	0 °C to +50 °C (Industrial: –10 °C to +60 °C)
Storage Temperature	–40 °C to +85 °C
Relative Humidity	5% to 95% RH (non-condensing)

Electrical Specifications

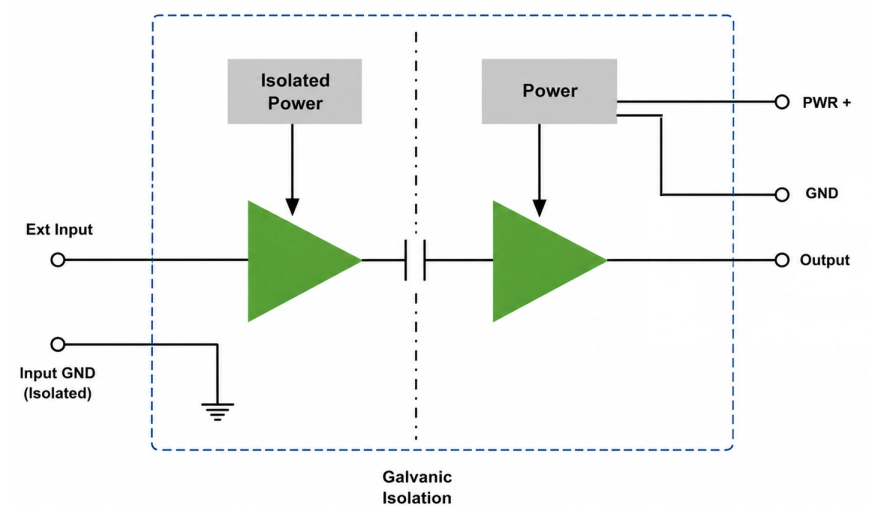
Parameter	Specification
Power Supply Voltage	24V DC $\pm 25\%$ (18V to 30V DC)
Operating Current	100 mA @ 24V DC
Input Signal Range	0.0 V to 70.0 V DC (High Voltage DC)
Input Impedance	$> 500\text{ k}\Omega$
Output Signal Range	4.00 mA to 20.00 mA (Active Current Loop, Load $\leq 500\Omega$)
Conversion Accuracy	$\pm 0.2\%$ of Full Scale @ 25 °C (max $\pm 0.5\%$)
Output Ripple Noise	$< \pm 0.1\%$ of Full Scale
Response Time	$< 1\text{ ms}$ ($< 1\text{ milliSec}$)
Temperature Drift	$< 100\text{ ppm}/^\circ\text{C}$
Status Indication	Power LED ON (PWR)
Field Calibration	Front-panel multi-turn Zero and Span trimpots

Isolation & Protection Specifications

Parameter	Value	Standard / Notes
Galvanic Isolation (Input to Output)	4,250 V RMS (4.25 kV)	Optical & magnetic isolation barrier (1 min)
Galvanic Isolation (Input to Aux. Power)	1,500 V RMS (1.5 kV)	Continuous dielectric isolation
Output to Aux. Supply	Shared Common Ground	Non-isolated reference ground
Reverse Polarity Protection	Integrated	Protects internal circuitry against reverse DC supply wiring
Transient Clamping	600W TVS	Surge and spike suppression across all ports

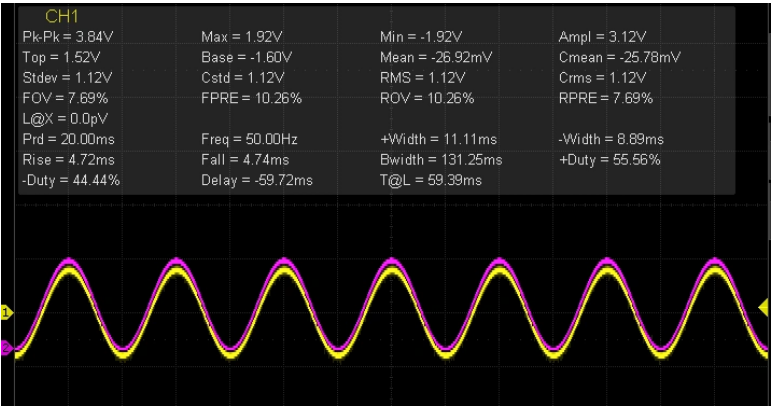
Functional Isolation Architecture & Dynamic Response

The pure linear analog architecture provides true continuous signal isolation without quantization stepping or switching ripples.

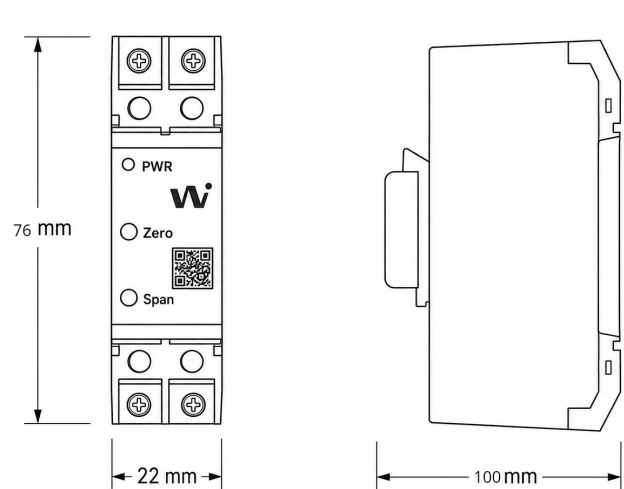


Oscilloscope Dynamic Waveform Verification

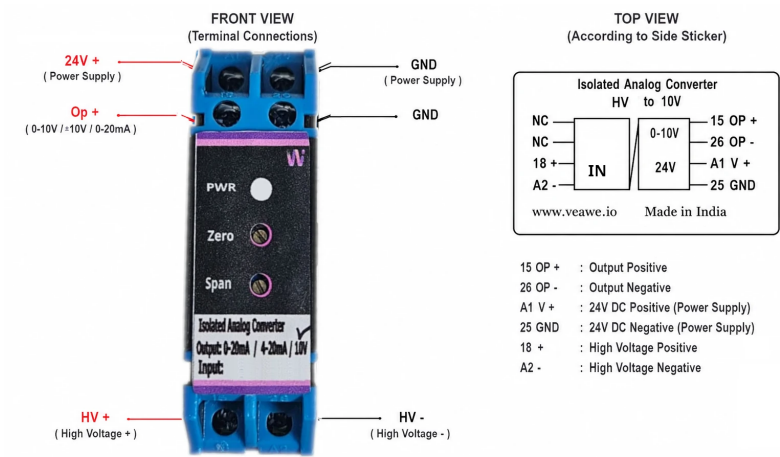
Oscilloscope measurement verifying that the isolated output signal reproduces the input waveform with sub-millisecond response latency (< 1 ms) and clean signal fidelity:



Mechanical Dimensions



Terminal Details & Wiring



Connection Pinouts

Terminal Block	Pin	Label	Signal	Description
Input Terminals	18	18 +	HV Input (+)	0–70V DC High Voltage Input (+)
(Bottom Block)	A2	A2 -	HV Input (-)	High Voltage Input Ground Return (-)
	–	NC	Unused	Reserved / Not Connected
	–	NC	Unused	Reserved / Not Connected
Output Terminals	15	15 OP+	Output (+)	Active 4–20mA Analog Output (+)
(Top Block)	26	26 OP-	Output (-)	Analog Output Ground Return (-)
Power Terminals	A1	A1 V+	+24V DC	Auxiliary Power Supply Input (+24V DC)
(Top Block)	25	25 GND	Power 0V	Auxiliary Power Supply Ground Return

Available Variants & Configurations

The Veawe Precision Analog Isolator family is available in standardized and custom input/output configurations:

Signal Con- verter Input	Output	High Volt- age Input	Output	Transducer Input	Output
0–20 mA	0–20mA, 4– 20mA, 0– 10V, ±10V	30V DC	0–20mA, 4– 20mA, 0– 10V	Pt100	0–20mA, 4– 20mA, 0– 10V
4–20 mA	0–20mA, 4– 20mA, 0– 10V, ±10V	70V DC	0–20mA, 4– 20mA, 0– 10V	Pt1000	0–20mA, 4– 20mA, 0– 10V
0–10 V DC	0–20mA, 4– 20mA, 0– 10V, ±10V	100V DC	0–20mA, 4– 20mA, 0– 10V	K type	0–20mA, 4– 20mA, 0– 10V
0–5 V DC	0–20mA, 4– 20mA, 0– 10V, ±10V	150V DC	0–20mA, 4– 20mA, 0– 10V	J type	0–20mA, 4– 20mA, 0– 10V
75 mV DC	0–20mA, 4– 20mA, 0– 10V, ±10V	300V / ±300V DC	0–20mA, 4– 20mA, 0– 10V	Resistance	0–20mA, 4– 20mA, 0– 10V
±75 mV DC	0–20mA, 4– 20mA, 0– 10V, ±10V	350V DC	0–20mA, 4– 20mA, 0– 10V	—	—
—	—	100V AC	0–20mA, 4– 20mA, 0– 10V	—	—
—	—	5A AC (CT)	0–20mA, 4– 20mA, 0– 10V	—	—

LED Indications and Diagnostics

LED	Color	Status	Description
PWR	Green	ON	Auxiliary 24V DC operating power connected and regulated

Revision History

Revision	Date	Description of Change
Rev 1.0	2026-09-09	Initial datasheet release

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