

Isolated 20mA Splitter AC-20mA-2

The AC-20mA-2 is an industrial precision dual-channel analog current loop splitter designed to duplicate a single 0/4–20mA process transmitter signal into two independent, mutually isolated 0/4–20mA active current outputs. Built with a pure linear analog isolation amplifier without PWM conversion or digital reconstruction, it delivers continuous analog tracking with an ultra-fast response time (< 1 ms) and exceptionally low output ripple noise ($< \pm 0.1\%$). With an ultra-high 4.25 kV RMS galvanic isolation barrier between input and outputs, it breaks troublesome ground loops between field sensors and multiple receiving devices (such as a local digital indicator and a central PLC/DCS analog input card), ensuring signal integrity and comprehensive equipment protection.



Key Features

- 4–20mA input to dual independent 4–20mA isolated outputs
- 4.25 kV RMS galvanic isolation between input and outputs
- 1.5 kV RMS isolation between channels and auxiliary power
- Ultra-fast response time (< 1 ms) for real-time loop splitting
- Drives loop loads up to 500 Ω per channel 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-20mA-2	Isolated 20mA Splitter (1 Input, 2 Outputs, 24V DC, 4.25kV Isolation)
AC-420-420	Signal Isolator 4–20mA to 4–20mA Current Loop Isolator
AC-10V-10V	Isolated Analog Signal Converter 10V to 10V DC
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

- **Dual-Receiver Monitoring:** Splitting a single 4–20mA field transmitter signal simultaneously to a central PLC/SCADA system and a local panel meter or chart recorder.
- **Redundant Control Systems:** Feeding primary and standby safety PLCs from a single critical field process sensor.
- **Ground Loop Elimination:** Resolving common-mode voltage differences between control rooms and field instrumentation.
- **Process Automation & Interlocks:** Providing parallel 4–20mA feedback to both variable speed drives and automation controllers.
- **Control Panel Building:** Compact 35 mm DIN rail mounting for clean and space-efficient cabinet wiring.

Specifications

Parameter	Value
Mounting Type	35 mm DIN Rail Mounting
Dimensions	110 mm x 47 mm x 25 mm (L x H x W)
Weight	100 g
Enclosure Material	Industrial Grade ABS
Operating Temperature	–20 °C to +55 °C
Storage Temperature	–40 °C to +85 °C
Relative Humidity	5% to 95% RH (non-condensing)

Electrical Specifications

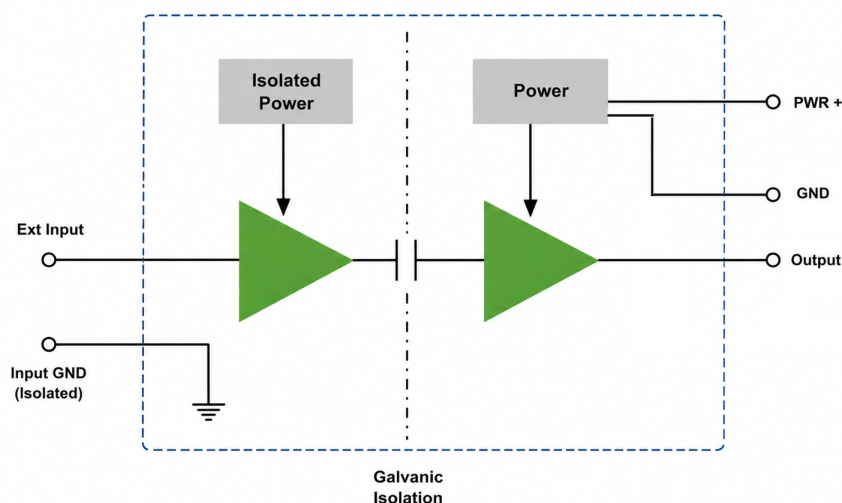
Parameter	Specification
Power Supply Voltage	24V DC $\pm 25\%$ (18V to 30V DC)
Operating Current	100 mA @ 24V DC
Input Signal Range	0/4–20 mA DC (Single Channel Input)
Input Impedance	$\leq 100\ \Omega$
Output Signal Range	Dual 0/4–20 mA DC (Channel 1 & Channel 2, Load $\leq 500\ \Omega$ each)
Conversion Accuracy	$\pm 0.1\%$ of Full Scale @ 25 °C (max $\pm 0.2\%$)
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 Outputs)	4,250 V RMS (4.25 kV)	Optical & magnetic isolation barrier (1 min)
Galvanic Isolation (Between Output 1 & 2)	1,500 V RMS (1.5 kV)	Complete channel-to-channel isolation
Galvanic Isolation (Input to Aux. Power)	1,500 V RMS (1.5 kV)	Continuous dielectric isolation
Outputs 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

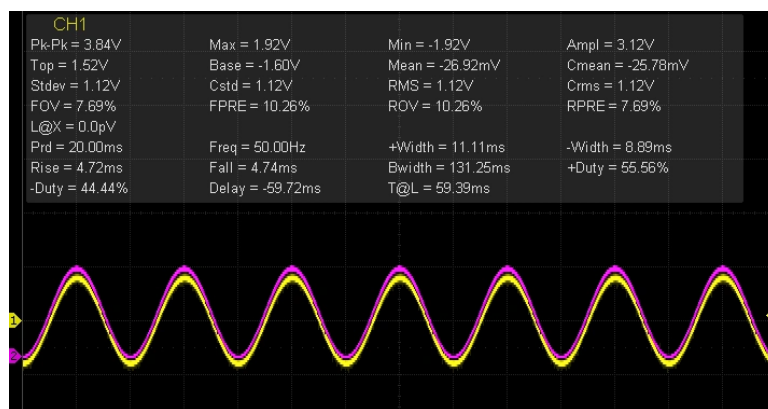
Functional Isolation Architecture & Dynamic Response

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

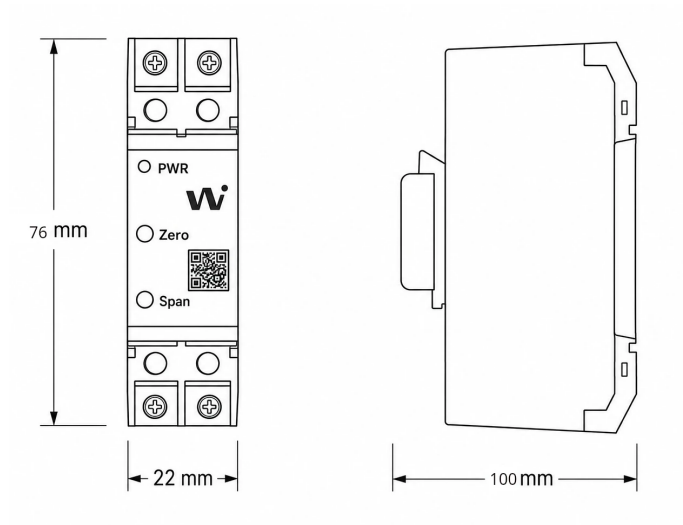


Oscilloscope Dynamic Waveform Verification

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	IN +	Input (+)	Single 0/4–20mA Current Loop Input (+)
<i>(Bottom Block)</i>	A2	IN -	Input (-)	Current Loop Ground Return (-)
	–	NC	Unused	Reserved / Not Connected
	–	NC	Unused	Reserved / Not Connected
Output Channel 1	15	OP1 +	Output 1 (+)	Isolated 0/4–20mA Output Channel 1 (+)
<i>(Top Block)</i>	26	OP1 -	Output 1 (-)	Channel 1 Ground Return (-)
Output Channel 2	16	OP2 +	Output 2 (+)	Isolated 0/4–20mA Output Channel 2 (+)
<i>(Top Block)</i>	28	OP2 -	Output 2 (-)	Channel 2 Ground Return (-)
Power Terminals	A1	A1 V+	+24V DC	Auxiliary Power Supply Input (+24V DC)
<i>(Top Block)</i>	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 Converter Input	Output	High Voltage 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	Dual 0/4–20 mA (Splitter)	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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