

FE155 Stimulator HC

Signal Conditioner Series

Description

The FE155 Stimulator HC uses the analog output from a PowerLab to produce electrically isolated constant current pulses for stimulation of nerve, muscle or tissue samples. The unit provides constant current electrical pulses with adjustable pulse amplitude, width and frequency. It is supplied with MLAC36 Stimulator HC Leads (2m) to connect the stimulator HC to the samples for stimulation.



Operation

The output stage consists of a high-voltage constant-current source that can produce pulses of variable duration and amplitude under software control. The current source can deliver pulses up to 100 mA at 100 V compliance levels; its amplitude is set by a digital attenuator network, which is in turn controlled by the I²C logic. The output to the experimental tissue is through isolated optical couplers.

Power for the Stimulator HC current source is derived from the safety approved power pack external AC wall-plug transformer coupled through a custom isolation transformer (from which the isolated low voltage and 100 V supplies are derived).

Under no circumstance should any other transformer be used with the FE155 Stimulator HC.

During operation an indicator light on the front panel lights green with every pulse (it will glow yellow if the Stimulator HC is out of compliance). A small internal beeper can also be enabled to give an audible beep with every pulse delivered.

Applications

The FE155 Stimulator HC is suitable for stimulation of nerve, muscle or tissue samples when obtaining evoked response measurements.

Specifications

Output

Connection type:	Two 2 mm touch proof safety plugs
Output configuration:	Constant-current stimulator with hardware limited repetition rate
Output waveform:	Rectangular, monophasic pulses with software-selectable pulse amplitude and duration
Isolation rating:	4000 V AC _{rms} for 1 minute
Safety indicators:	A single multi-color indicator displays the Stimulator HC status. A green flash indicates delivery of a valid stimulus. A yellow flash indicates an out-of-compliance condition (OOC).
Safety switch:	Isolating On-Off switch flicks down to disconnect quickly
Compliance voltage:	100 V fixed
Current ranges:	1 mA, 10 mA, 100 mA full scale
Current rise time:	<1 μ s (100 Ohm load @ 100 mA) 25 μ s (10 kOhm load @ 0.5 mA)
Current fall time:	<1 μ s (100 Ohm load @ 100 mA) 25 μ s (10 kOhm load @ 0.5 mA) <i>Note: Rise and fall times are proportional to load resistance and capacitance.</i>
Operating duty cycle:	up to 20%
Resolution:	1% of full scale (10 μ A, 100 μ A, or 1 mA)
AC line leakage current:	<200 nA p-p
Differential output noise:	<1 μ A p-p
Output capacitance:	~70 pF (without cable)
Power source:	Non-isolated circuitry supplied by PowerLab via I ² C connection. Isolated and high-voltage circuitry derives power from the external 12 V AC, 300 mA _{rms} , wall-plug transformer. High voltage isolation is provided by an internal isolation transformer. No batteries required.

Pulse Control (internal pulse duration control)

Pulse duration range:	0.02 to 5.12 ms in 0.02 ms steps
Duration accuracy:	$\pm 0.01\%$, +5/0- μ s
Repetition rate:	up to 30 Hz
Repetition accuracy:	$\pm 0.1\%$ (determined by PowerLab)
Current rise delay:	22–45 μ s (variable)

Control Port

I²C port:

Provides control and power

Interface communications rate of ~50 kbits/s

Physical Configuration

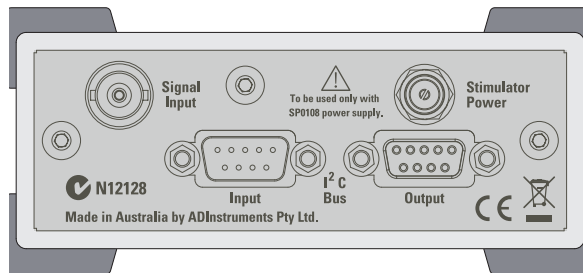
Dimensions (h × w × d): 55 mm × 120 mm × 260 mm

Weight: 1.3 kg

Operating temperature range: 0–35 °C, 0–90% humidity (non-condensing)

ADInstruments reserves the right to alter these specifications at any time.

Front and Back Panels



Caution

Read “Statement of Intended Use” on our website or in “Getting Started with PowerLab” before use.

Ordering Information:

FE155 Stimulator HC

Includes:

Stimulator HC Owner’s Guide

MLAC36 Stimulator HC Leads (2m)

2 mm Safety Plugs (one RED, one BLACK) (2)

PC Cable (9-pin plug to 9-pin receptacle)

MLAC01 BNC to BNC Cable

Power Plug Pack (12 V AC, 20 V AC)



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ISO 9001:2008 Certified Quality Management System

WARRANTY: ADInstruments PowerLab data acquisition units (Product Number Prefix: PL), Front-end Signal Conditioners (Product Number Prefix: FE) are warranted against defects in materials and workmanship for a period of 5 years from the date of purchase. Other PowerLab data acquisition units and ADInstruments manufactured Front-end and Pod Signal Conditioners, and Instruments are warranted of a period of 3 years from the date of purchase. Third party products are covered by the manufacturer’s warranty. Warranties are void if the product has been damaged due to negligence. Consumables and electrodes are not covered by a warranty. All questions regarding service and warranty should be directed to your nearest ADInstruments representative.