

MANHSCK100A

Model HSCK100A

Scrambled Grid Current Generator

Operating Instructions



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To Operate in the LOCAL (Manual) Mode:

1. Connect a trigger signal source to the rear panel tip jacks. A simple hand switch, a relay, or an open collector driver is required. Be sure to observe the correct polarity if an active or open collector driver is used.
2. Connect the 8 pin shock output connector to the grid floor.
3. Turn the power on with the rear panel switch.
4. Set the REMOTE/LOCAL switch to LOCAL (down)
5. Push the SHOCK/SET switch to the SET position (down), and adjust the CURRENT SET knob until the meter shows the target grid shock current (in mA).
6. Release the SHOCK/SET switch. The unit is now ready to deliver grid shock current.
7. Shock current can now be triggered either with the SHOCK/SET switch on the front panel, or by applying a trigger signal to the rear panel pin jacks.
8. The front panel STATUS LED will glow green when the shock is on and flash red when shock is actually being delivered to a subject animal.

To Operate in the REMOTE Mode:

1. Connect a trigger signal source to the rear panel tip jacks, as above. This is optional since the shock current output can be controlled either from the tip jacks or through one of the DB25 remote port lines.
2. Connect the DB25 remote port to an external device capable of supplying current set point data. The remote port is compatible with most PC parallel ports, if appropriate PC software is provided.
3. Set the REMOTE/LOCAL switch to REMOTE.
4. The SGCG current setpoint can now be programmed from the remote data device, and the shock current can be triggered either from the remote device or through the rear panel pin jacks. The front panel controls are ignored, except the REMOTE/LOCAL switch.

The status LED shows green for shock-on and red for shock-delivered, as in LOCAL mode. In addition, the TEST_OUT line of the DB25 is asserted low during a shock-delivered event. It remains off (high) during shock-on.



Diagnostic Tests

The SGC6 device can test the animal chamber grid for possible partial short circuits between the grid bars due to the buildup of animal debris during testing sessions. Such grid faults can lead to inconsistent and variable behavioral data.

In LOCAL mode, press and hold the TEST button for about a second. If the status LED stays RED, there is a grid fault problem. The grid should be inspected and cleaned. The grid is live during this test, so it should NOT be performed with an animal in the behavior chamber.

In REMOTE mode the grid fault TEST function is initiated by asserting the TEST line of the DB25 connector. The result is signaled by the front panel status LED (green= OK) and by the DB25 TEST_OUT line.

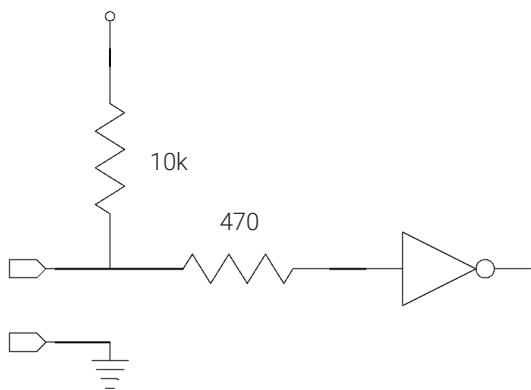
The status of the internal high voltage fuse can also be easily assessed.

In LOCAL mode, put the selector switch to SET and adjust the current to a non-zero value. The status LED will indicate red and the meter will indicate the current setpoint if the fuse is good.

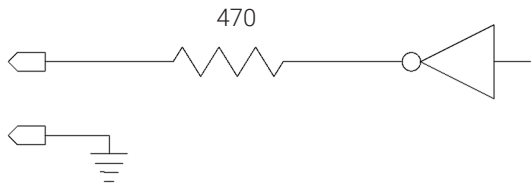
In REMOTE mode, assert both the TEST_IN and TRIGGER DB25 lines. If the fuse is OK, the TEST_OUT line will be asserted low.

Interface Details for Scrambled Grid Current Generator v3.10

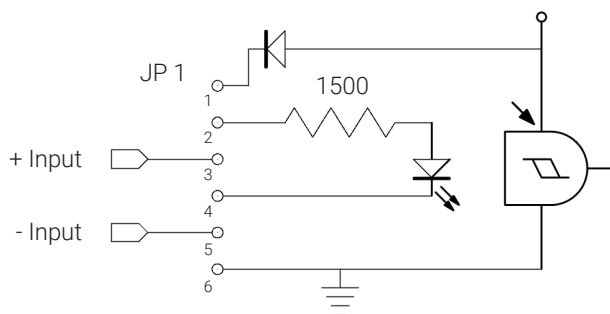
DB 25 Input Circuit



DB 25 Output Circuit



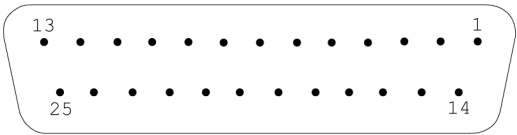
Trigger Input Circuit (32V Max)



Jumper Positions	Trigger Function
1-2, 3-4, 5-6*	Contact closure or active pulldown
2-3, 4-5	Active HI voltage (4.5V min) or current (2 mA min) drive

* These positions are the Default setting. The Default setting is required by ABET II for proper operation.

DB25 Remote Connector Entry view



Pin #	Function
1	TRIGGER
2	Data0 (0.02mA)
3	Data1 (0.04mA)
4	Data2 (0.08mA)
5	Data3 (0.16mA)
6	Data4 (0.32mA)
7	Data5 (0.64mA)
8	Data6 (1.28mA)
9	Data7 (2.56mA)
10	NC
11	TEST_OUT
12	NC
13	NC

Pin #	Function
14	TEST_IN
15	NC
16	NC
17	NC
18	Ground
19	Ground
20	Ground
21	Ground
22	Ground
23	Ground
24	Ground
25	Ground

Notes: All signal lines, except TEST_OUT (pin 11), are active LOW.
Signal levels are TTL compatible.

Using An HSK100A For Two-Pole Applications

While the HSK100A series instruments are designed for scrambled grid shock applications, they can also be used for two-pole applications, such as tail shock. The output waveform is symmetrical and biphasic. A simplified schematic for the HSK100A when used in a two-pole application is shown in Figure A. The electrode load (E1 to E2) is driven by an H-bridge which makes electrode E1 positive during the A-drive phase and electrode E2 positive during the B-drive phase. The resulting output current waveform is shown in Figure B.

To obtain the electrode load current waveform shown in Figure B, the two shock electrodes need to be connected as shown in Figure C. Figure C shows the Shock Out connector when looking at the rear panel of the HSK100A.

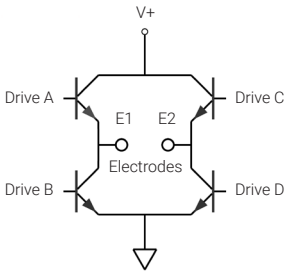


Figure A. Simplified output circuit for HSK100 devices when used for two pole applications.

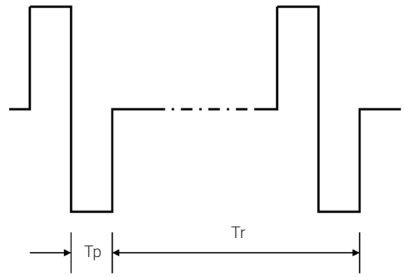


Figure B. HSK100 series current output waveform when connected for two-pole applications. $T_p = 8.3 \text{ msec}$; $T_r = 75.0 \text{ msec}$.

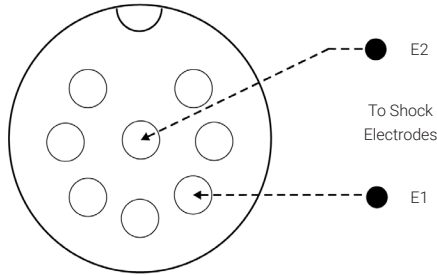


Figure C. The Shock Out connector pins to use to obtain the two-pole current waveforms shown in Figure B.

Shock Count and Latency Data

In some applications (e.g. the defensive burying paradigm) it is useful to obtain a latency time between some event and shock delivery to the subject animal, and/or to count the number of shocks delivered. HSK100A instruments facilitate these measurements by providing an output signal through the rear panel DB25 connector that is synchronized with shock delivery. The TEST_OUT signal from pin11 (shown on page 6) is TTL compatible. This signal is normally LOW, but transitions to HI when output shock current is actually delivered to a subject animal. The minimum duration of this signal is about 80 msec, and it continues for the full duration of shock delivery.

Terms and Conditions

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If ordering instrumentation for use outside the USA, please specify the country of ultimate destination, as well as the power requirements (110V/60Hz or 220V/50Hz). Some model numbers for 220V/50Hz will have a "C" suffix.

Quotations

Quotations are supplied upon request. Written quotations will include the price of goods, cost of shipping and handling, if requested, and estimated delivery time frame. Quotations are good for 30 days, unless otherwise noted. Following that time, prices are subject to change and will be re-quoted at your request.

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Lafayette Instrument Company
3700 Sagamore Parkway North
Lafayette, IN 47904, USA.

Shipments cannot be received at the PO Box. The items should be packed well, insured for full value, and returned along with a cover letter explaining the malfunction. An estimate of repair will be given prior to completion ONLY if requested in your enclosed cover letter. We must have a hard copy of your purchase order by mail or fax, or repair work cannot commence for non-warranty repairs.

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3. This warranty does not cover damage to components due to improper installation by the customer.
4. Consumable and/or expendable items, including but not limited to electrodes, lights, batteries, fuses, O-rings, gaskets, and tubing, are excluded from warranty.
5. Failure by the customer to perform normal and reasonable maintenance on instruments will void warranty claims.
6. If the original invoice for the instrument is issued to a company that is not the company of the end user, and not an authorized Lafayette Instrument Company distributor, then all requests for warranty must be processed through the company that sold the product to the end user, and not directly to Lafayette Instrument Company.

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