

**Features**

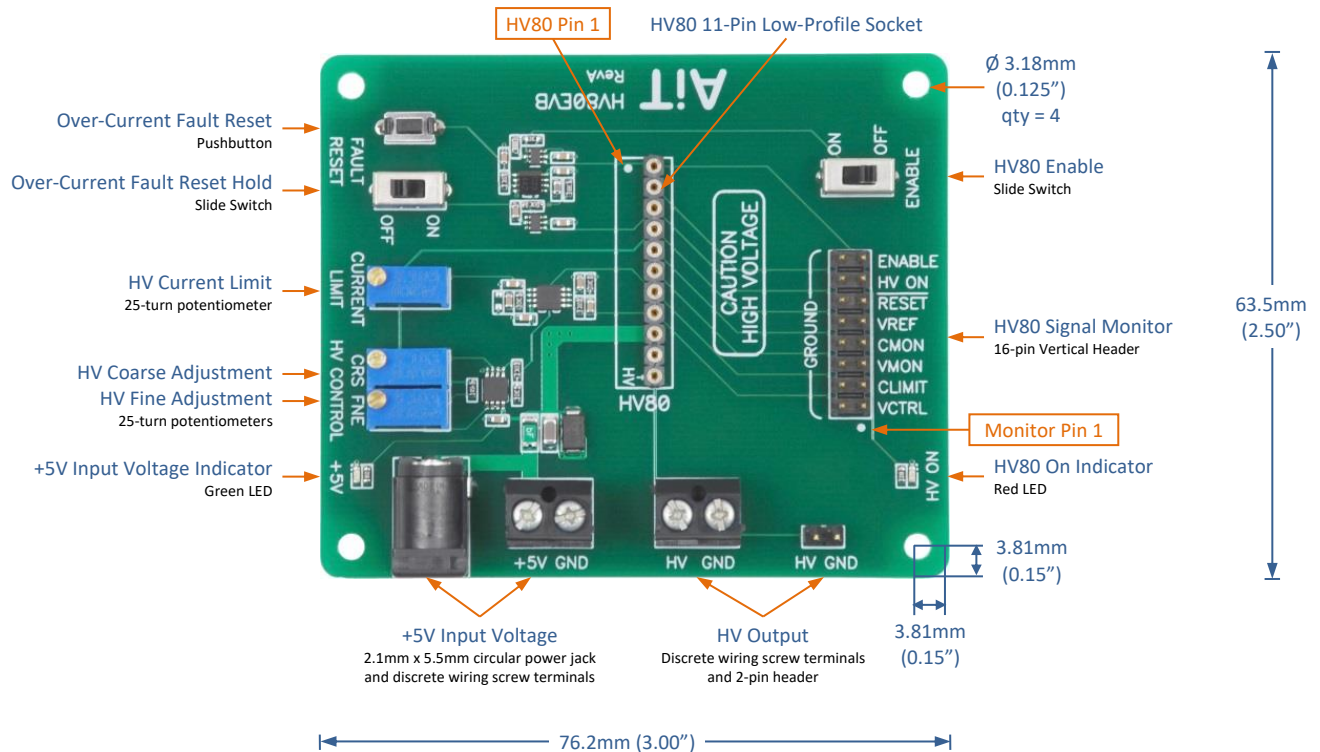
- Supports the AiT HV80A and HV80B 80V programmable power supplies
- Coarse and fine output voltage control
- Current limit control
- Over-current fault reset pushbutton
- Over-current fault disable switch
- HV80 enable switch
- HV80 signal monitor connector
- Connects to a standard +5V power supply with discrete wiring or a 2.1mm x 5.5mm barrel jack
- Refer to the HV80 datasheet for +3.3V operation



*HV80 sold separately*

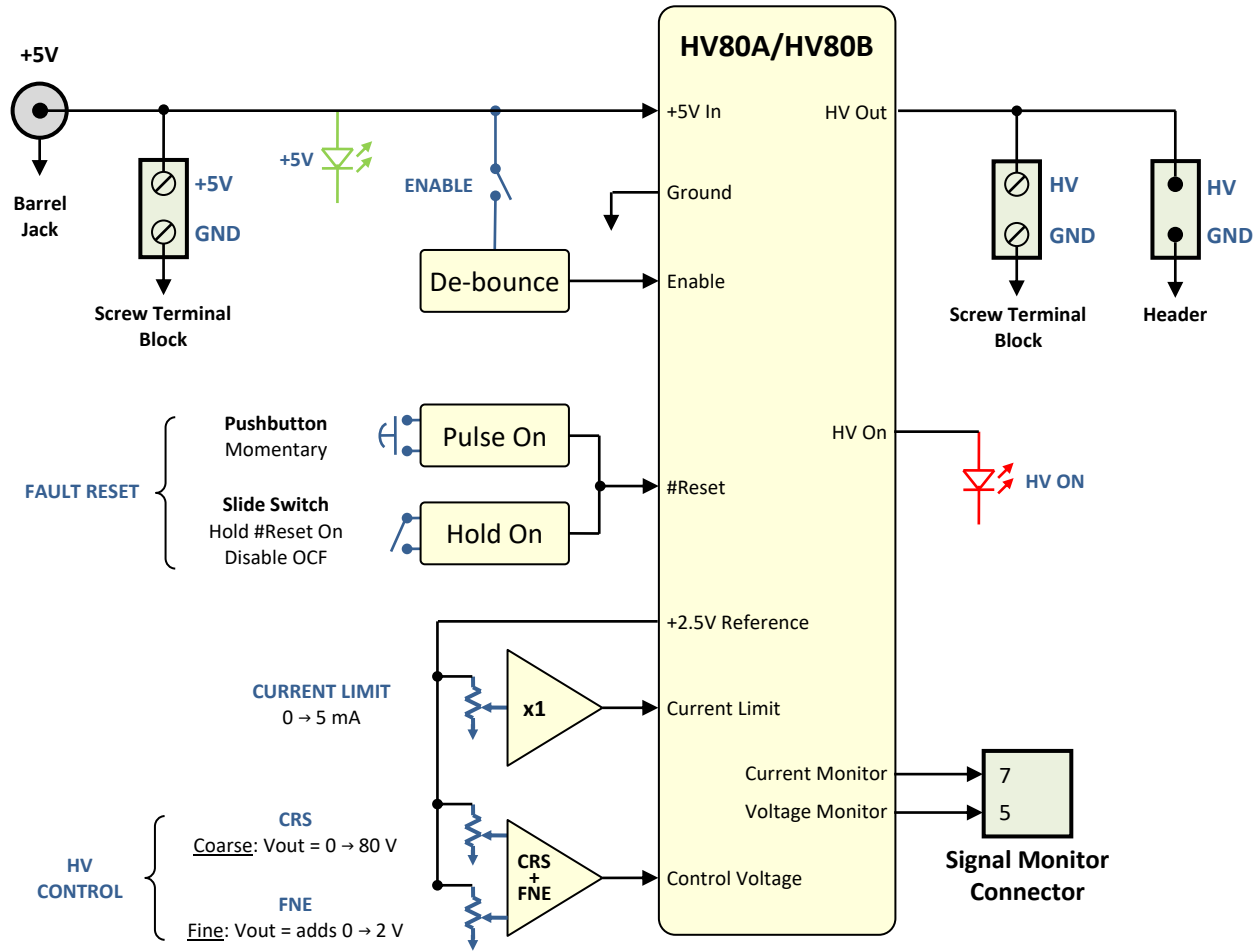
**Accessories Included**

- +5V wall-mount power supply
- Four #4-40 aluminum standoffs with screws



Measurement tolerance: ±0.020"

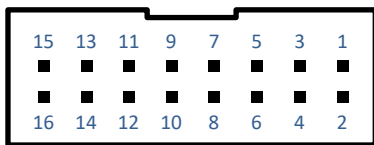
**Architecture**



**NOTES**

- Blue text represents circuit board text labels
- Blue objects represent control components
- Refer to the HV80 datasheet for details

**SIGNAL MONITOR CONNECTOR**



16-pin 0.100" vertical header

Pin	Function	Pin	Function
1	Control Voltage	2	Ground
3	Current Limit	4	Ground
5	Voltage Monitor	6	Ground
7	Current Monitor	8	Ground
9	Voltage Reference	10	Ground
11	#Reset	12	Ground
13	HV On	14	Ground
15	Enable	16	Ground

## Specifications

### Input Power Requirements

Input voltage	+5V Refer to the HV80 datasheet for +3.3V operation
Input fuse	200mA, resettable
No-load current, no HV80	5mA
No-load current	25mA at $V_{out} = 80V$ , no load
Full-load current	140mA at $V_{out} = 80V$ , 4mA load

### HV80 Control

Coarse control voltage	0V → 2.5V control = 0V → 80V HV80 output
Fine control voltage	0V → 62.5mV control = 0V → 2V added HV80 output
Current limit control voltage	0V → 2.5V control = 0mA → 5mA HV80 output current
Enable switch	“ON” = Enables the HV80 main input voltage “OFF” = Disables the HV80 main input voltage
Fault reset pushbutton	Temporarily asserts #Reset for approximately 500ms. Disables the over-current fault shutdown while #Reset is asserted.
Fault reset switch	“ON” = Permanently asserts #Reset and disables over-current fault shutdown “OFF” = Permits over-current fault shutdown
Caution	Disabling the over-current fault circuit or repeating HV reset during a persistent fault condition may damage system components. Identify and remove the cause of the fault, restart the HV power supply at a safe output voltage, then slowly increase to normal operating voltage.

### LEDs

+5V	Green = +5V power supply on
HV ON	Red = HV80 enabled and no over-current fault

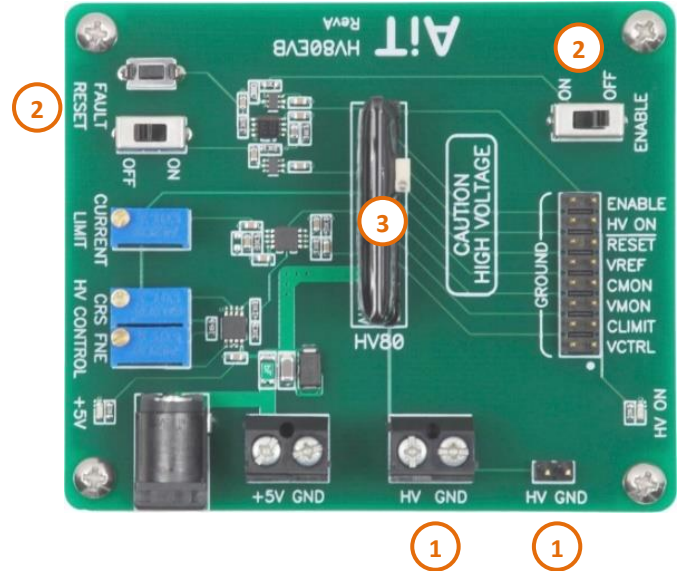
### Connectors

Signal Monitor header	16-pin, 2-row unshrouded header, 0.1” pin pitch
+5V circular barrel jack	2.1mm ID, 5.5mm OD, center positive
+5V terminal block	Screw terminals
HV output header	2-pin vertical header, 0.1” pin pitch
HV output terminal block	Screw terminals

## Operation

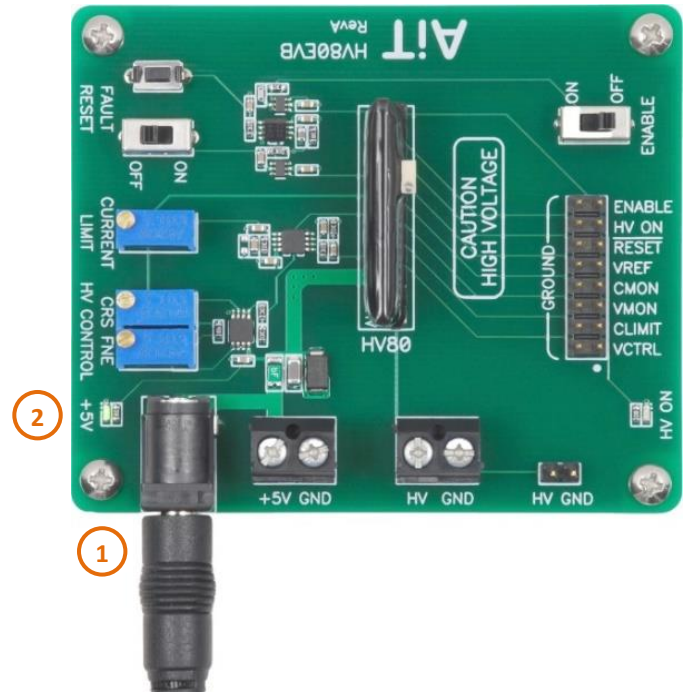
### STEP 1: Prepare for operation

1. Disconnect all HV output connections
2. Place all switches in the "OFF" position
3. Install the HV80 if necessary  
Avoid bending the HV80 connector pins. Lightly insert the HV80 partially into the socket to check for correct pin alignment. When the pins are aligned with the holes, fully insert the HV80 straight into the socket. Do not insert at an angle.



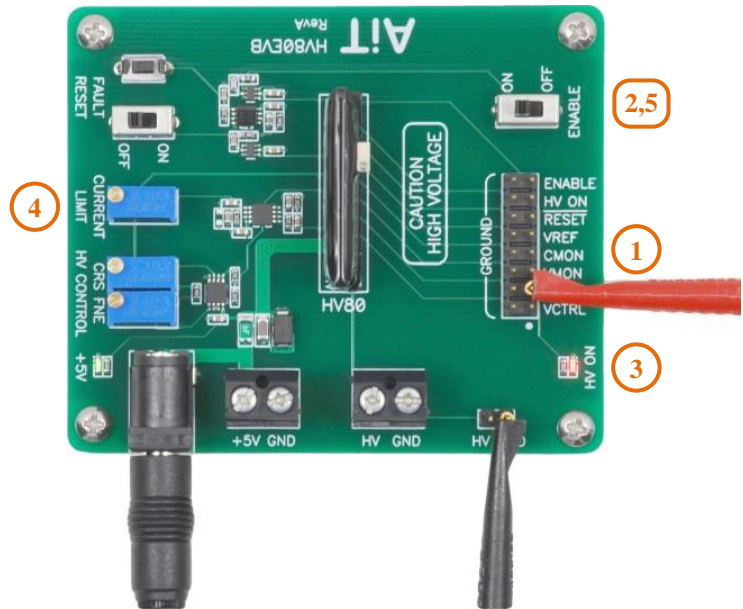
### STEP 2: Connect the +5V main power

1. Connect the +5V main power supply to the barrel jack
2. Verify that the green LED "+5V" is on



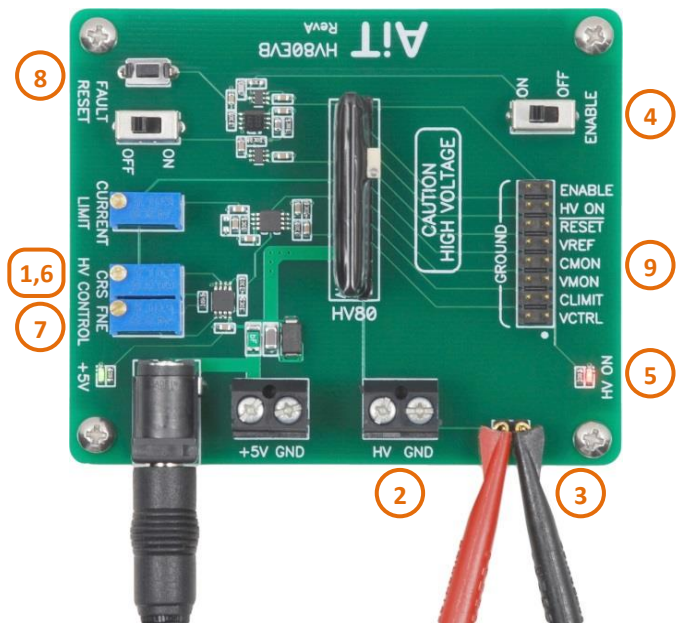
**STEP 3: Set the HV output current limit**

1. Connect a voltmeter to the Current Limit and ground terminals on the Monitor connector
2. Slide the "ENABLE" switch to "ON"
3. Verify that the red "HV ON" LED is on
4. Adjust the CURRENT LIMIT potentiometer to set the desired current limit.  
A +1.0V (2mA) current limit is recommended for most applications.
5. Slide the "ENABLE" switch to "OFF"



**STEP 4: Set the HV80 output voltage**

1. Turn the "CRS" coarse HV Control voltage potentiometer fully counter-clockwise to set the output voltage to zero
2. Connect the load to the HV and GND screw terminals
3. Connect a voltmeter to the "HV" and "GND" pins
4. Slide the "ENABLE" switch to "ON"
5. Verify that the red "HV ON" LED is on
6. Slowly increase the "CRS" coarse HV Control voltage potentiometer until the output voltage is within 1V of the target voltage
7. Adjust the "FNE" fine HV Control voltage potentiometer to achieve the target voltage
8. If the "HV ON" led disables during operation, set the bias voltage to zero and press the "FAULT RESET" pushbutton to reset an over-current fault
9. It is often helpful to monitor the HV output current during operation



**NOTE**

Review the HV80 datasheet regarding the output current limit control, #Reset control, and output voltage limiting before connecting a load.

## Safety Information



### **WARNING – High Voltage**

- High voltage may be present during operation
- High voltage stored on capacitors may be present after power is removed
- Improper handling may result in personnel injury or equipment damage

This high-voltage device must be used only by personnel trained and qualified in safe handling, installation, and operation of high-voltage equipment.



### **CAUTION – Electrostatic Discharge (ESD) Sensitivity**

The circuit board can be damaged by electrostatic discharge. Observe precautions for handling electrostatic sensitive devices. Handle only at static-safe workstations.

## High-Gain Photodetectors

High-gain photodetectors such as silicon photomultipliers may conduct damaging currents if exposed to high optical signal levels while the bias voltage is applied, or if the bias voltage exceeds the recommended operating range. These devices must be operated only in low-light conditions, and only within the manufacturer's recommended bias voltage range.

## Handling and Disassembly

This product may be provided with a protective enclosure. Disassembled enclosure components and circuit boards may contain sharp edges. Take appropriate safety precautions while assembling or disassembling the enclosure and handling disassembled components.

## Indoor Use Only

Do not operate this product in a wet or damp environment. Do not operate in an explosive atmosphere.

Use of this product, and AiT Instruments' liability related to use of this product, is further governed by AiT Instruments' standard terms and conditions of sale, which were provided upon purchase of this product.