

Features

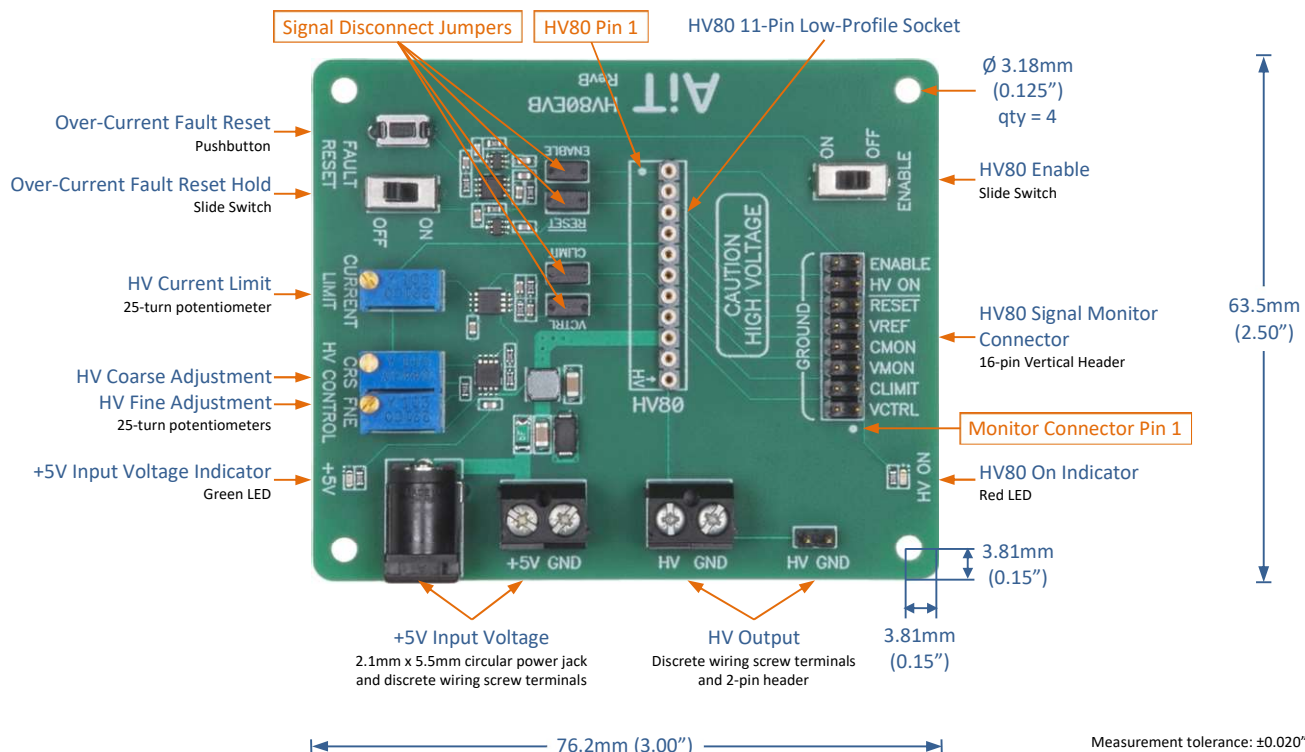
- Supports the AiT HV80 series 80V precision programmable power supplies
- Coarse and fine output voltage control
- Current limit control
- Over-current fault reset pushbutton
- Over-current fault disable switch
- HV80 enable switch
- HV80 signal monitor connector
- Connects to a standard +5V power supply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



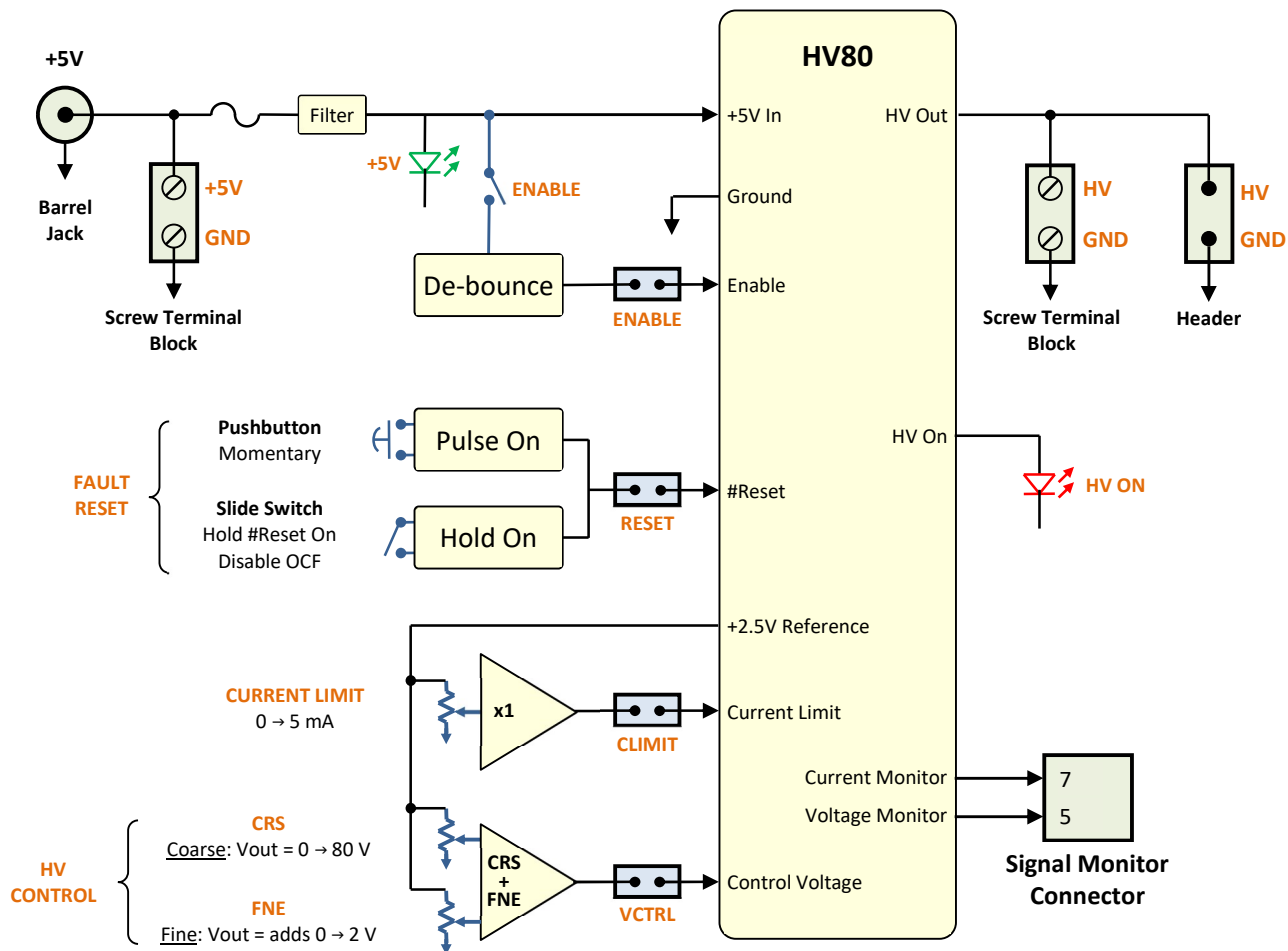
HV80 sold separately

Accessories Included

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

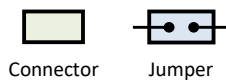


Architecture

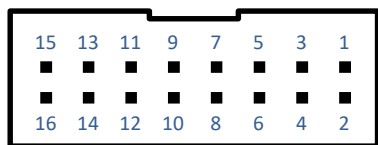


NOTES

- Orange texts are circuit board text labels
- Blue objects are control components
- Refer to the HV80 datasheet for HV80 operation



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 Vout = 80V, no load |
| Full-load current | 140mA at Vout = 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, disables over-current fault shutdown “OFF” = Permits over-current fault shutdown |
| Caution | Permanently disabling the over-current fault system or repeating HV reset during a persistent fault condition may damage system components. If a fault occurs, remove the cause of the fault, set the output voltage to a safe low level, restart the HV power supply, and slowly increase the output voltage to normal. |

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 |

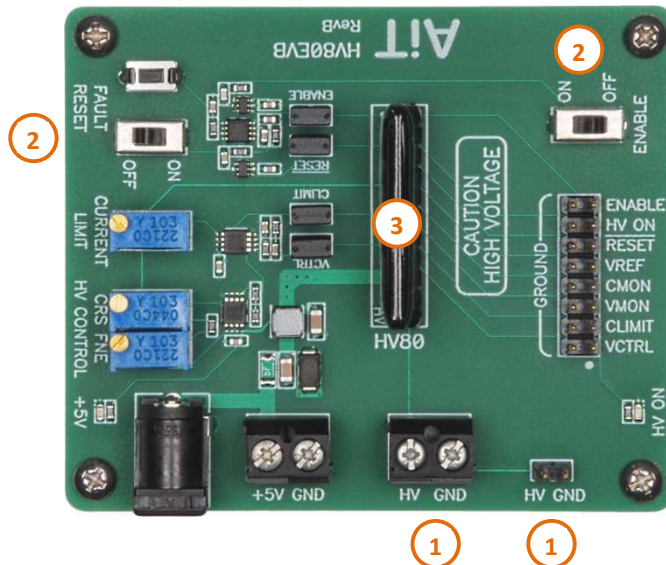
Jumpers

| | |
|--------|--|
| ENABLE | Disconnects HV80 Enable signal from the on-board switch |
| RESET | Disconnects HV80 Reset signal from the on-board switch |
| VCTRL | Disconnects HV80 Voltage Control signal from the on-board potentiometers |
| CLIMIT | Disconnects HV80 Current Limit signal from the on-board potentiometer |

Operation

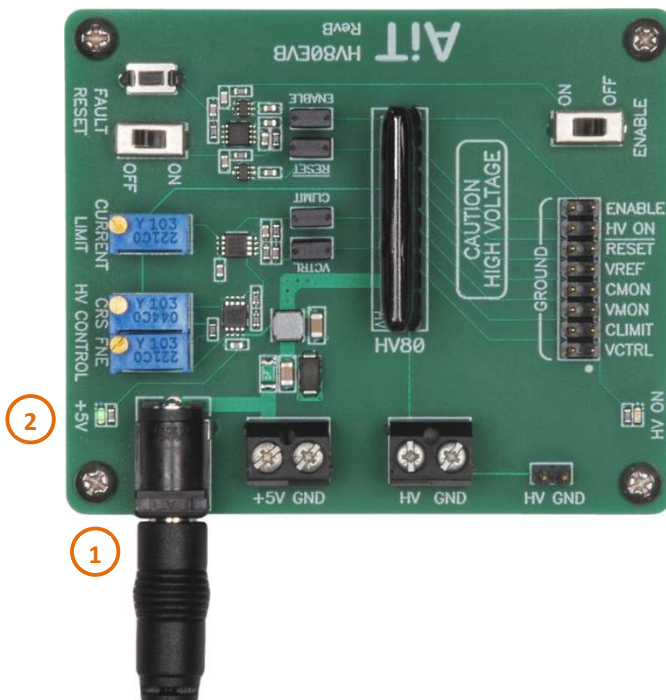
STEP 1: Prepare for operation

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.



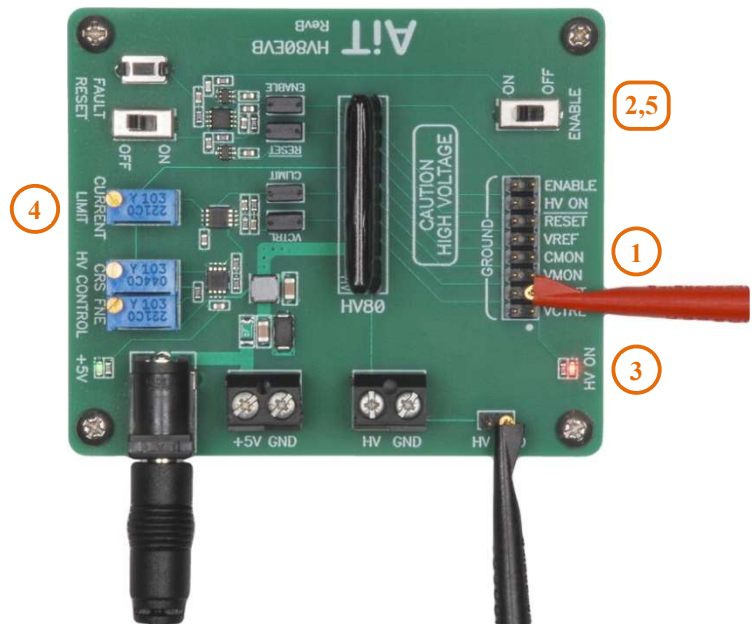
STEP 2: Connect the +5V main power

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



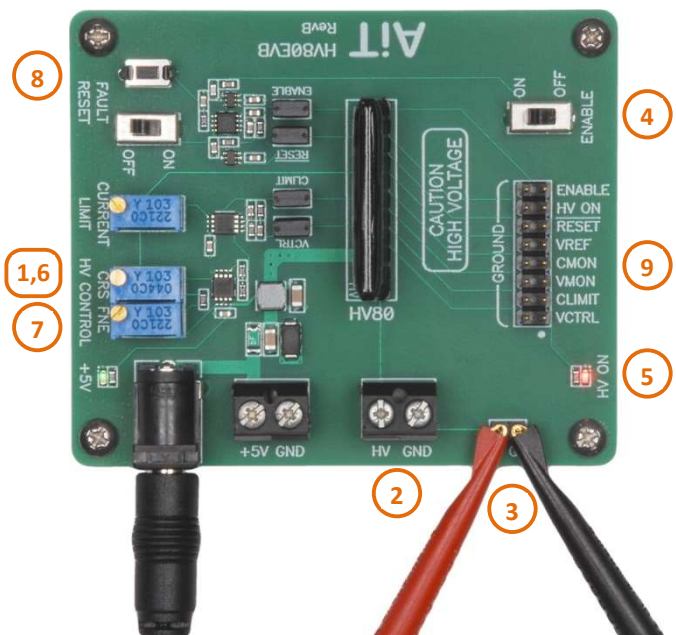
STEP 3: Set the HV output current limit

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 then 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

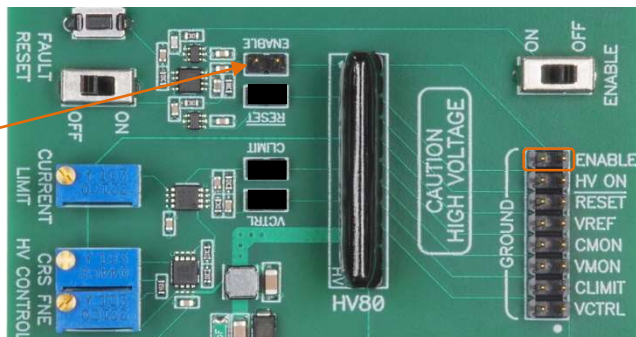
Review the HV80 datasheet regarding the output current limit control, #Reset control, and output voltage limiting before connecting a load.

Jumpers

WARNING: Apply an external signal only when the corresponding jumper is removed. Applying an external signal with the jumper installed may damage the on-board components.

External Enable

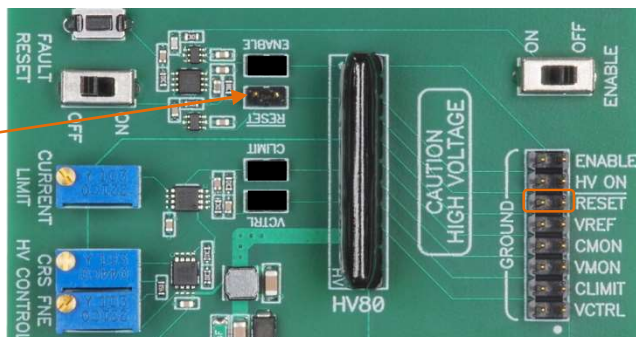
Remove ENABLE jumper
to disconnect on-board
ENABLE control



Apply external
ENABLE signal

External Reset

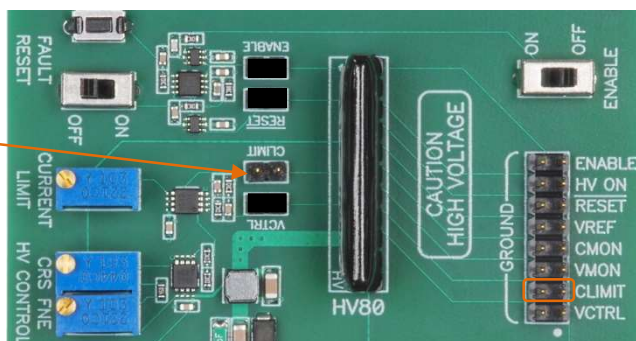
Remove RESET jumper
to disconnect on-board
RESET control



Apply external
RESET signal

External Current Limit

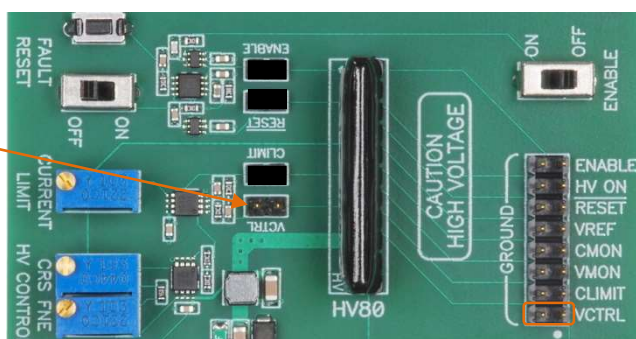
Remove CLIMIT jumper
to disconnect on-board
current limit control



Apply external
CLIMIT signal

External Control Voltage

Remove VCTRL jumper
to disconnect on-board
voltage control



Apply external
VCTRL signal

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.