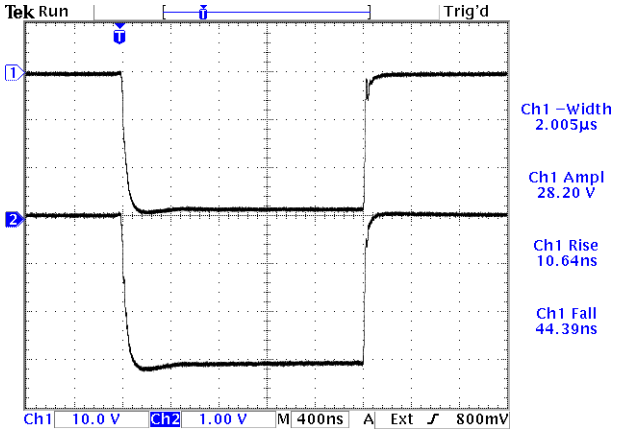
# AV-106 SERIES

5, 15, 30 & 100 AMPERE
1 us TO 1 ms
PULSED CONSTANT CURRENT SOURCES




Top: AV-106A-B, -30A into 0.94Ω. 10 V/div, 400 ns/div.
Bottom: Narrow Monitor into 50Ω. 1 V/div, 400 ns/div.

- Pulse current laser diode drivers
- Peak outputs of 5 to 100 Amps
- Pulse widths from 1 us to 1 ms
- Rise times from 50 ns to 1 us
- Rugged 100 cm output cables
- IEEE-488.2 GPIB and RS-232 interfaces

The AV-106 series of pulse generators is designed for pulsing laser diodes and other low impedance loads with rectangular current pulses as high 100 Amps, with wide pulse widths.

The AV-106A family provides up to 30 A with pulse widths variable from 0.5 to 50 us and 50 ns rise and fall times. These units will operate with a load voltage in the range of 0 to 30 V, and exhibit less than a 5% change in current for a load voltage change of 30 Volts.

For higher currents, the AV-106B family provides up to 100A in the pulse width range of 2 to 200 us.

For wider pulse width applications, the AV-106C family provides pulse widths to 1 ms and peak currents to 15 A.

The AV-106D family provides pulse widths to 1 ms, peak currents to 5 A and duty cycles to 50%.

All AV-106 models have a rear-panel output connector to which a unique 100 cm long high-current transmission line may be attached (model AV-CLZ1-100). This line has a characteristic impedance ($Z_0$) approximately equal to 1Ω. (For more details, see http://www.avtechpulse.com/transmission/av-clz1.) This allows the load to be placed away from the instrument without degrading the pulse shape. A medium-power test load (5 Watts) is provided with these models for the convenience of initial testing purposes.

The AV-106 models are pulsed constant current sources. The output current is largely independent of the load voltage. The instrument will function properly into short circuits and diode loads. For optimal waveform shape, however, it may be beneficial to add a small resistance to the load (~ 1Ω), to better match the load impedance to the cable characteristic impedance.

Either output polarity (positive or negative) can be provided. All models are available with a dual polarity option. On dual polarity units, two output connector are present (one positive, one negative), but only one is active at a time.

A delay control and a sync output are provided for scope triggering purposes. The units can also be triggered externally using a TTL-level pulse. When triggered externally, the pulse width may be controlled by the front-panel controls, or the output pulse width can be set to track the input trigger pulse width. A push-button is provided for one-shot operation.

All models are available with optional remote analog electronic control (0 to +10V) of the output amplitude. Electronic control units also include the standard front-panel one-turn controls.

All models are protected against excessively high duty cycles by an automatic control feature that limits the output power for as long as the overload condition persists. All models incorporate an Output On/Off function and soft-power-on circuitry to protect the load.

A monitor output feature that provides an attenuated coincident replica of the main output current pulse is included.

All models include a complete computer control interface (see http://www.avtechpulse.com/gpib for details). This provides GPIB and RS-232 computer-control, as well as front panel keypad and adjust knob control of the output pulse parameters. A large backlit LCD displays the output amplitude, polarity, frequency, pulse width, and delay. To allow easy integration into automated test systems, the programming command set is based on the SCPI standard, and LabView drivers are available at http://www.avtechpulse.com/labview. An Ethernet port for Telnet-based or web-based control is optional (see http://www.avtechpulse.com/options/tnt).

All models require 100-240V, 50-60 Hz prime power.

See the continuously-updated applications note area of the Avtech web site for general applications assistance (http://www.avtechpulse.com/appnote).

# SPECIFICATIONS

# AV-106 SERIES

| Model[1]: | AV-106A-B | AV-106B-B | AV-106C-B | AV-106D-B |
|---|---|---|---|---|
| Amplitude[2,3]: | 0 to 30 Amperes | 0 to 100 Amperes | 0 to 15 Amperes | 0 to 5 Amperes |
| Load voltage range: | 0 to 30 Volts | 0 to 100 Volts | 0 to 20 Volts | 0 to 5 Volts |
| Pulse width (FWHM): | 0.5 to 50 us | 2 to 200 us | 1 us to 1 ms | 1 us to 1 ms |
| Rise & fall times (20%-80%): | ≤ 50 ns | ≤ 1.0 us | ≤ 50 ns | ≤ 0.5 us |
| PRF: | 0 to 1 kHz | 0 to 100 Hz | 0 to 1 kHz | 0 to 1 kHz |
| Duty cycle: (max) | 0.25% | 0.1% | 1% | 50% |
| Output impedance: | ≥ 50 Ohms | | | |
| Output regulation: | ≤ ±5% change in current for a load voltage change from 0 Volts to maximum rated load voltage | | | |
| Polarity[4]: | Positive or negative or both (specify) | | | |
| GPIB & RS-232 control[1]: | Standard on -B units. | | | |
| LabView drivers: | Check http://www.avtechpulse.com/labview for availability and downloads | | | |
| Controls: | Keypad and adjust knob, and GPIB / RS-232 control. | | | |
| Telnet / Ethernet control: | Optional[5]. See http://www.avtechpulse.com/options/tnt for details. | | | |
| Propagation delay (Jitter): | ≤ 100 ns, (± 100 ps ± 0.03% of sync delay, Ext trig in to pulse out) | | | |
| Ext. trigger in: | Mode A: +3 Volts, 50 ns or wider (TTL), Mode B: +3 Volts, $PW_{IN} = PW_{OUT}$ (TTL) | | | |
| Sync to pulse out delay: | 0 to ± 1 second | | | |
| Sync output: | +3 Volts, 100 ns, will drive 50 Ohm loads | | | |
| Gate input: | Synchronous or asynchronous, active high or low, switchable. Suppresses triggering when active. | | | |
| Monitor output: | Provides an attenuated coincident replica of output current pulse. | | | |
| Supplied output transmission line: | Detachable high-current transmission line cable assembly. See http://www.avtechpulse.com/transmission for details. | | | |
| Part number: length, $Z_0$: | AV-CLZ1-100 (see http://www.avtechpulse.com/transmission/av-clz1) 1 Ω, 100 cm | | | |
| Output connection: | End of cable: DB-37 male. Pins 1-19 = signal, pins 20-37 = ground. | | | |
| Supplied test load[6]: | AV-CTL1-ENC. See http://www.avtechpulse.com/accessories/av-ctl1 for details. | | | |
| Connectors (other): | Trig, Sync, Gate, Monitor: BNC | | | |
| Power requirements: | 100 - 240 Volts, 50 - 60 Hz | | | |
| Dimensions: | 100 x 430 x 375 mm (3.9" x 17" x 14.8") | | | |
| Temperature range: | +5°C to +40°C | | | |

1) -B suffix indicates IEEE-488.2 GPIB and RS-232 control of amplitude, pulse width, PRF and delay (see http://www.avtechpulse.com/gpib for details).
2) For analog electronic control (0 to + 10 V) of amplitude, suffix model the model number with -EA. Electronic control units also include standard front-panel controls and computer control capability.
3) The minimum useful amplitude is 3% of the maximum amplitude.
4) Indicate desired polarity by suffixing the model number with -P or -N (i.e. positive or negative) or -PN for dual polarity option.
5) Add the suffix -TNT to the model number to specify the Telnet / Ethernet control option.
6) The supplied test load is for low-duty-cycle basic operational tests only. The power rating of the load is 5 Watts. It may not be capable of supporting the instrument's full maximum average output power. See http://www.avtechpulse.com/accessories/ for details about the AV-CTL series of test loads.


AV-106A-B, shown with the supplied accessories (AV-CLZ1-100 cable and AV-CTL1-ENC test load).
See http://www.avtechpulse.com/transmission/av-clz1 for more information about the AV-CLZ1-100 cable.
See http://www.avtechpulse.com/accessories/av-ctl1 for more information about the AV-CTL1-ENC test load.