

AVOZ-DF2-B, 100V / 10A pulse

- High voltage, high current pulsed
- Currents of 5, 10, 20 or 50 Amps
- Voltages to 50, 100, 200, or 250 Volts
- Peak powers to 12.5 kW, average powers to 20 W
- Pulse widths of 20 to 200 ns
- PRF to 100 kHz
- Rise times of 3, 5, or 15 ns
- IEEE-488.2 GPIB and RS-232 interfaces

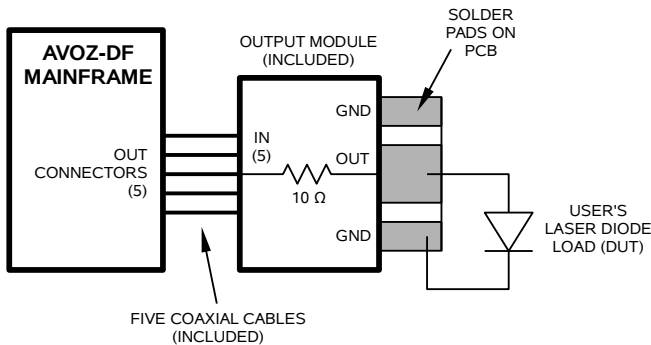
The AVOZ-DF models are high-voltage, high-current, high pulse repetition frequency (PRF) pulse generators. The high output voltages of the AVOZ-DF models permits the testing of laser diodes and laser diode arrays with relatively high forward voltage drops ( $V_F$ ).

Models AVOZ-DF1-B, AVOZ-DF2-B, and AVOZ-DF3-B are voltage pulsers designed to drive  $10\Omega$  load impedances. An output module is included which provides a high-current low-inductance  $10\Omega$  series resistance internally, to allow low-impedance loads (such as laser diodes) to be driven directly. The output module is connected to the mainframe using five supplied coaxial cables (giving a matched characteristic impedance  $Z_0$  of  $50\Omega / 5 = 10\Omega$ , in order to minimize transmission lines reflections).

With an output voltage of  $V_{OUT}$ , the current through the diode will be then given by Ohm's Law:

$$I_{DIODE} = (V_{OUT} - V_F) / 10\Omega$$

The basic test arrangement is shown below:



The AVOZ-DF1-B model can provide up to 50V of voltage and 5A of current. The maximum PRF is 100 kHz, and the pulse width can be adjusted from 20 to 200 ns. The rise and fall times are 3 ns or less, on a 20%-80% basis.

The 100V AVOZ-DF2-B is similar, except that the maximum output current increases to 10A. Model AVOZ-DF3-B boosts the output amplitudes to 200V and 20A. The maximum PRF is reduced to 25 kHz. These two models have 5 ns rise times.

Model AVOZ-DF5-B provides higher voltages (250V) and currents (50 Amps), using a  $5\Omega$  load impedance and ten coaxial cables (giving a matched characteristic impedance  $Z_0$  of  $50\Omega / 10 = 5\Omega$ ).

For all models, either output polarity can be provided.

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. Single-pulsing can be achieved using a front-panel pushbutton, by external triggering, or by computer command over the GPIB or RS-232 ports.

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>.

The -VXI option adds a rear-panel Ethernet connector, allowing an instrument to be remotely controlled using the VXI-11.3, ssh, telnet, and web protocols. In particular, the VXI-11.3 features allows software like LabView to control an instrument using standard VISA communications drivers and network cabling, instead of using older-style GPIB cabling and GPIB controller cards. See <http://www.avtechpulse.com/options/vxi>.

All models require 100 - 240 Volt, 50 - 60 Hz prime power. All models are protected against overload conditions such as excessively high duty cycles or a short-circuited load.

For higher-voltage, high-current, wider-pulse applications with lower maximum PRF requirements, consider models in the AVOZ-D series. For example, the AVOZ-D6-B provides amplitudes to 1000V / 200A for pulse widths of 1 to 10 us. See <http://www.avtechpulse.com/laser/avoz-d6> for details

For  $50\Omega$  applications, see also the AVR-5B and AVR-7B families (for details, see <http://www.avtechpulse.com/medium/avr-5b> and <http://www.avtechpulse.com/medium/avr-7b>). These also high voltages with higher maximum duty cycles.

Avtech can customize models (including single quantities) to meet your particular test requirements. Contact Avtech with your requirement ([info@avtechpulse.com](mailto:info@avtechpulse.com))!





## SPECIFICATIONS

## AVOZ-DF SERIES

Model <sup>1</sup> :	AVOZ-DF1-B	AVOZ-DF2-B	AVOZ-DF3-B	AVOZ-DF5-B
Amplitude:	voltage: 5 to 50V current: 0 to 5A	10 to 100V 0 to 10A	20 to 200V 0 to 20A	25 to 250V 0 to 50A
Required load impedance <sup>2</sup> (R <sub>LOAD</sub> ):	10 Ω			5 Ω
Pulse width (FWHM):	20 to 200 ns			50 to 200 ns
Rise and fall times (20%-80%):	< 3 ns	< 5 ns		< 15 ns
Maximum PRF:	100 kHz		25 kHz	2 kHz
Maximum average output power:	5 Watts	20 Watts		5 Watts
Polarity <sup>2</sup> :	Positive or negative (specify)			
Propagation delay:	< 200 ns (Ext trig in to pulse out)			
Jitter:	± 100 ps ± 0.03% of sync delay (Ext trig in to pulse out)			
Trigger modes:	Internal trigger, external trigger (TTL level pulse, > 10 ns, 1 kΩ input impedance), front-panel "Single Pulse" pushbutton, or single pulse trigger via computer command.			
Variable delay:	Sync to main out: 0 to 1.0 seconds, for all trigger modes (including external trigger).			
Sync output:	> +3 Volts, > 50 ns, will drive 50 Ohm loads			
Gate input:	Synchronous or asynchronous, active high or low, switchable. Suppresses triggering when active.			
Mainframe output connector (on the rear panel):	Five SMA connectors (wired in parallel internally)			
Supplied 1m/36" SMA-to-SMA coaxial cables):	5			10
Included output module:	An output module containing the required series resistance, and capable of dissipating the maximum average power, is provided. The input side mates to the provided coaxial cables, which connect to the mainframe output connectors. The output is provided on a 2 cm x 2 cm (3/4" x 3/4") section of microstrip circuit board. The load/DUT should be soldered between the output and ground pads on this circuit board. Avtech can provide special socketing arrangements for packaged diodes upon request. Note that any added inductance present in the output-pad-to-diode path (L <sub>1</sub> ) and diode-to-ground-pad path (L <sub>2</sub> ) will degrade the output rise and fall times according to the inductive time constant, $\tau = (L_1 + L_2) / R_{LOAD}$ .			
Other connectors:	Trig, Gate, Sync: BNC			
GPIB & RS-232 control <sup>1</sup> :	Standard on -B units. See <a href="http://www.avtechpulse.com/gpib">http://www.avtechpulse.com/gpib</a> for details.			
LabView drivers:	Check <a href="http://www.avtechpulse.com/labview">http://www.avtechpulse.com/labview</a> for availability and downloads			
Ethernet port, for remote control using VXI-11.3, ssh, telnet, & web:	Optional <sup>4</sup> . Recommended as a modern alternative to GPIB / RS-232. See <a href="http://www.avtechpulse.com/options/vxi">http://www.avtechpulse.com/options/vxi</a> for details.			
Settings resolution:	The resolution of the timing parameters (pulse width, delay, period) varies, but is always better than 0.15% of ( set value  + 20 ns). The amplitude resolution is < 0.1% of the maximum amplitude.			
Settings accuracy:	Typically ± 3% (±2 ns or ± 2% of max. amplitude) after 10 minute warmup. For high-accuracy applications requiring traceable calibration, verify the output with a calibrated oscilloscope.			
Power, temperature:	100 - 240 Volts, 50 - 60 Hz.			
Dimensions:	Mainframe: 100 x 430 x 375 mm (3.9 x 17 x 14.8"), Output module: 25 x 42 x 64 mm (1 x 1.65 x 2.5")			
Chassis material:	Anodized aluminum, with blue plastic trim			
Temperature range:	+5°C to +40°C			

1) -B suffix indicates IEEE-488.2 GPIB and RS-232 control of pulse amplitude, pulse width, delay and PRF. (See <http://www.avtechpulse.com/gpib>).  
2) A series resistance of this value is included in the provided output module, to permit operation with low-impedance diode loads.

3) Indicate desired polarity by suffixing the model number with -P or -N (i.e. positive or negative).  
4) Add the suffix -VXI to the model number to specify the Ethernet port.