



- Up to 180 Volts, 180 Amps into 1 Ohm
- 20 ns pulse width
- Adjustable offset for sub-threshold bias
- Low-impedance transmission line output
- Includes IEEE-488.2 GPIB, RS-232

The AVOZ-F series of pulsed laser diode drivers is capable of generating very high current pulses (to 180 Amps) with very narrow pulse widths (20 ns). This series is ideal for testing high-speed laser diode arrays.

The AVOZ-F1-B is a voltage pulser designed to drive a 1.0 Ohm load impedance. The 1 Ohm impedance acts to limit the output current, and to terminate the 1 Ohm output transmission line. If the load is a diode, a resistance must be added in series with the diode so that the total resistance is 1 Ohm.

The output amplitude is variable from 0 to -180 Volts. The full-width half-maximum pulse width is fixed at 20 ns. The rise and fall times are approximately one-half of the pulse width (i.e., 10 ns). The repetition rate of the internal oscillator is variable from 0.1 to 100 Hz. (The instrument may also be triggered by an external TTL signal.)

A 0 to -50V DC variable offset may be applied to the output. The offset is connected through a 1 kilohm resistance, limiting the maximum offset current to 50 mA. This is provided to bias a laser diode just below threshold, if desired.

The AVOZ-F2-B is similar, except that it is designed to drive a high impedance load of 2 Ohms. The maximum output current is -90 Amps.

Both models consist of an instrument mainframe and an output cable that consists of a unique 60 cm long, flexible microstrip line with a characteristic impedance of 1Ω (for the AVOZ-F1-B) or 2Ω (for the AVOZ-F2-B). See <http://www.avtechpulse.com/transmission/av-lz1> for a detailed description of the line. This allows the laser diode to be placed away from the instrument without

degrading rise time or the pulse shape. A matching resistor must be placed in series with the diode to provide a net resistive load to the line of 1 Ohm (for the AVOZ-F1-B) or 2 Ohms (for the AVOZ-F2-B). Connection to the end of the line is normally by soldering (between the center conductor and ground) and the lines are supplied with one end soldered to a small piece of 1/16" glass epoxy circuit board (approx. 1 cm x 2.5 cm) with accessible output and ground solder pad areas. The other end of the AV-LZ cable is permanently connected to the rear-panel socket of the mainframe.) An optional plug-in or screw-in socket arrangement can be provided for most common diode packages. To specify socket mounting, add the suffix -S5 to the model number and describe the diode package type (e.g. TO-18) and the required pin connections (e.g. anode, cathode, ground).

A delay control and a sync output are provided for oscilloscope triggering purposes. The sync output (a BNC connector located on front panel) provides a TTL pulse with 100 ns pulse width, and will drive 50 Ohms. The delay between the main output signal and the sync output is variable from 0 to 1.0 seconds.

This model includes 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 back-lit LCD displays the output amplitude, frequency, and delay. To allow easy integration into automated test systems, the programming command set is based on the SCPI standard, and sample LabView drivers are available for download at the Avtech web site ([www.avtechpulse.com](http://www.avtechpulse.com)).



AVOZ-F1-B



## SPECIFICATIONS

## AVOZ-F SERIES

Model:	AVOZ-F1-B <sup>1</sup>	AVOZ-F2-B <sup>1</sup>
Amplitude: voltage: current:	0 to -180 Volts 0 to -180 Amps	0 to -180 Volts 0 to -90 Amps
Polarity:	Negative	
Required load impedance:	1.0 Ohms	2.0 Ohms
Pulse width (FWHM):	20 ns (fixed)	
Rise time (20% - 80%):	< 10 ns	
Fall time (80% - 20%):	< 10 ns	
PRF: internally triggered: externally triggered:	0.1 to 100 Hz 0 to 100 Hz	
DC offset:	0 to -50 Volts DC, variable. 50 mA maximum. Connected to the output through a 1 kilohm resistance.	
GPIB and RS-232 control:	Included. 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	
Propagation delay:	≤ 150 ns (Ext trig in to start of output pulse)	
Jitter (Ext trig in to pulse out):	≤ ± 35ps ± 0.015% RMS (sync out to pulse out)	
Trigger required (ext trig mode):	TTL levels (0 and +3V to +5V), 50 ns or wider	
Sync delay:	Variable 0 to ± 1.0 seconds	
Sync output:	TTL levels (0 and +3V to +5V), 100 ns width, will drive 50 Ohm loads	
Gate input:	Synchronous, active high or low, switchable. Suppresses triggering when active.	
Output transmission line: length: characteristic impedance (Z <sub>0</sub> )	Flexible AV-LZ1 microstrip <sup>2</sup> 60 cm 1 Ohm	Flexible AV-LZ2 microstrip <sup>3</sup> 60 cm 2 Ohms
Output connection:	Solder pads on the end of the flexible microstrip transmission line	
Other signal connectors:	Trig, Gate: BNC (rear panel) Sync: BNC (front panel)	
Power requirements:	100 - 240 Volts, 50 - 60 Hz	
Dimensions: (H x W x D)	100 mm x 430 mm x 475 mm (3.9" x 17" x 18.8")	
Chassis material:	cast aluminum frame and handles, blue vinyl on aluminum cover plates	
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/>).

2)See <http://www.avtechpulse.com/transmission/av-lz1> for details.  
3)See <http://www.avtechpulse.com/transmission/av-lz2> for details.

See our Applications Information Section on pages 104 - 112, and visit the application note area of the Avtech web site: <http://www.avtechpulse.com/appnote>.

Use the "Pick the Perfect Pulser" parametric search engine at <http://www.avtechpulse.com/pick> to find the best pulser for your application!