

Model 25D Manual

Introduction:

The Model 25D drive electronics is a high voltage push-pull power amplifier capable of output voltage swings in the order of 175v P-P, push-pull. The Model 25D provides output rep rates from DC-30MHz and typical rise and fall times of 8ns.

Technical Overview:

The Model 25D has a maximum output of 175v p-p. The output stage is the only saturating part of the amplifier. Although the amplifier accepts standard TTL drive levels as its input, the entire amplifier with the exception of the output stage is linear. At the very input of the amplifier, a switch allows the user to select either TTL or low level Analog as its required input format.

TTL Input: (Logic high $>+2v$, $<+4.5v$, Logic low $<+.8v$)

This input mode employs a S140 line driver as a buffer between the input signal entering the system and the power amp. This allows the user some latitude on logic highs and lows at the input. As the input section of the amplifier is linear, care must be taken not to drive this section of the amplifier into saturation and cutoff. By virtue of an on-board line driver, the actual input signals may be rather poor and still the internal line driving gate delivers the required signal to the amplifier.

Analog Input:

This input mode is included to allow operation of the Model 25D with the Model 305 Synchronous Countdown. The Model 305 outputs a 0 to +1v, high-speed analog pulse which is used to operate the Model 25D in the "Pulse-Picking" mode. The Analog input should only be selected when driven by the Model 305.

Note:

For most applications the TTL input mode is selected. The only exception is when the Model 25D is configured with the Model 305 Synchronous Countdown for use as a Pulse Picker. In either configuration the input impedance is 50 ohms.



All signal levels should be checked with an oscilloscope with the signal terminated in 50 ohms before applying to the driver input.



Care should be taken when using a function generator or pulse generator as output levels from these instruments can easily exceed the max V_{ih} allowed for the S140 buffer in the driver.

Pulse Selection:

The Analog Mode is selected and configured at the factory when mated to the Model 305. The pulse width from the Analog out of the M305 and the M25D is fixed at approximately 18ns. If the driver is to be used for wider pulse widths, an external pulse generator may be used with adjustable pulse widths and rep rates. The driver is completely DC coupled and will accept any pulse format from DC to 30MHz. The min/max pulse width is determined by setting of the pulse generator.

Controls and Indicators:

Drive Voltage control allows the end-user to set the P-P output of the amplifier to the proper level for the modulator and the wavelength of operation. Limits are 175v max and 138v min. This is typically set by the user while monitoring the detected output of the system with an oscilloscope.

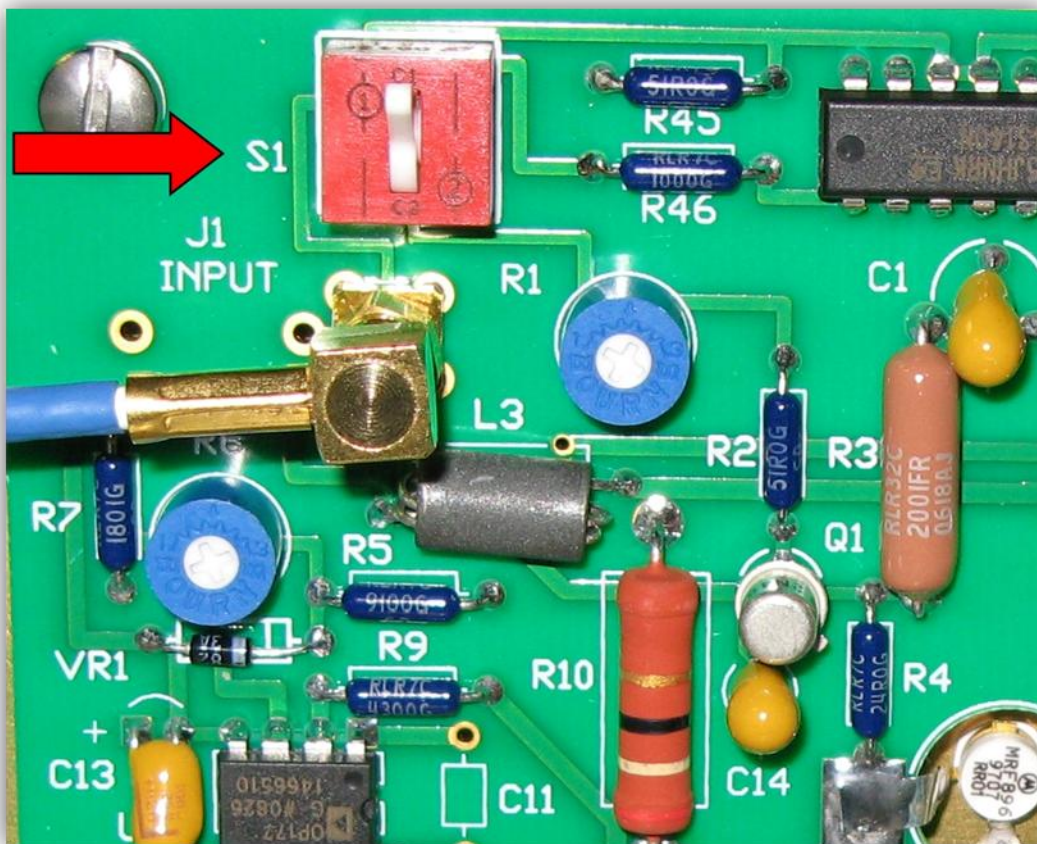
Bias Voltage Adjustment control allows the end user to set the static DC bias on the modulator which sets the quiescent optical operating point. For example, when the system is being used as a high-speed shutter, the user might set the throughput intensity of the system to minimum at logic low input level. Then, when the input signal goes to logic high, maximum throughput intensity is obtained. The inverse may be obtained by setting the Bias at maximum transmission with logic low input. Then when the input goes high, minimum transmission is obtained.

Bias Voltage Meter is an analog volt meter that indicates the actual differential bias voltage applied to the modulator. This voltage is not referenced to ground but is to the internal electrodes of the modulator. Bias voltage range is approximately, +/- 400vDC.

Model 25D Input Signal Format Selection Switch (S1):

Up Position sets the input of the driver to accept a 0 to +1V input signal. Input impedance 50 ohms. The “UP” position is used for Pulse Selection Systems where the system is configured to include a Model 305 Synchronous Countdown.

Down Position sets the input of the driver to accept a TTL logic level at the input connector on the rear panel. Input impedance is 50 ohms.



Note:

To change the input format switch, remove the top cover on the Model 25D driver electronics while the system is powered off.

Model 25D Connection Diagram

Model 25D / Model 305 / E-O Modulator Inter-connection Diagram

