

2. SPECIFICATIONS

2.1. PERFORMANCE

TIME RESOLUTION FWHM $\leq 0.01\%$ of full scale plus 5 ps for all ranges.

TEMPERATURE INSTABILITY $\leq \pm 0.01\%/^{\circ}\text{C}$ (± 100 ppm/ $^{\circ}\text{C}$) of full scale or 10 ps/ $^{\circ}\text{C}$ (whichever is greater), 0 to 50 $^{\circ}\text{C}$.

DIFFERENTIAL NONLINEARITY $\leq \pm 2\%$ from 10 ns to 2% of full scale (whichever is greater) to 100% of full scale.

INTEGRAL NONLINEARITY $\leq \pm 0.1\%$ from 10 ns to 2% of full scale (whichever is greater) to 100% of full scale.

RESET CYCLE Fixed 1.0 μs for X1 and X10 Multipliers; fixed 5 μs for X100 Multiplier; and fixed 50 μs for X1k and X10k Multipliers. Occurs after Overage, Strobe cycle, or Ext Strobe Reset cycle.

START-TO-STOP CONVERSION TIME Minimum ≤ 5 ns.

2.2. FRONT PANEL CONTROLS

RANGE (ns) Three-position rotary switch selects full scale time interval of 50, 100, or 200 ns between accepted Start and Stop input signals.

MULTIPLIER Five-position rotary switch extends time range by a multiplying factor of 1, 10, 100, 1k, or 10k.

DELAY (μs) 20-turn screwdriver-adjustable potentiometer varies the delay of the TAC output from 0.5 μs to 10.5 μs , relative to an accepted Stop input signal; operable in the Int Strobe mode only.

STROBE MODE Two-position locking toggle switch selects either Internal or External source for initiating the strobe cycle to strobe valid information from the TAC output.

2.3. REAR PANEL CONTROLS

GATE MODE Two-position locking toggle switch selects Coincidence or Anticoincidence mode of operation for the Start circuitry. Start circuitry is enabled in the Coinc position or inhibited in the Anti position during the interval of a Gate input signal.

LOG CURR Two-position locking toggle switch selects the use of ± 6 V or ± 12 V bin lines to provide current for the internal logic circuitry.

In the ± 6 V position the 566 is within the current allotment for a single NIM width when using a NIM-standard Class V power supply. In the ± 12 V position the 566 exceeds the current allotment for a single NIM width on the +12 V and -12 V bin lines. However, this position allows the 566 to be used with power supplies not providing +6 V and -6 V.

2.4. INPUTS

All four inputs listed below are dc-coupled, edge-triggered, and printed wiring board (PWB) jumper selectable to accept either negative or positive NIM-standard signals. Input impedance is 50 Ω in the negative position and > 1 k Ω in the positive position. The threshold is ~ 400 mV in the negative position and $\sim +2$ V in the positive position.

STROBE Front panel BNC connector provides an external means to strobe a valid output signal from the TAC in the Ext Strobe mode. The input signal, exceeding threshold within the Ext Strobe reset interval after the Stop input, initiates the read cycle for the linear gate to the TAC output. Factory-set in the positive input position. Ext Strobe reset interval has a minimum value of ~ 0.5 μs and a maximum value of nominally 10 μs .

START Front panel BNC connector initiates time conversion when Start input signal exceeds threshold. Factory-set in negative input position.

STOP Front panel BNC connector terminates time conversion when Stop input signal exceeds threshold. Factory-set in negative input position.

GATE IN Rear panel BNC connector provides an external means of gating the Start circuitry in either Coincidence or Anticoincidence with the Start input signal. Gate input signal must cross threshold ≥ 10 ns prior to the Start input signal and must overlap the trigger edge of the Start input signal. Factory-set in the positive input position.

2.5. OUTPUTS

TAC OUTPUT Front panel BNC connector provides unipolar pulse.

Amplitude 0 V to +10 V proportional to Start/Stop input time difference.

Time End of delay period in Int Strobe mode; prompt with Strobe input in Ext Strobe mode.