

BNC 745 Digital Delay Generator



Description

The Model 745 generator provides four independent delay channels (T1 to T4). The delay resolution is 250 fs, and external trigger to channel jitter is less than 25 ps. Internal trigger is less than 5 ps. BNC outputs deliver up to 5V, with a 1 ns typical rise time into 50 ohms. Amplitude, delay and width are independently adjustable for each output pulse. An external trigger (TRIG IN), an internal F1 or F2 frequency, or software command is used to trigger the output channels. A To output pulse marks zero delay reference. The Model 745 also provides four optional delays channels, T5 to T8, at the rear panel. With these optional rear panel delays, the resolution is 5 ns and the trigger to channel jitter is less than 100 ps.

Features

- Four high resolution delay channels
 - 250 fs resolution
 - Jitter as low as 5 ps
 - 20 second delay range
- External clocking (10 MHz to 80 MHz to the nearest 100 kHz)
- Options: Four additional delay channels, Clock Out, Gate In
- Compact packaging for high channel count
- All parameters may be controlled via front panel, Ethernet or Internet

Applications

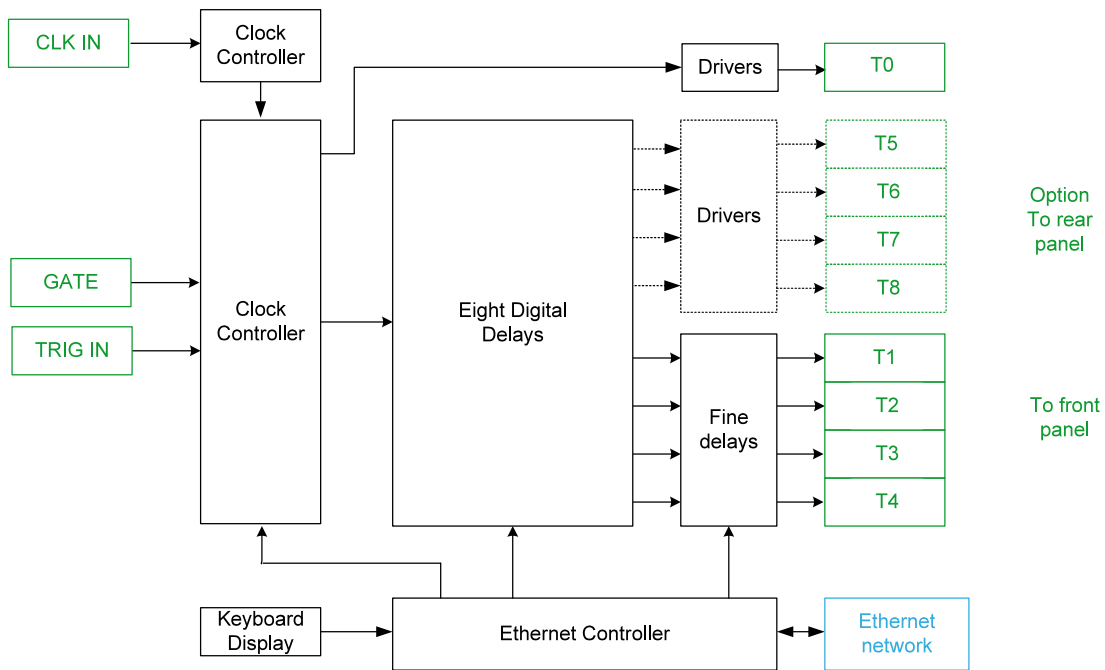
- Components test
- ATE
- Laser timing
- Precision pulse
- Instrument triggering
- Pulse Picking



Control panel Web page:

This web page, from an embedded Web server, provides a simple method to configure settings for each channel (delay, output amplitude, output width), trigger source, trigger mode, and to control operation and status of the instrument.

The configuration information of the instrument are stored and saved in the 745. BNC's DDG-MUX software will allow control of up to 8 745's on one GUI page.



Block diagram

SPECIFICATIONS

Delays

Channels	4 outputs with independent delays & widths
Range	0 to > 20 seconds
Resolution	250 fs
RMS Jitter	Internal Trigger: 5 ps for delays < 100 ns; 5 ps + delay x 10 ⁻⁷ > 100 ns
	External Trigger: 25 ps for delays < 100 ns; 25 ps + delay x 10 ⁻⁷ > 100 ns
Accuracy	< 250 ps + delay x 10 ⁻⁷
Time base	0.5 ppm stability

Trigger source

Command	Front panel and Ethernet
Internal	Channels may be triggered from F1 to F2 Each adjustable from 1 Hz to 50 kHz
External	Repetition rate < 50 kHz; 50 ohm input impedance
	Slope selectable; level from 0.1V to 5V Insertion Delay < 50 ns

Trigger mode Single or repetitive

Output To 5 V/50Ω, 200ns (rear panel)

Output T1 to T4

Amplitude	2 to 5 V, step < 0.1 V
Width	200 ns to 10 μs, step: 5 ns
Load	50 Ω
Rise time	< 2 ns (1 ns typical)
Fall time	< 5 ns
Connector	BNC on front panel

Clock Input User Specified, settable at factory (between 10 MHz & 80 MHz to the nearest 100 kHz)

Clock In

Frequency User may specify frequency between 10 MHz & 80 MHz to the nearest 100kHz

General specifications

Size	215 x 245 x 135 mm
Power	50 W 110 to 240 V

Interface control

Front panel, Web page from embedded web server for IE8, Firefox 3.6 and Ethernet network

Options

Option 1: 4 auxiliary delay channels

Delay

Channels: 4 independent delay outputs
Range: 0 to > 20 seconds
Resolution: 5 ns
Jitter < 100 ps rms + delay x 10⁻⁷ (external trigger to any output)
Accuracy: 1 ns + delay x 10⁻⁷

Output T5 to T8

Amplitude: 5V
Width: 200 ns
Load: 50 Ω
Rise, Fall time < 5 ns
Connector: BNC on rear panel

Option 2: Clock output (10MHz, +/- 1 V, square)

Option 3: Gate input

Option 4: Burst mode (future development)

Option 5: USB (future development)

Option 6: OCXO 50 ppb stability