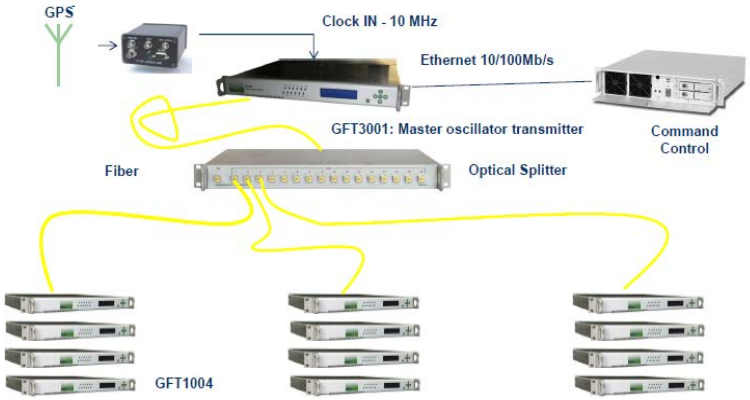
GFT1000
100 Channel Digital Delay Generator

Features

- 100 independent delay channels
  100ps resolution
  25ps RMS jitter
  10 second range
- Output pulse up to 6 V/50 Ω
- Up to 1 Km between two Output pulses
- Independent trigger rates on each channel
- External Clocking 10 to 100 MHz
- Controlled via Front panel, Ethernet, Internet (Web page)
- Options:
  - 1ps delay channel resolution
  - Output pulse 10V/20V/32V
  - Extension to 2500 channels
  - Synchrotron configuration
  - Other form factor cPCI, PXI, Box



Applications

- Picoseconds system laser
- Synchrotron
- High energy laser
- Accelerator
- Large physics system
- Automatic Test Equipment

Description

The GFT1000 can provide one hundred of delayed pulses to equipments distributed over an area of thousands of square meters, within a time resolution of 100ps (1ps in option).

The basic version of the GFT1000 is a system made with eleven synchronized units. One unit is the Master Oscillator (GFT3001) and provides the triggers and time base to ten Slave units (GFT1004) via an optical network (splitter and optical fibers). Each Slave is a digital delay generator and provides ten channels. The delay of each channel is programmable up to 1 second with a resolution of 100ps. Channel to channel jitter is less than 25ps . In standard BNC output delivers 3ns /6V level into 50Ω.

Amplitude, polarity and width are independently adjustable on each output giving you complete time and amplitude domain control.
Each channel can be independently set to trigger in single shot mode, or repetitive mode with a set of frequencies between 0.1 Hz and 10 kHz.

External clock input allows to synchronize the GFT1000 to an 10MHz frequency standard or to selectable clock frequency (Mode Lock laser)

The high accuracy, wide range, low jitter, and up to 1 km separation between the channels, designate the GFT1000 as the ideal solution to many critical timing problems encountered in large physics system like Synchrotron, Accelerator and High energy laser.

The GFT1000 is well suited in Picoseconds Laser System applications to synchronize all the equipments and functions (Flash-lamps, Q-switches, high speed Cameras…) with only few compact units.

The basic version provides 100 channels distributed over 10 areas. In option the number of channels can be extended up to 2500 and the number of areas up to 128.

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Specifications

Delays	
Channels	100 independent delay outputs
Range	0 to 10 second
Resolution	100 ps
RMS jitter	25 ps (T0 to any output)
Accuracy	< 250 ps + delay x 10^{-7}
Time base	0.05 ppm stability
Trigger source	
Internal	3 generators:0.1Hz to 10 kHz (1, 2, 5 steps)
External and command	1 or 2 Single Shots (0s and -1s)
Output T0 Master	10V / 50 Ω, 100ns
Output T0 Slave	6V / 50 Ω, 100ns

Outputs T1 to T100	
Amplitude	3 V to 6 V / 50 Ω
Rise / fall time	5 ns / 5 ns max.
Width	100 ns to up 1 second
Polarity	Positive or negative
Connector	BNC
Clock input(1)	10 MHz to 100 MHz
General	
Interface control	Front panel, Ethernet / Internet (Web page)
Software	Labview and EPICS driver
Power	90 to 220 V / 1 A
Size	Racks 19'', 1U, 300 mm (Include Rack mount kit)

Options

1.Channel output (2) 2.5 to 10 V / 50 Ω, rise time < 1ns, width: 100 ns to 100 ms
5 to 20 V / 50 Ω, rise time < 3ns, width: 100 ns to 10 µs
32 V/ 50 Ω, rise time < 3ns, fixed width: 1µs

2. 1ps delay resolution

3.Optical output: With GFT101 module

4. Channel number extension : Up to 2500 channels (ask to the factory)
4. Synchrotron configuration: Up to 255 repetitive or single shot event triggers - 125 or 180MHz External RF clock – Dynamic Event table - One RF Clock delay resolution - 100ps delay resolution with LINAC system board– On each Slave (LOCAL system): Two output clocks (Booster and Storage Ring) and Eight delay channels. For more information ask to the factory.
5. Other Slave Form factors

Slave reference and Form Factor	Resolution/ Channel number	Jitter RMS Ch.-Ch.	Pulse Amplitude	Pulse Width	Pulse Rise time Under 50Ω
GFT1208, CPCI	1 ps/ 8 ch.	15 ps	3 or 10 V	0.2 to 10µs	1 ns
GFT1404, PXI	1 ps/ 4ch and 5ns/ 4 ch	15 ps	2 to 5 V	0.2 to 10 µs	0.7 ns
GFT1504, Box ½ 19"	1 ps/ 4/8/10 ch	10 ps	2.5 to 10 V	100 ns to 10 ms	0.7 ns
LOCAL system, CPCI	One clock/ 8 ch	100 ps	4 V	10 µs	< 5ns
LINAC system, CPCI	90 ps/ 1ch	100ps	4 V	10 µs	< 5ns

(1) User specified, settable in factory

(2) This option can be independently applied to every output.