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

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

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

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)
5. 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.
6. Other Slave Form factors

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

(1) User specified, settable in factory
(2) This option can be independently applied to every output.