GTO TimeStamp
Rev. 1.0

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2018 May 11

1 General

1.1 Function

GTO TimeStamp (TSGTO) has the compatible time-stamping function with LUPO VME Module that is commonly used in RIKEN RIBF. GTO has an Ehternet and USB connectivities, however, USB is not avalable yet.

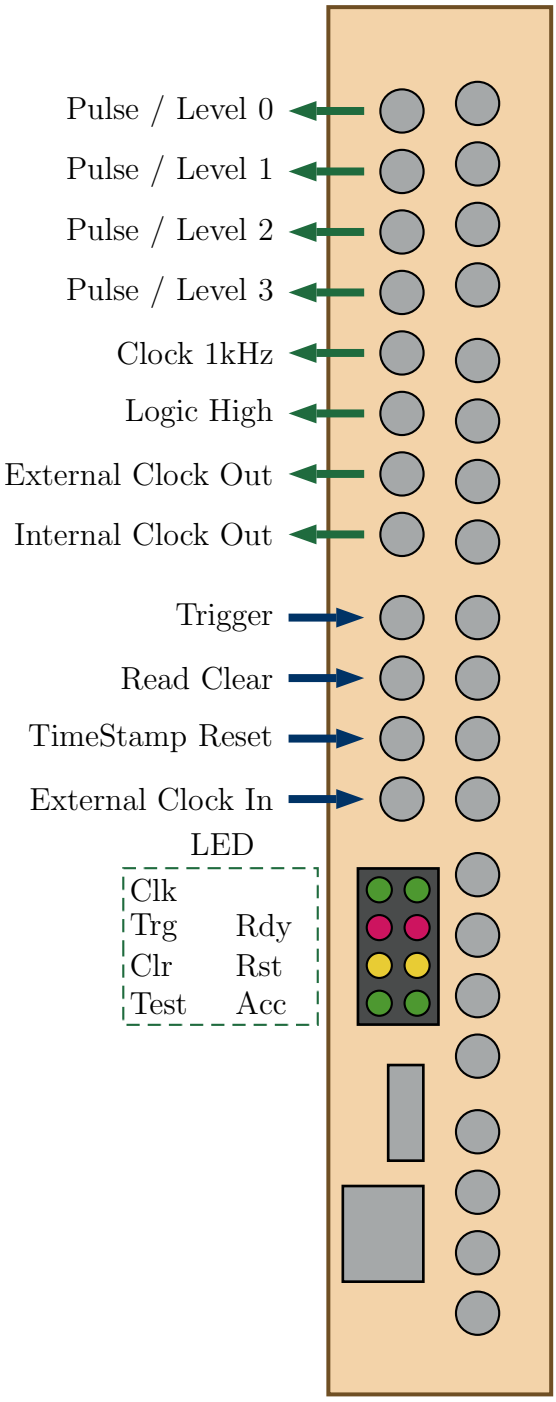
1.2 Connector

- Pulse / Level 0–4 : Output Register controled by software
- Clock 1kHz : 1kHz Clock Output
- Logic High : Always output NIM logic level '1'
- External Clock Out : when external clock is properly applied, 25MHz clock signal will be seen
- Internal Clock Out : 25MHz clock output from the internal oscillator
- Trigger : Trigger input
- Read Clear : TimeStamp value is cleared and accept next trigger input
- TimeStamp Reset : Reset TimeStamp counter to zero
- External Clock In : 25MHz clock is required

1.3 LED

- Clk : External clock input OK
- Trg : Trigger In
- Rdy : Data ready
- Clr : Clear In

- Rst : TimeStamp Reset In
- Test : Test LED
- Acc : Access via Ethernet


Pulse / Level 0
Pulse / Level 1
Pulse / Level 2
Pulse / Level 3
Clock 1kHz
Logic High
External Clock Out
Internal Clock Out
Trigger
Read Clear
TimeStamp Reset
External Clock In
LED
Clk
Trg
Clr
Test
Rdy
Rst
Acc

2 Interface

2.1 Command line program

'cmdtsgto' is an example of the control program. Commands are

```
cmdtsgto HOSTNAME COM [params] ...
```

```
COM =  status   : Read status
       read     : Read parameters (for debug)
       init     : Initialize all parameters to default value
       eepr     : Load parameters from EEPROM
       eepw     : Save current parameters to EEPROM
       ts       : Get current ts value
       all      : Get all TS / Scaler information
       pulse    : Pulse output (4bit pattern) (0xX)
       level    : Pulse output (4bit pattern) (0xX)
       reset    : Reset TS clock counter
       clear    : Clear latched TimeStamp
       scrclr   : Clear Scaler Values
       test     : Test LED (on/off)
       noop     : Dummy access to GTO
       help     : Help
```

2.1.1 Related program

The Ethernet port of GTO is based on Lantronix XPORT device. If IP address by DHCP is unkown, 'findxport' program seeks XPORT in the same LAN (subnet).

2.2 Quick Use

1. Connect LAN cable, then power on
2. seek the IP address of GTO by 'findxport' program
   if DHCP is not available on your network, please use Device Installer program distributed by Lantronix company, and apply a fixed IP address.

3. Check the network connection by 'cmdtsgto' program
   ./cmdtsgto IP-address (or Hostname) test on
   If the command is scuceeded, TEST LED will be on. To disable it, use 'test off' command instead of 'test on'.

4. Check the signal of 'Internal Clock Out' by an oscilloscope
   if 25MHz clock could be seen, GTO is working well

5. Connect 'Internal Clock Out' nad 'External Clock In' by a LEMO cable

6. Check the signal of 'External Clock Out' and 25MHz clock should be found
   at the same time, LED of Clk should be on

7. Connect 'Pulse / Level 0' and 'Trigger' by a LEMO cable

8. execute 'testread.sh' that file is located the same directory of 'cmdtsgto'
   ./testread.sh IP-address (or Hostname)
   if every thing is working well, you could get timestamp information

2.2.1 Explanation of testread.sh

'testread.sh' script is:

```
#!/bin/sh
 host=$1
 for i in `seq 1 10`
 do
  ./cmdtsgto $host pulse 1
  ./cmdtsgto $host all
  ./cmdtsgto $host clear
 done
```

The sequence is like this:

1. Generate single-shot pulse from 'Pulse / Level 0' (it is applied to 'Trigger')

2. Read all parameters (timestamp and scaler values)

3. Clear timestamp

3 Appendix

3.1 Version Information

1.0 First stable version without USB connection