GTO TimeStamp
Rev. 1.0

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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 Ethernet and USB connectivities, however, USB is not available 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
2 Interface

2.1 Command line program

‘cmdtsgto’ is an example of the control program. Commands are

```bash
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 unknown, ‘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 succeeded, 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