Modifying LXT3108D Embedded Software to Support the Intel® LXT3104/8 Intel® GUI and Intel® PTM

Application Note

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Revision History

Revision	Date	Description
-001	09/13/01	Initial Issue.
-002	03/26/02	1. Changed to title, purpose, intended audience, scope to reflect the fact that this app note is relative only to the LXT3108D. 2. Modified the procedure section to clarify the relationship between the host software and the embedded software. 3. Added more text to describe the functionality of the Read Command.

1.0 Purpose

To define the steps required to modify embedded software, used in the LXT3108D environment, to send/receive data to/from the Intel® LXT3104/8 Intel® GUI and Intel® PTM (Intel® Pulse Template Matching) software. Each of these software applications uses a predefined byte sequences to (1) detect the presence of hardware, (2) read data from the device, and (3) write data to the device. Customers who implement proprietary embedded software will need to modify their software in order to interpret commands sent from these applications.

1.1 Intended Audience

This application note was created for software developers responsible for the creation and maintenance of embedded software that interfaces with the Intel LXT3104/8 device in the LXT3108D environment.

1.2 Scope

The modifications described in this document are required if the following items are true:

1. The customer wishes to use the LXT3104/8 GUI or the Intel PTM software to configure their LXT3104/8 device(s) in the LXT3108D environment.
2. The customer wishes to use embedded software, not supplied by Intel Corporation, to act as an intermediary between the LXT3104/8 and the LXT3104/8 GUI or PTM.

1.3 Procedure

A three-step process is required in order to modify existing software to handle communication with the LXT3104/8 GUI and PTM. These modifications need to be made in order to decipher the data sent from the LXT3104/8 GUI and PTM. These software applications supports a board detect feature, a read command, and a write command. Additionally, these software applications use a serial interface to transmit/receive data. Your embedded software will need to be modified to support receiving these three functional pieces of data across a serial interface. The following describes these three functions in more detail.

1.3.1 Function One: Board Detect

The host application (LXT3108 GUI, LXT3104 GUI, or Intel PTM) sends four (4) bytes of data when trying to communicate with the microprocessor connected to the LXT3108/4 for the first time. The first byte sent by the host application is always 0xFF. The host application then expects the embedded software to return the logical OR value of the last three bytes it sent. Here is an example:

Host Application Sends: 0xFF 0x10 0xAA 0x03

Embedded Software Returns: 0xBB

1.3.2 Function Two: Read Command

The format for the read command consists of four bytes sent serially. The first byte sent, 0x28 Hex, indicates that it is a read command. The LXT3108/4 uses a sixteen (16) bit-addressing scheme. The low and high bytes of the address are sent as one byte each. The embedded software should ignore the fourth byte of the read command.

Format:

```
0x28 <Low Address> <High Address> <Dummy Value>
```

Example:

```
0x28 0x20 0x88 0xFF   # Read the value at address 0x8820
```

After interpreting the read command and retrieving the data from the LXT3018, the embedded software should return the byte value back to the host application (LXT3108/4 GUI or PTM). The embedded software will always return a single byte of data to the host application.

1.3.3 Function Three: Write Command

The format for the write command consists of four bytes sent serially. The first byte sent, 0x20 Hex, indicates that it is a write command. The LXT3108/4 uses a sixteen (16) bit addressing scheme. The low and high bytes of the address are sent as one byte each. The fourth byte represents the value that should be written to the specified address.

Format:

```
0x20 <Low Address> <High Address> <Value>
```

Example:

```
0x20 0x25 0x88 0x01   # Write value 0x01 to address 0x8825
```

2.0 Glossary

Term Categories

Term	Term definition
Intel® PTM	Intel® Pulse Template Matching
Intel® GIU	Intel® Graphical User Interface