



GTOMP User Guide

This document explains how to use the GTOMP support tool for Noritake itron GT-CP series modules. GTOMP (GT Operator Macro Packer) consists of two primary tools, a **screen designer** and **memory tool**. The **screen designer** can prototype one or more “screens” to be used in an application. The **memory tool** is used to save images and files to GT-CP modules.

NOTE: Any features listed as “IN DEVELOPMENT” have not been fully tested and should not be used.

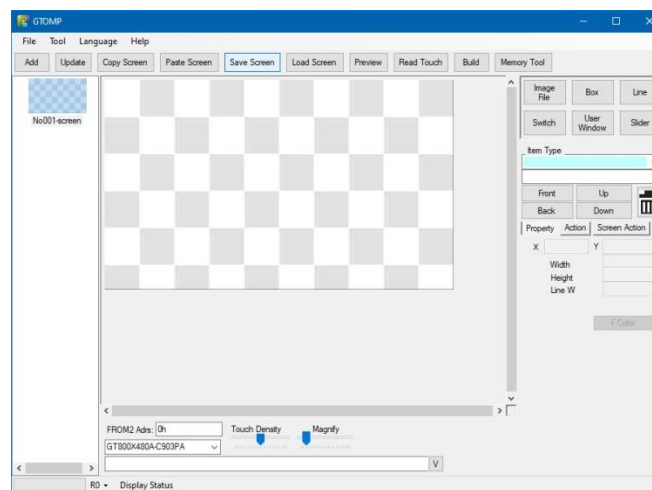


Figure 1: GTOMP Screen Designer

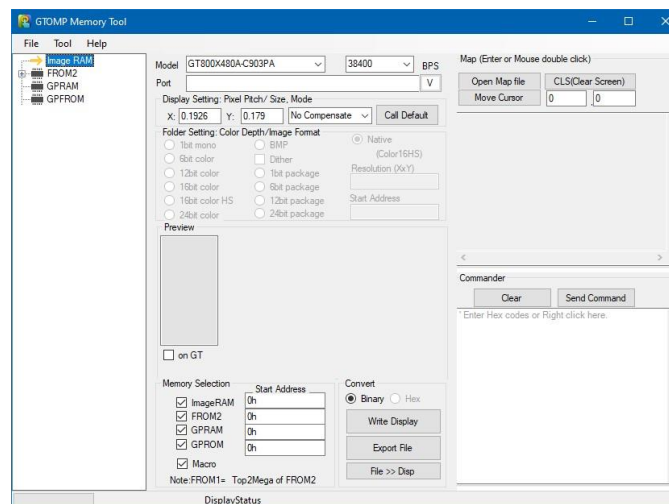


Figure 2: GTOMP Memory Tool

Table of Contents

GTOMP User Guide.....	1
Table of Contents	2
1. Environment for Using GTOMP.....	4
Operating System.....	4
Environment	4
Noritake Compatible Modules.....	4
Installation.....	4
Connection	4
Language.....	4
2. Operation Overview.....	4
Display Screen Design	4
Write Images to Memory.....	4
3. Tips	5
How to test the touch screen – 3 methods.....	5
Method 1: Screen Designer	5
Method 2: Memory Tool	5
Method 3: Touch Level Tool.....	5
Changing Touch Panel Sensitivity.....	5
Memory Switch Change.....	5
GT Screen Capture.....	6
4. Screen Designer	7
Screen Designer Menu	7
Menu Description	8
Drop-down Menus.....	8
Menu Buttons.....	8
Design Screen.....	9
Drawing Item Buttons.....	9
Drawing Item List	10
Progress Bar.....	10
Design Screen Thumbnail.....	10
Connection Port Selection	10
GT Product Type Selection.....	10

Image Data Storage Start Address.....	10
Information on Connected GT	10
Display Item Properties	10
Touch Level Tool.....	11
Touch Level Log Viewer.....	13
5. Memory Tool.....	15
Memory Tool Menu.....	15
Menu Description	16
Drop-down Menu	16
GT Module Connection Settings.....	16
Image Settings	16
Map Reference Data	17
Progress Bar.....	17
File Arrangement Tree	17
Memory Selection	18
Connected GT Module Information.....	18
Conversion Operation Buttons	18
File Preview	18
Touch Package Data.....	20
Store Touch Package Data	20
Change Touch Package Data Memory Switch.....	20
Select a Touch Package Data Package Number	20
Map Display.....	21
Send GT Module Commands	22
6. Known Issues	23
7. Disclaimer	24
8. Tool Revision History.....	25
9. Document Revision History	26

1. Environment for Using GTOMP

Operating System

Microsoft Windows 10

Environment

Required: .Net Framework 4.5

A WinUSB driver is required to connect to a GT-CP module.

We recommend using the WinUSB driver.

Note 1: The WinUSB driver is already installed on Windows8.1 and later.

Noritake Compatible Modules

- GTWQ043C3A00PA (F150 or later)
- GTWV050C3A00PA (F150 or later)
- GTWV070C3A00PA (F150 or later)

Installation

This tool does not require any software installation.

Connection

This software is created to use a USB interface. However, it can also be connected with a UART port. In this case, it spends more time because the transfer speed is decreased.

Language

English and Japanese are available. When starting up the tool, the software refers to the language that the OS is using. If needed, you can choose a different language from the Language toolbar.

2. Operation Overview

Display Screen Design

The GTOMP Screen Designer GUI is intended to help users design one or more “screens” with images, rectangles, lines, characters, and touch switches. Multiple objects can be placed on a single screen and multiple screens can be created.

Write Images to Memory

The memory tool can write images and other files to specific points in GT module memory. You can call and display saved images directly, or combine with the various commands and character options to achieve other actions and display options. This tool can be accessed by clicking the “Memory Tool” button on the screen designer window. When this tool is closed, the image data set to FROM2 will be transferred to the screen designer.

3. Tips

How to test the touch screen – 3 methods

Method 1: Screen Designer

1. Add a “Switch” to the current design screen.
2. Select the desired switch mode. (coordinate, custom switch, or switch matrix)
3. Click the preview button. (Images and settings will be sent to the GT module.)
4. Clicking the “Read Touch” button opens the Touch Monitor dialog box. This new window will display the module’s touch data in real time.

Method 2: Memory Tool

1. Find the commander box at the lower right of the memory tool screen.
2. Right click in the text area and select "Touch Panel Data Transmit ON / OFF → ON" from the menu, the byte string of the corresponding command will appear in the text box.
3. Click “Send Command”. The command will be sent to the GT module.
4. The “Read out” text box will appear and display GT module transmission data.

Method 3: Touch Level Tool

1. Click on “Tool > Touch Level Tool”, the “Touch Level Tool” window will appear.
2. Touch the connected module’s touch screen. The graph should change accordingly.

Note that in any of the 3 methods above, the touch settings are not changed, so the module will use the default touch mode setting (coordinate mode).

Changing Touch Panel Sensitivity

1. Choose “Tool > Change Touch Threshold” from the screen designer tool.
2. When the setting dialog opens, change the threshold value and click the “OK” button.
3. Select “Tool > Memory Switches” from the screen designer tool.
4. Click on “Read Module” to read the connected GT module’s touch data.
5. Memory switch #59 is the sensitivity (threshold) setting, please change this. Do not change memory switch #58 (gain).
6. Click on “Write Module” to save the changes to the connected GT module.

Memory Switch Change

- There are various configuration parameters that are saved in memory. These can be found on the respective module’s hardware spec. You can read and write all memory switch settings with the “Tool > Memory Switch” dialog in the screen designer tool.

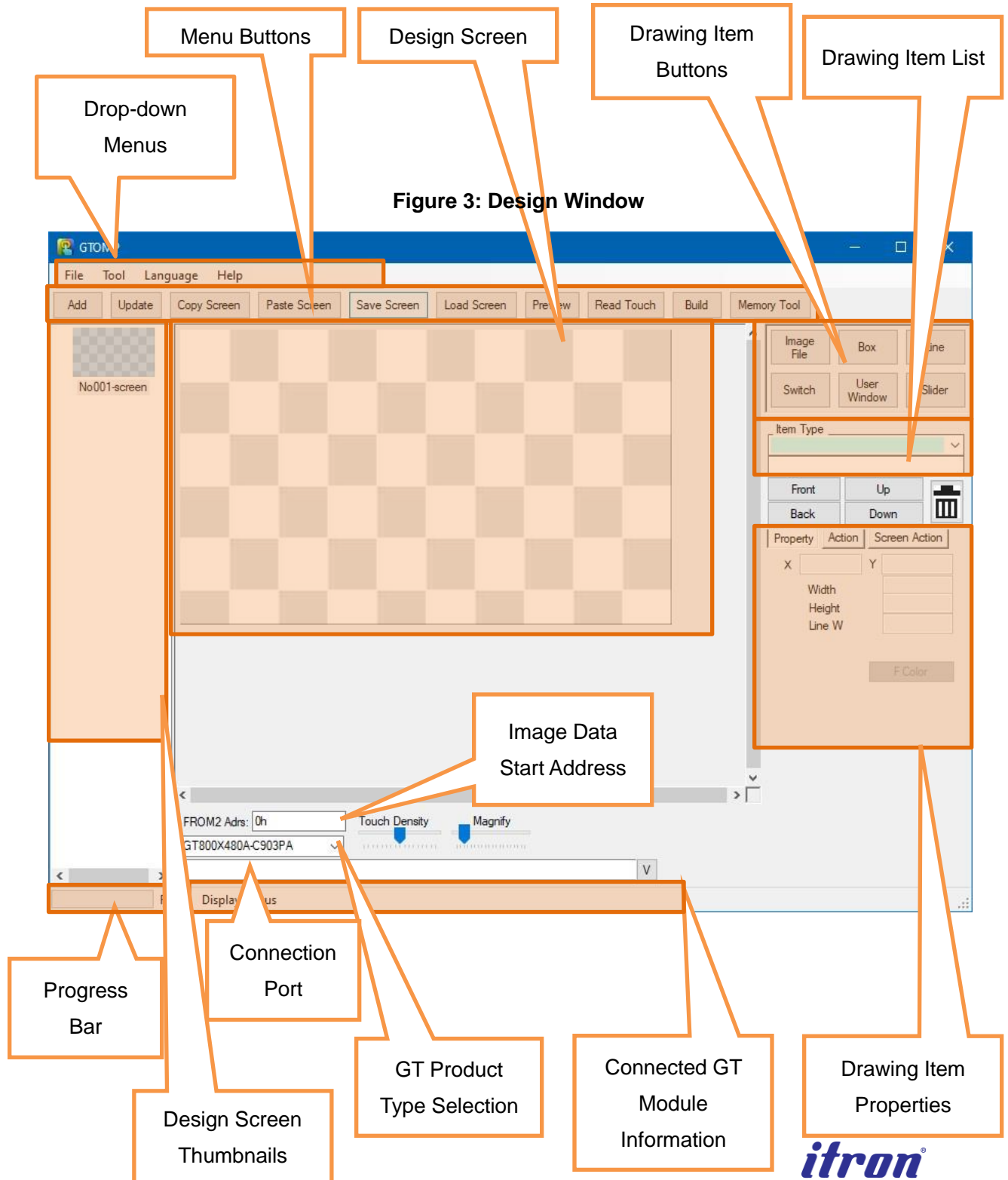
GT Screen Capture

How to capture a host controller made GUI screen

1. Disconnect USB cable and host board interfaces from display. Disconnect power from display. Close GTOMP.
2. Apply power to display.
3. Connect display to host board interface.
4. Run host program to draw graphics on display screen.
5. Disconnect host board interface from display.
6. Connect display to PC via USB.
7. Run GTOMP.
8. GTOMP should automatically detect and connect to display.
9. Go to “Tool > GT Screen Capture” to put the connected display’s screen information onto your clipboard.
10. When finished, a pop-up should indicate the information is on the clipboard.
11. Paste the screen capture into a drawing application like Paint.

4. Screen Designer

Screen Designer Menu



Menu Description

Drop-down Menus

- File
 - New
 - Open
 - Save
 - Save As
 - Exit
- Tool
 - Reset VCOM - USB Mapping (VCOM driver support function.)
 - Change Touch Threshold (Touch panel sensitivity adjustment function.)
 - Make Image Files (Copy image files used in the design to a user-designated location.)
 - Load Map File (Read Map files created with GT-Packer.)
 - View Map/FROM2 Usage (Display FROM2 usage summary.)
 - GT Screen Capture (Capture the data currently on the GT module and copy it to the clipboard.)
 - Memory Switches (Open the GT module memory switch editing tool.)
 - Dither Tool (Perform dither conversions on user images.)
 - String Table (IN DEVELOPMENT)
 - Blink ON (IN DEVELOPMENT)
 - Touch Level Tool (View connected module's touch data graphically.)
 - Touch Level Log Viewer (Open and review touch data snapshot files graphically.)
 - Firmware Update (Update the connected GT-CP module's firmware.)
- Language - Menu language selection
 - English
 - Japanese
- Help
 - About (Show tool version)

Menu Buttons

These menu buttons provide quick access to frequently used functions:

- Add (Add a new screen.)

- Update (Saves the current screen design.)
- Copy Screen (Copy screen.)
- Paste Screen (Paste the copied screen to the selected screen.)
- Save Screen (Save the current design screen)
- Load Screen (Load a design screen into the current project)
- Preview (temporarily display the current design on the connected GT module.)
- Read Touch (Monitor the connected GT module's touch activity.)
- Build (IN DEVELOPMENT)
- Memory Tool (Switch to Memory Tool.)

Design Screen

Add items such as images and rectangles here to create a display design.

Select Item: When you move the mouse cursor over an item, the selection outline is displayed as a blinking green frame. Right click to switch items. Left click confirms selection and will change the frame color to light blue. The position and size of the selected item can be changed by clicking and dragging the mouse operation or changing the item's coordinate properties. Note that there is a delay in processing the click operations.

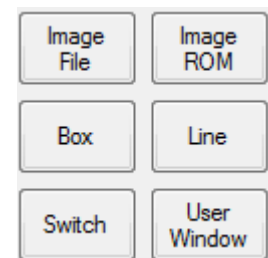
Drawing Item Buttons

Select a drawing item to add to the screen. Click on the desired item and place the item onto the screen by clicking and drawing a square with the mouse on the design screen. The item's properties can be changed once it is placed on the screen.

Items that can be added are as follows:

- **Image File:** Select an image file from the host PC.
- **Image ROM:** Select an image that was registered in FROM2 with the memory tool. When an image is added to FROM2, it will be added to this list.
- **Box:** Draw a rectangle of any size. You can select whether the rectangle is filled or not.
- **Line:** Draw a line. The line thickness can be changed.
- **Switch:** Draw a touch area. Various touch settings can be configured within a switch object.
- **User Window:** Display characters.
- **Slider:** IN DEVELOPMENT

Figure 1: Drawing Items



Drawing Item List

This drop-down menu lists all items in the current screen design.

Progress Bar

When performing time-consuming processing, the progress bar is displayed. Please wait until this processing is complete.

Design Screen Thumbnail

You can switch between screens by clicking on a screen thumbnail. You can add a blank screen by clicking the “Add” button.

Connection Port Selection

Specify the GT module’s connection port. On Windows 7 or later, you can select a WinUSB connected module’s name and ID.

If you select “Noritake Display”, you will connect to the first GT module found via WinUSB connection.

By selecting a COM port number, you can select a GT module connected via Virtual COM.

GT Product Type Selection

Typically, the GT product type is automatically selected when a module is connected. If this is not the case, please select the connected module’s product type. This selection is used to obtain available commands and the number of pixels of the screen.

Image Data Storage Start Address

The start address value is used to specify the image address when writing to FROM2.

Information on Connected GT

When a port is selected, the tool attempts to connect to that port. If it succeeds, it reads the display’s information and presents it here. If it is unsuccessful, a failed connection message will be displayed.

Display Item Properties

You can refer to and change various display item settings.

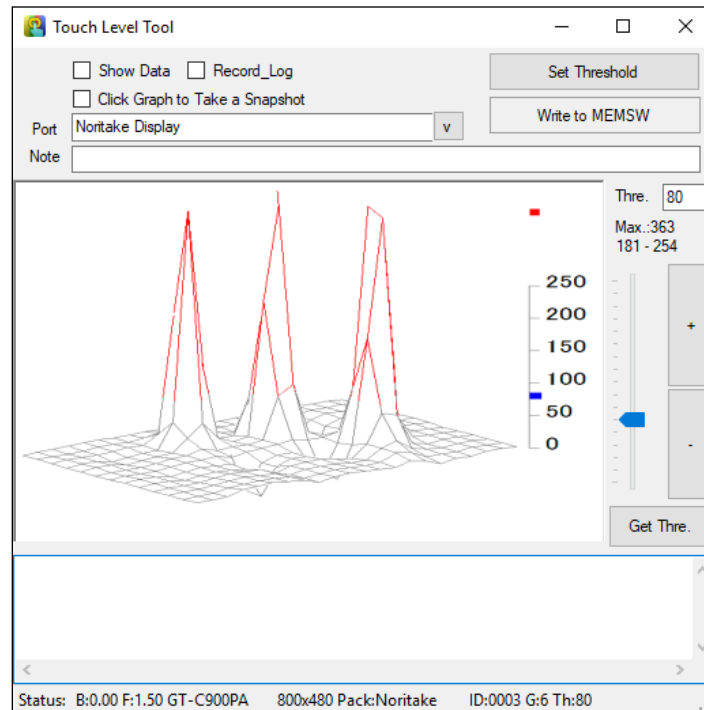
Items can be layered on top of each other. New items are placed on top and will hide the items below. By selecting items and clicking “Front”, “Back”, “Up”, and “Down” you can change the layering order.

The trash button will delete the selected item.

X and Y are the item’s upper-left corner positional coordinates. An item’s height and width (in pixels) can be set as well.

Touch Level Tool

This internal tool is used to visualize the touch level values read from the module's touch panel. This allows for easy touch sensitivity analysis and efficient threshold adjustment.



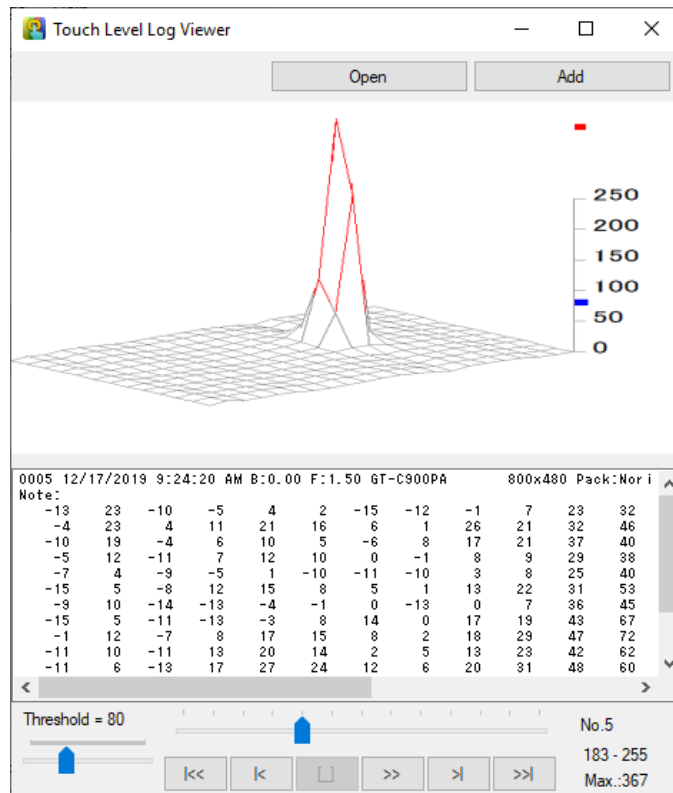
As long as a display is connected to the selected port, a graphical representation of the touch panel's data will appear in the middle of the window. The scale on the right indicates the converted input touch value (red indicator) related to the touch threshold value (blue indicator). The red part of the graph is the portion of the touch input that is larger than the threshold value. The grey part of the graph is touch data lower than the threshold value. Keep in mind that the graph's threshold value is not necessarily the active threshold value on the connected module. The controls on the right-hand side of the window can adjust the module's threshold value. The "+" and "-" buttons increase and decrease the threshold value by 1. The slider adjusts the graph's threshold value on a scale from 0 to 255. The "Get Thre." button reads the active threshold value from the connected module and changes the graph's threshold value. The graph threshold button can also be entered manually in the text box next to the "Thre." label. The "Set Threshold" button will set the graph threshold value as the connected display's current threshold value. The "Write to MEMSW" button will save the current graph threshold value to the connected module's memory.

The three checkboxes in the top left corner allow data value viewing and recording. If the "Show

Data" box is checked, the bottom of the window will update with touch count data for each touch electrode. If the "Record_Log" box is checked, all future sets of touch data will be recorded and saved in the desired folder. Uncheck the "Record_Log" checkbox to stop recording touch data. The resulting log file can be opened in the "Touch Level Log Viewer". If the "Click Graph to Take a Snapshot" is checked, the tool will take a snapshot of the current touch data if the graph is clicked. These snapshot files will be saved to the "snapshot" folder in the tool executable's folder (.../GTOMPXXX/snapshot). Snapshot files can be opened in the 'Touch Level Log Viewer'.

Touch Level Log Viewer

This internal tool can open touch level log files and view stored touch data. This allows users to evaluate and archive touch data during sensitivity adjustment.



The “Touch Level Log Viewer” can open snapshot and touch log files created by the “Touch Level Tool” with the “Open” button. Once opened, the touch data will appear as an array of touch snapshots on the main graph and touch value display. The “Add” button can open snapshot and touch log files and will add the touch data to the existing array of touch data snapshots.

The six buttons at the bottom of the window control the touch snapshots that have been loaded.

- “|<<” will go to the first touch snapshot.
- “|<” will go back by one touch snapshot.
- “□” will stop the automatic walkthrough of all touch snapshots.
- “>>” will start the automatic walkthrough of all touch snapshots.
- “>|” will go forward by one touch snapshot.
- “>>|” will go to the last touch snapshot.

The slider directly above the control buttons lets the user scrub through all loaded touch



Noritake Co., Inc.
Electronics Division

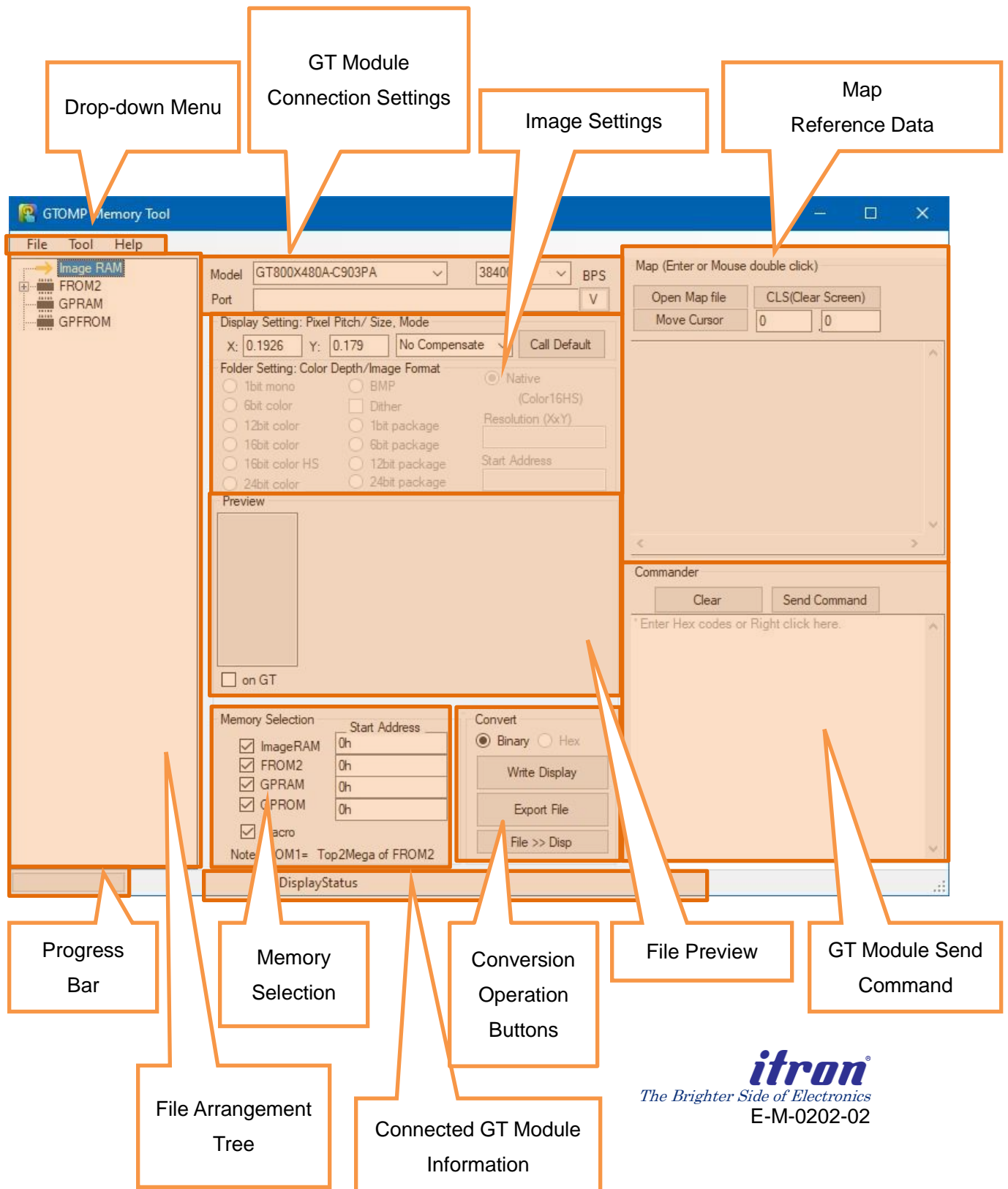
snapshots.

A threshold slider is also present to adjust the snapshot graph's threshold value.

5. Memory Tool

Memory Tool Menu

Figure 2: Memory Tool Window



Menu Description

Drop-down Menu

- File
 - New (Create new tree.)
 - Open Tree (Open saved tree.)
 - Save Tree (Save current tree.)
 - Save Tree as (Save the tree with a name.)
 - Import Map (Load Map file)
 - Add File(s) (Add files to selected tree nodes.)
 - Exit Memory Tool (Exits the memory tool and returns to the design tool.)
- Tool
 - Create Test Images (Generate color test image on the PC's desktop)
 - Slideshow by Map File (Play a slideshow with map file images)
 - Language Selection (English and Japanese)
 - Rom Erase (Erase the connected GT module's ROM)
 - Reset VCOM USB Mapping
 - Touch Setting Package Data (Save/change/select touch package data)
 - Collect Files (Save all current tree files to one location)
 - Memory Switches (Edit the connected module's memory switches)
- Help
 - About (See the tool's version number)

GT Module Connection Settings

Specify the GT module type and connection port. The tool knows the number of pixels and pixel pitch for each GT module.

Click the "V" button on the right side and select the appropriate port. When selected, the tool will perform a connection attempt, and on success it displays the module's information at the bottom of the window.

Image Settings

Different image settings can be applied to different folders within the file tree. If a single image is selected, the image settings cannot be changed.

Pixel Pitch: Specifies the pixel pitch correction being used. Some GT-CP modules have TFT panels that contain rectangular pixels. This tool will compensate for rectangular pixels to make the resulting TFT image 1:1 compared to a display with

square pixels. The pixel pitch setting is global for all images.

Color Depth: Specifies the number of bits per pixel. The smaller the number of bits per pixel, the lower the resulting image size and quality. When “Dither” is checked, color reduction is performed using a dither conversion with the error diffusion method.

Internal Format: This will be the maximum number of colors to display for the applicable images. Even if it saves with more number of colors, the number of display colors will not increase. If the new format has more colors than the original format, the new image will look exactly like the original image.

The post-conversion image size depends on the original image size.

Note: Please be aware that transparent color backgrounds cannot be used in the 16-bit color high speed format.

Resolution (XxY): Change the image size. When set to “0 x 0”, the file’s original size is used.

Start Address: This designates the associated file’s start address. If this is left blank, it will default to the start of the related memory.

Map Reference Data

When converting image data to the FROM2 writing format with the buttons in the “Convert” section, a list of command codes and address for calling and displaying the converted image data are also created and displayed in the text box. This information can be used for checking FROM2 image data and programming macros onto the GT module controller. Double-clicking the command code sends the code to the GT module.

The “Open Map” button reads in a saved map file.

The “CLS (Clear Screen)” button sends a screen clear command to the GT module.

Specify the desired x and y coordinates and click the “Move Cursor” button to move the cursor.

Images are drawn on the display relative to the cursor position. If an image is not properly drawn onto the display, then set the cursor to position 0, 0 and try again.

Progress Bar

When performing time-consuming processing, the progress bar is displayed. Please wait until this processing is complete.

File Arrangement Tree

The top nodes (Image RAM, FROM2, GPRAM, and GPFROM) indicate sections of memory on the GT module.

Folders can be placed in each memory node, and image files can be set in each folder.

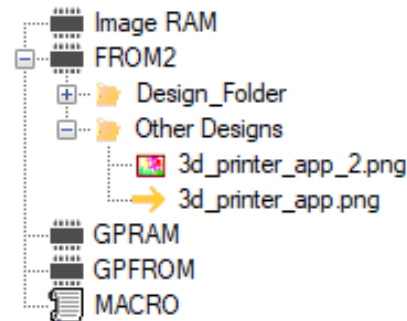
To add files, use the right-click menu on the file tree or drag-and-drop from the PC's file explorer.

To add files, left-click on the desired memory section, and then right-click and select "Add File".

For drag-and-drop, if a folder is dropped into the tree, a corresponding folder is created and registered in the tree.

You can place images (.bmp, .jpg, etc.), text (.txt), and outline font (.otf, .ttf) files in FROM2. In addition to macros and program macro codes, the MACRO node can also contain setting and registration files such as touch package files (please contact us for these types of files). The "Design_Folder" will contain any design screen images from the screen designer tool.

Figure 3: Tree Example



Memory Selection

This section indicates the sections of GT module memory that will be written to. The checkbox by each memory name indicates if that node's information will be written. The hexadecimal address on the right side of each memory name is the data's FROM2 start address.

Connected GT Module Information

If a successful connection has been established with a GT module, then the connected module's information will be shown here.

Conversion Operation Buttons

The "Write Display" button will write the selected tree data to the connected GT module.

The "Export File" button will export the selected tree data as two files:

- A binary file that contains all data to be written to the display.
- A text file that contains the resulting Map file information.

The "File >> Disp" button will ask the user to select a binary file. This file should have been generated by the "Export File" button. Once the file is selected, the data will be written to the connected GT module.

After data is written to the module, Map file information will appear in the Map text box on the right side of the memory tool.

File Preview

This area will preview the currently selected file.

If the image file size is smaller than the connected display, the image will be displayed in the

upper-left corner of the preview area. If an image is larger than the display area, the excess image data will become discolored. This allows the user to compare the image size with the display size.

Figure 4: Preview Small Image and Large Image



Touch Package Data

Noritake has developed touch package data files that can adjust touch screen sensitivity using more than just the touch threshold value. These files can be obtained directly from Noritake. Contact your sales rep or sales engineer to request a touch package data file.

Store Touch Package Data

1. With your GT-CP module connected to your PC and GTOMP open, select the appropriate connection port for the GT-CP module.
2. Click on the "Memory Tool" button.
3. Once the "Memory Tool" window has opened, navigate to "Tool > Touch Setting Package Data > Store > No. 1".
4. An "Open" dialog box will pop-up.
5. Navigate to the desired touch setting package file and click "Open". The touch package data is now loaded onto the connected GT-CP module as package #X.

Change Touch Package Data Memory Switch

1. With your GT-CP module connected to your PC and GTOMP open, select the appropriate connection port for the GT-CP module.
2. Click on the "Memory Tool" button.
3. Once the "Memory Tool" window has opened, navigate to "Tool > Change Memory Switch > Set Package X". This will set the module to use touch setting package #1 upon reboot.

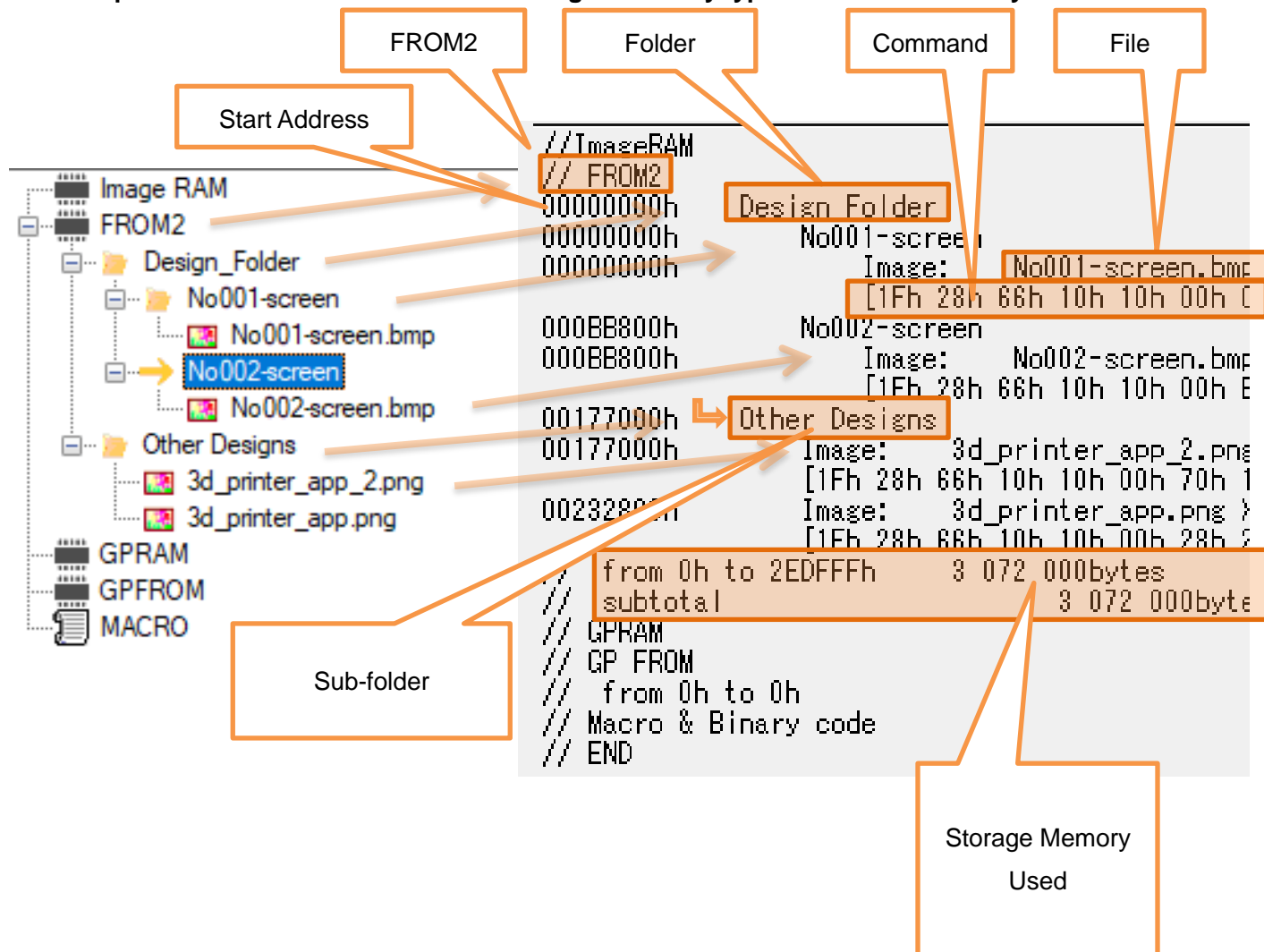
Select a Touch Package Data Package Number

4. With your GT-CP module connected to your PC and GTOMP open, select the appropriate connection port for the GT-CP module.
5. Click on the "Memory Tool" button.
6. Once the "Memory Tool" window has opened, navigate to "Tool > Select a Package > Package X". This will select touch package #1 and change the connected GT-CP's touch setting parameters to match the selected touch package data file.

Map Display

When data is written to the connected GT module, the associated Map information is displayed in the Map text box. The Map information includes each file's start addresses and related command byte code. This is the same information contained in the exported .txt map file.

Map file information is indented according to memory type and folder hierarchy.



Send GT Module Commands

You can send commands to the GT module using hexadecimal code.

In order to send byte data to the module, write hexadecimal code in the commander text box (like 31h 32h) and click the “Send Command” button.

Spaces or commas can be used to separate each hex byte.

In the following example, the hex bytes are separated by both spaces and commas.

Code Example:

```
//      Cursor (0,0)
        {1fh 24h 00h 00h 00h 00h}

//      Outline Font Type Select
        {1Fh,28h,67h,08h,00h}

//      Font Size Select
        {1Fh 28h,67h 01h,00h}

'      Character Table Type
        {1Bh 74h FEh}

'      Outline Font Size
        {1Fh 28h 67h 06h 00h 00h 00h 00h 00h 00h 00h}

"ABCDEF 日本語"
```

Annotations:

- Comment (points to the first line)
- Brackets are ignored. (points to the curly braces in the Font Size Select line)
- Use text within quotes. (points to the last line)

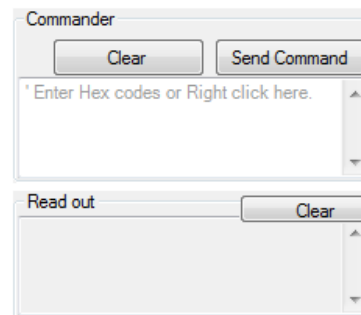
Right-clicking in the commander text box will bring up a list of pre-defined display commands. When a command is chosen, the command byte code will appear in the commander text box. This code can be changed as necessary.

Please note the commander’s special characters:

- ' (Apostrophe), // (two slashes): the text to the right of these characters are seen as a comment.
- " (Double quotation): sends text to a GT module as a string, ignoring {} (brackets).

Clicking on the “Send Command” button will open the “Read out” text box. This will display any data (in hexadecimal and ASCII) being transmitted from the GT module. It can be used to verify module responses and touch data.

Figure 5: Commander Boxes



Commands can be copy-pasted from the Map text box and sent to the connected GT module. (Ctrl+V must be used to paste text)

The size of these boxes can also be adjusted.

6. Known Issues

- If an object is deleted from the screen designer, a smaller screen “preview” will appear on the bottom of the window. Interacting with this will cause an error to occur. DO NOT click on this bugged object.

7. Disclaimer

THIS SOFTWARE, DOCUMENT, AND ITS CONTENTS ARE PROVIDED BY NORITAKE CO., INC. "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS DOCUMENT (AND ITS CONTENTS), EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

8. Tool Revision History

Version	Date	Revision
1.0.1.5 BETA	01/22/2020	Beta version Added touch level tool and package data download tools.
1.1.1.7 BETA	06/10/2020	Numerous bug fixes Added ability for Memory Tool to write to multiple displays at once Other new “work-in-progress” features
1.2.1.9 BETA	10/23/2020	Numerous bug fixes Improved project save/load system Other new “work-in-progress” features

9. Document Revision History

Version	Date	Revision
E-M-0202-00	01/22/2020	Initial release.
E-M-0202-01	06/10/2020	Update for GTOMP 1.1.1.7 BETA. Added GT screen capture in Tips section.
E-M-0202-02	10/23/2020	Update for GTOMP 1.2.1.9 BETA.