Application Note

AN_286

App_Meter

Version 1.0

Issue Date: 2018-01-03

This application note introduces the setup of a Sample Application running on MSVC. The objective of the Sample Application is to enable users to become familiar with the usage of the FT8XX, the design flow, and display list used to design the desired user interface or visual effect.

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1 Introduction

This application demonstrates an interactive Absolute and Relative Dial using points, track and buttons based on the FT8XX platform.

The Absolute dial user interactive function involves moving the knob around from its minimum to maximum position, while playing sound. This dial can be activated by enabling the following define statement in "Platform.h". Absolute Dial is enabled by default.

```
#define Absolute Dial
```

The Relative dial user interactive function involves moving the knob, while playing sound which increases or decreases in volume. This dial can be activated by enabling the following define statement in "Platform.h"

```
#define Relative Dial
```

1.1 Overview

The document will give the basic understanding about the FT8XX CPU features Track, Points and Buttons commands.

For information on Project file and Source code build, please refer to AN_391 EVE Platform Guide.

1.2 Scope

This document will be used by software programmers to develop GUI applications by using FT8XX with any MCU via SPI.

2 Application Flow

2.1 Absolute Dial Flowchart
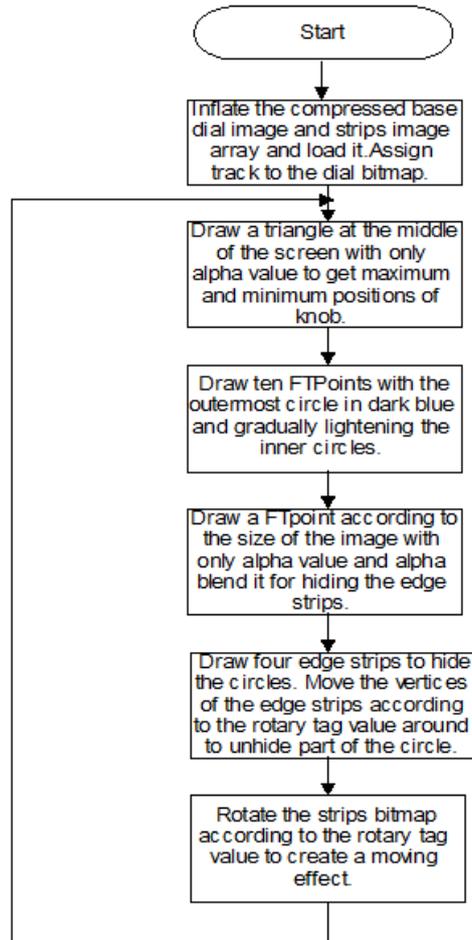
Figure 2.1.1 Absolute Dial Flowchart

2.2 Relative Dial Flowchart
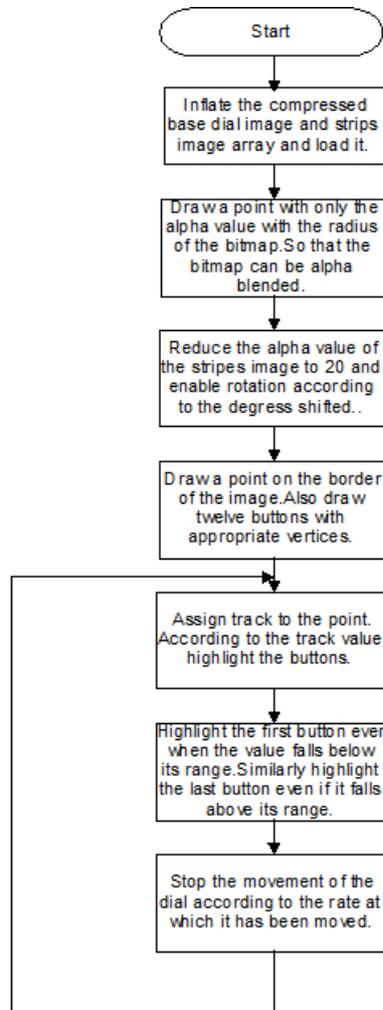
Figure 2.2.1 Relative Dial Flowchart

3 Description

Refer to AN 391 EVE Platform Guide for information pertaining to platform setup and the necessary development environment.

Parameters needed to be initialized are described below before constructing the display list.

3.1 Intialization

3.1.1 Download the Bitmaps

The bitmaps are downloaded onto the desired locations. The bitmap handles are also assigned here.

Note: After these configurations are set, swap the display list and flush into the J1 Memory.

3.1.2 Set the tracker properties to Point using CMD_TRACK

/* In the Function*/

```
Gpu_CoCmd_Track(phost,240, 136, 1, 1, tagval);
```

where 'tagval'– Tag value of the white circle.

A w and h of (1,1) means that the tracker is rotary, and reports an angle value in REG_TRACKER.

3.2 Functionality

3.2.1 Absolute Dial

The Absolute Dial demo has been designed to work like a volume dial. In this demo, the knob has to be moved according to minimum or maximum limits on its position.

Before the demo is started, the info screen is displayed with information. When the play button is pressed, the absolute dial demo is started.

3.2.1.1 Output of the Dial

Ten FTpoints are drawn with the outermost circle in dark colour, gradually lightening the inner circles to have a glowing effect.

The Dial is rotated with minimum and maximum positions. When the dial is moved away from its initial position, the circles are unhidden to show the output.

3.2.1.2 Edge Strips

Four edge strips are drawn. The first is from the left, second from above, third from the right, fourth is from below. The edge strips are drawn according to the vertices that need to be hidden. The edge strips are moved around according to the rotary tag value to unhide the FTpoints that are drawn.

3.2.1.3 Blend the bitmap

Draw FTPoint with only alpha value, with radius according to the size of the Dial bitmap.

Reduce the alpha value of the strips bitmap to 20 and rotate it according to the rotary value.
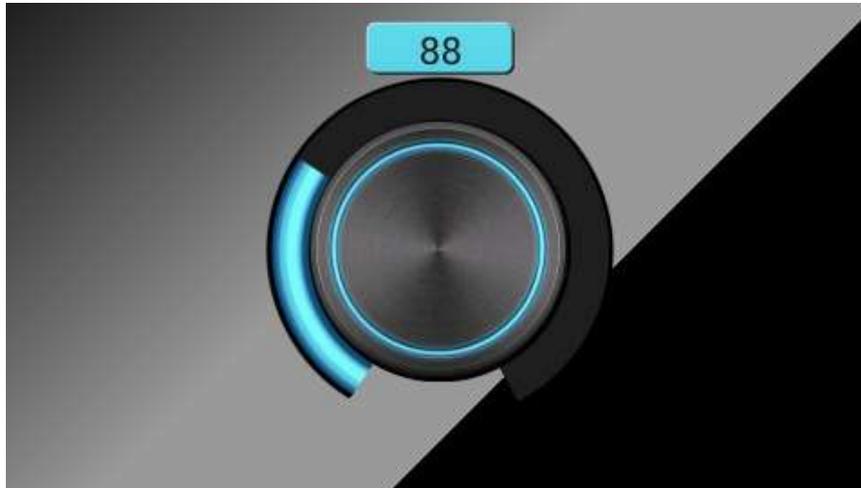
Figure 3.2.1.1 Absolute Dial Screen

3.2.2 Relative Dial

The Relative Dial demo has been designed to work like a volume dial.

In this demo, the knob can be moved without any minimum or maximum limit on its position. The rate at which the knob is rotated determines the velocity at which the knob will stop its movement. Before the demo is started, the info screen is displayed with info. When the play button is pressed, the relative dial demo is started.

3.2.2.1 Movement of the Dial

The Dial is rotated according to the rate at which it has been moved. So after the dial is rotated and penup has been done the knob reaches it minimum value by slowly reducing its speed. So Velocity calculation has been done.

3.2.2.2 Button Highlight

There are twelve buttons above the dial. The buttons are highlighted according to the track movement of the dial.

3.2.2.3 Bitmaps Rotation

The dial bitmap is placed at a specific location. The strips bitmap alpha value is reduced to 20 and it is rotated according to the value at which it has been rotated.

3.2.2.4 Audio

Audio is played according to the volume that is selected. The Carousel effect (08H) is played continuously.

Figure 3.2.2.2 Relative Dial Screen

4 Contact Information

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Please visit the Sales Network page of the Bridgetek Web site for the contact details of our distributor(s) and sales representative(s) in your country.

Appendix A– References

Document References

- Datasheet for VM800C
- Datasheet for VM800B
- AN_391 EVE Platform Guide
- FT8XX programmer guide
- FT800 Embedded Video Engine Datasheet

Acronyms and Abbreviations

Terms	Description
Arduino Pro	The open source platform variety based on ATMEL's ATMEGA chipset
EVE	Embedded Video Engine
SPI	Serial Peripheral Interface
UI	User Interface
USB	Universal Serial Bus

Appendix B – List of Tables & Figures

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Appendix C– Revision History

Document Title: AN_286 FT800 Absolute & Relative Dial

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Clearance No.:   BRT#110

Product Page: http://brtchip.com/product/

Document Feedback: Send Feedback

Revision	Changes	Date
1.0	Initial release	2018-01-03