

# Basic Dial Demo - Ampire UART TFT

This is a walkthrough guide showing you how you can use the UART display along with Windows UART Software to display images, and overlay lines to create a simple animated dial.

1. Uploading & Saving Single Images to the UART Display
2. Recalling Saved Images & Reviewing Commands
3. Setting Drawing Colours
4. Sending Line Draw Commands from UART Software
5. Building up and replaying Commands.

## 1 Uploading & Saving Images to the UART Display

Images need to be saved in \*.bmp or \*.jpg format

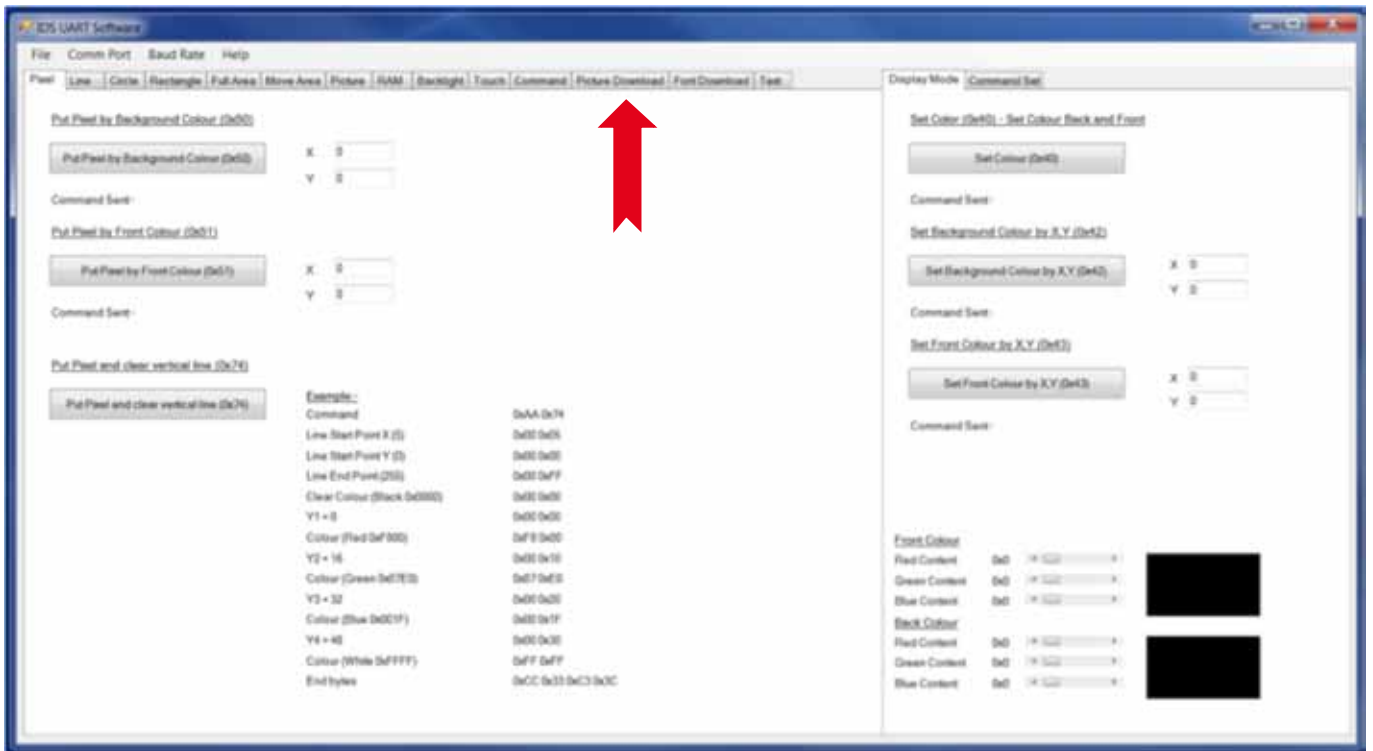
For images to be displayed properly, they need to be sized to the the correct resolution for the display.



This Dial Demo is for 800x600 UART Display.

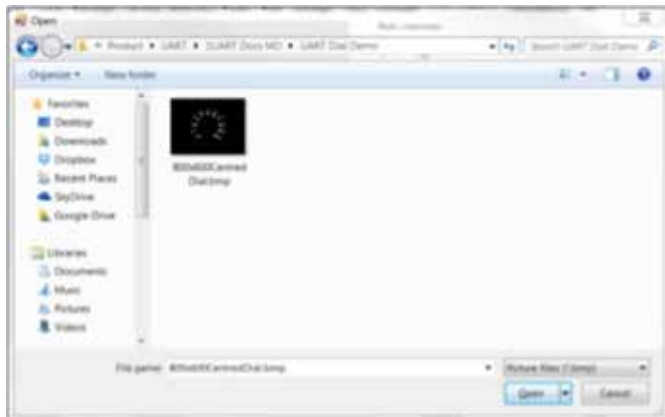
This image file can be found here;

UART Dial Demo\800x600CentredDial.bmp

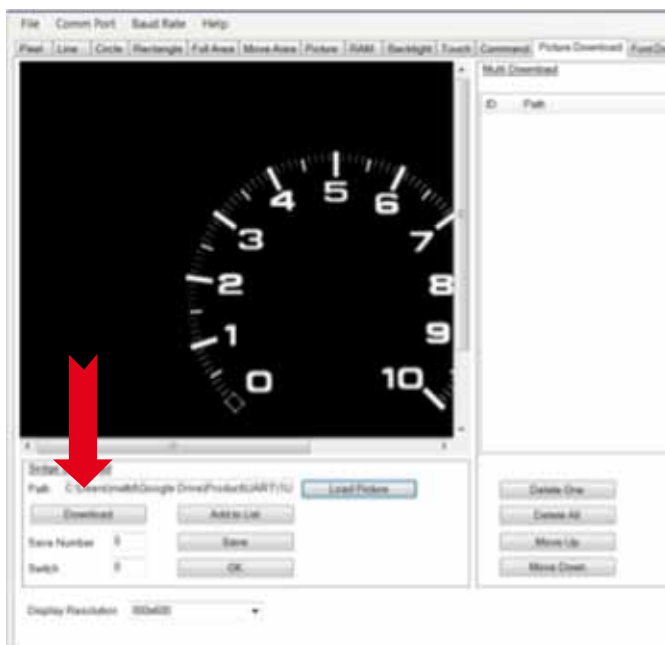


Once you have clicked on the **Picture Download** tab you need to set the resolution to match the display and your target image. **A**

Then you can load the image **B**



Navigate to the folder where the image is located, highlight the file and click the **Open** button.

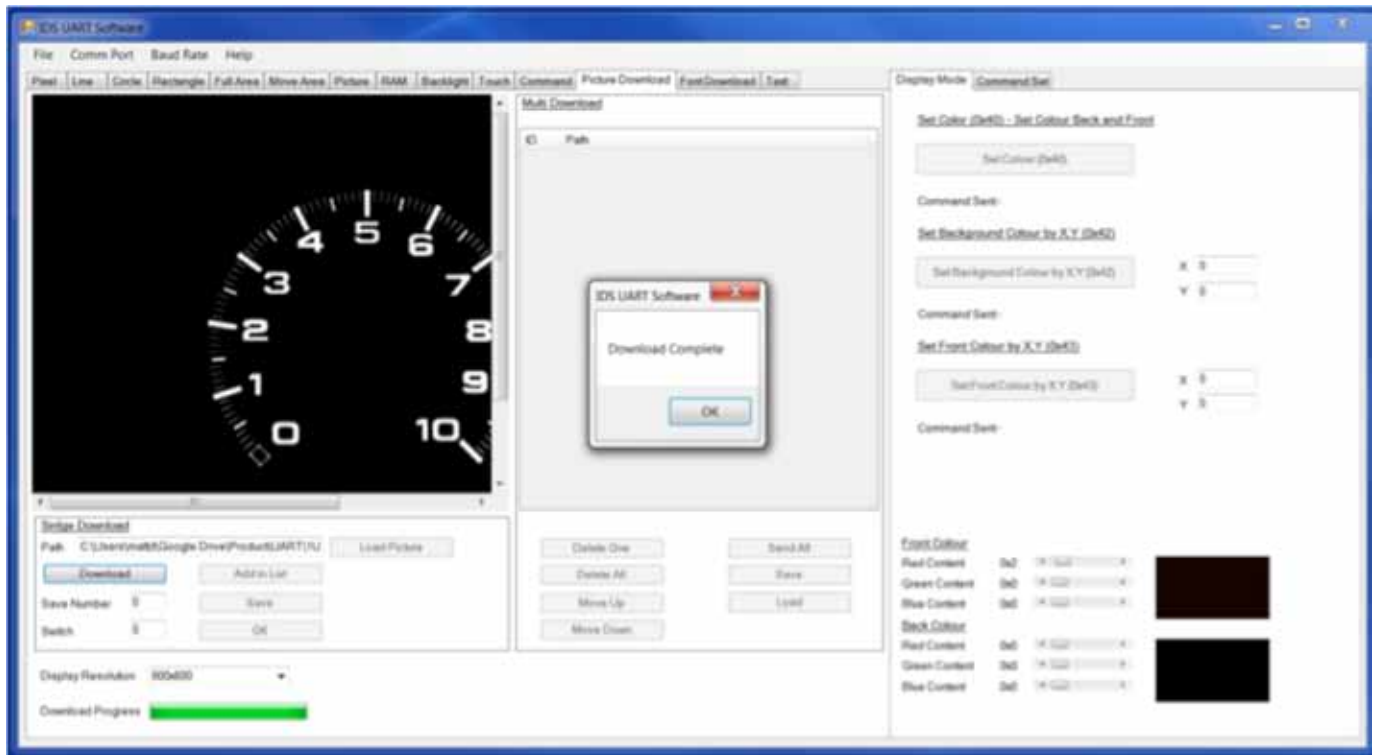


The image is now loaded in the UART software NOT ON THE DISPLAY. You can use the horizontal and vertical scroll bars to preview the image in the window.

The path of the file is also detailed in the text box below the image.

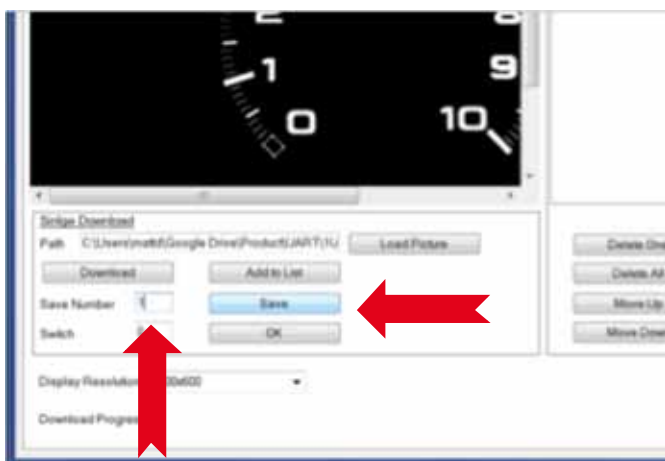
When you are happy click the **Download** button.

The image will be transferred to the display, and should begin to appear on the screen from the top down.



When the **Download Progress** box has filled, the image will be displayed on the screen and a **Download Complete** box will pop up on the screen. Click **OK** to clear.

Now the image is visible on the display, it needs to be stored on the device.



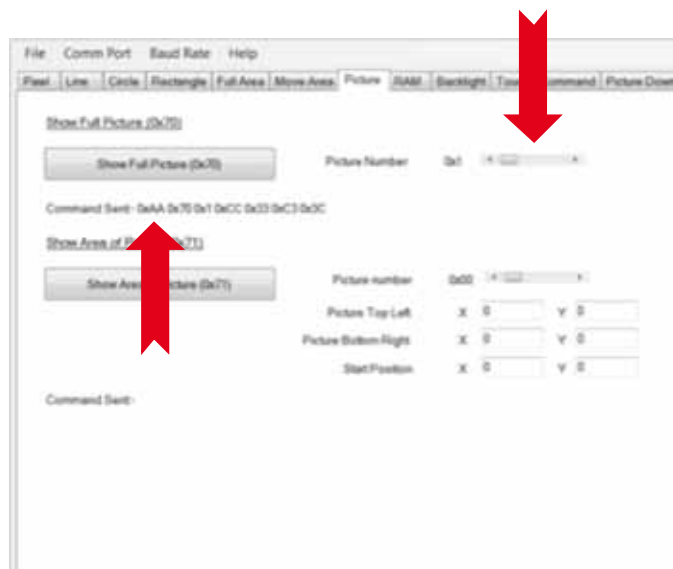
To select a location on the devices memory, enter a value in the Save Number text box and click the Save button.

For our demo we will use position '1'

If you save an image in Position 0. This will be displayed when the display is powered up. By Default an IES Splash Screen is stored in this position.

## 2 Recalling Saved Images and Reviewing Commands

Once the image has been saved on the device, you can recall it by sending the relevant command. This code is generated by pressing buttons in the UART software.

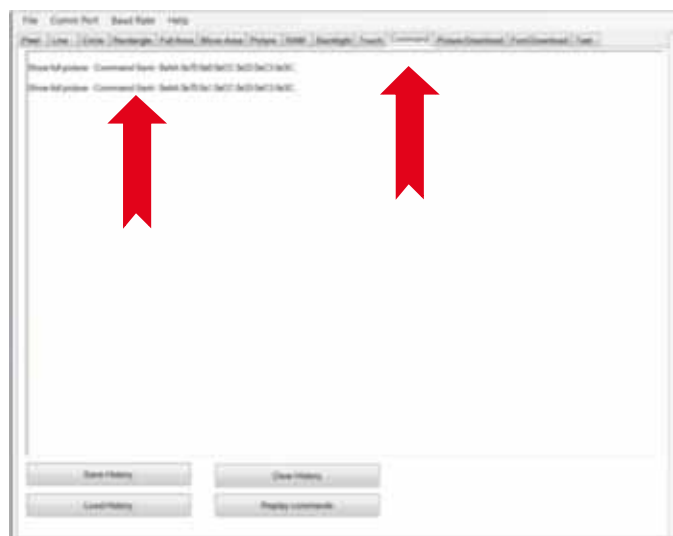


Navigate to the **Picture** tab.

Use the slider to pick the picture location. If you select **0x0** and click the **Show Full Picture** button, the display will refresh with the default splash screen.

To reload the dial image, select **0x1** with the slider and again click the **Show Full Picture** button.

Worth noting the actual code generated and sent to the display is shown below the button once pressed. **'Command Sent-'**



Command History.

All the commands you send from the UART Software are logged. If you navigate to the **Command** tab, you will see the history of commands you have sent to the display.

Here we see the Show full picture commands we executed in the last step.

You can cut, copy and paste into this window as well as save and reload history files.

You can also **Replay Commands** from here which will run through all commands in the window in order (top down).

### 3 Setting Drawing Colours

Now we have our image loaded, know how to recall it and review commands. We need to set the colours the display will use to overlay our Indicator Needle on the dial image.



Click the **Display Mode** tab on the right of the UART Software home screen.

Use the sliders at the bottom of the window to select the front and back colours.

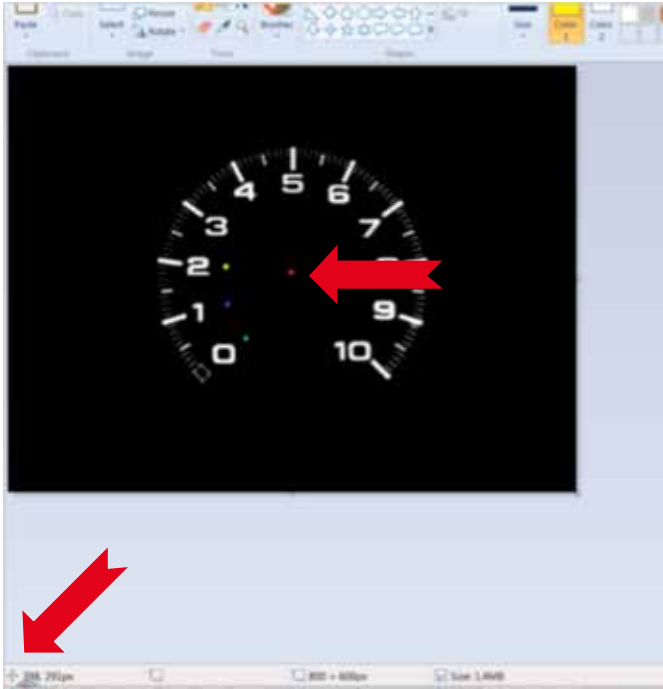
For the purposes of this demo, set the **Front Colour, Red Content** slider all the way to the right. And leave the **Back Colour** as black.

We will use the Front colour to draw the dial, and the background colour to write over this when the needle changes position.

When the colour swatches are correct, click the **Set Colour** button. Once Pressed the command sent will show up below the button and will also be logged in **Command** tab – as the show full picture commands were in the previous section.

#### 4 Sending Line Draw Commands from UART Software

The Line tool uses pixel coordinates, and colours we set previously to 'draw' on the current display image. These are on the same 'layer' as the loaded image and can not be undone, but instead have to be over written if you no longer wish the line to be visible.



To accurately overlay lines you need to know the X Y coordinates of the start and finish points for your lines.

There are a number of packages that will give you the position. Using Microsoft paint – hovering the mouse over the image will display X Y in the bottom left of the screen.

Coordinates displayed are centre of the Dial 398, 291



Before entering coordinates into the UART software, we will build a table of all the positions around the face of the dial.

All of our start points will be at the red dot 398, 291.

Locations around the dial will vary, here I have detailed 0, 1, and 2 on the dial as well as the centre.

R - 398,291

G 334, 383

B 308, 340

Y 305, 284



Navigating to the **Line** tab, we enter the coordinates for our first line from Centre to the Green dot, positioned @ 0 on the dial – into the **Draw line by Front Colour** text entry boxes.

Clicking the **Draw line by Front Colour** button, should draw a red line from centre to the 0 position on the dial.

Start X 398 Y 291

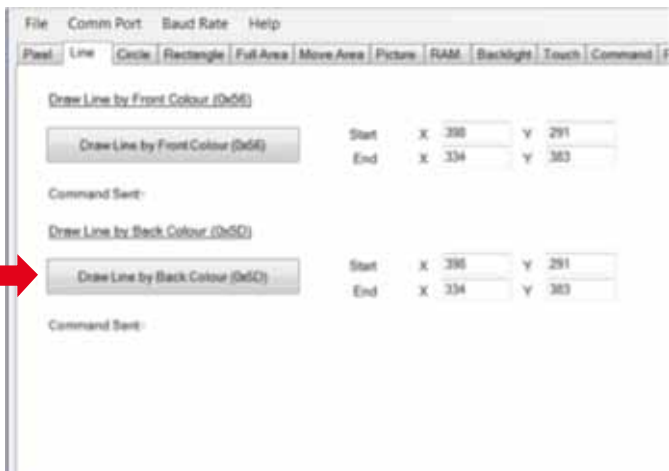
End X 334 Y 383



This is how the display should now look.

Before drawing the line for position 1 on the dial, we need to draw over line we just drew.

We do this using the **Draw line by Back Colour** button.



Navigating to the **Line** tab again, we enter the coordinates as before, from Centre to the Green dot, positioned @ 0 on the dial – into the **Draw line by Back Colour** text entry boxes.

When we execute this command by pressing the **Draw line by Back Colour** button the red line we draw previously will be over written with a black line (assuming you have set Front and Back Colours correctly in earlier steps)

Leaving you with a blank dial.

## 5 Building up & replaying Commands

We have looked at the **Command** tab a number of times in this walkthrough, now we can review the lines we have added and look to copy and paste from an external document.



If you have a look in the **Command** tab, we have additional lines.

These lines all start with an identifier telling you exactly what the command that follows will execute.

By repeating the previous steps with the coordinates for different positions on the dial, we can quickly and easily build a sequence that will, when the **Replay commands** button is pressed, create the effect of the needle moving around the dial.

The **UART DIAL 800x600 Windows Commands.txt** file located in the same folder as the **800x600CentredDial.bmp** image contains the code for a dial moving to all positions from 0 to 10 and back round again.

The positions have been labelled.

Prepare the display by importing and saving the image into location **1** you can copy the text directly from the .txt file and paste into the Command window in the **Command** tab.

To run through the animation, just hit the **Replay commands** button .