Additional Information for PIC24H & dsPIC33F CVD Demos

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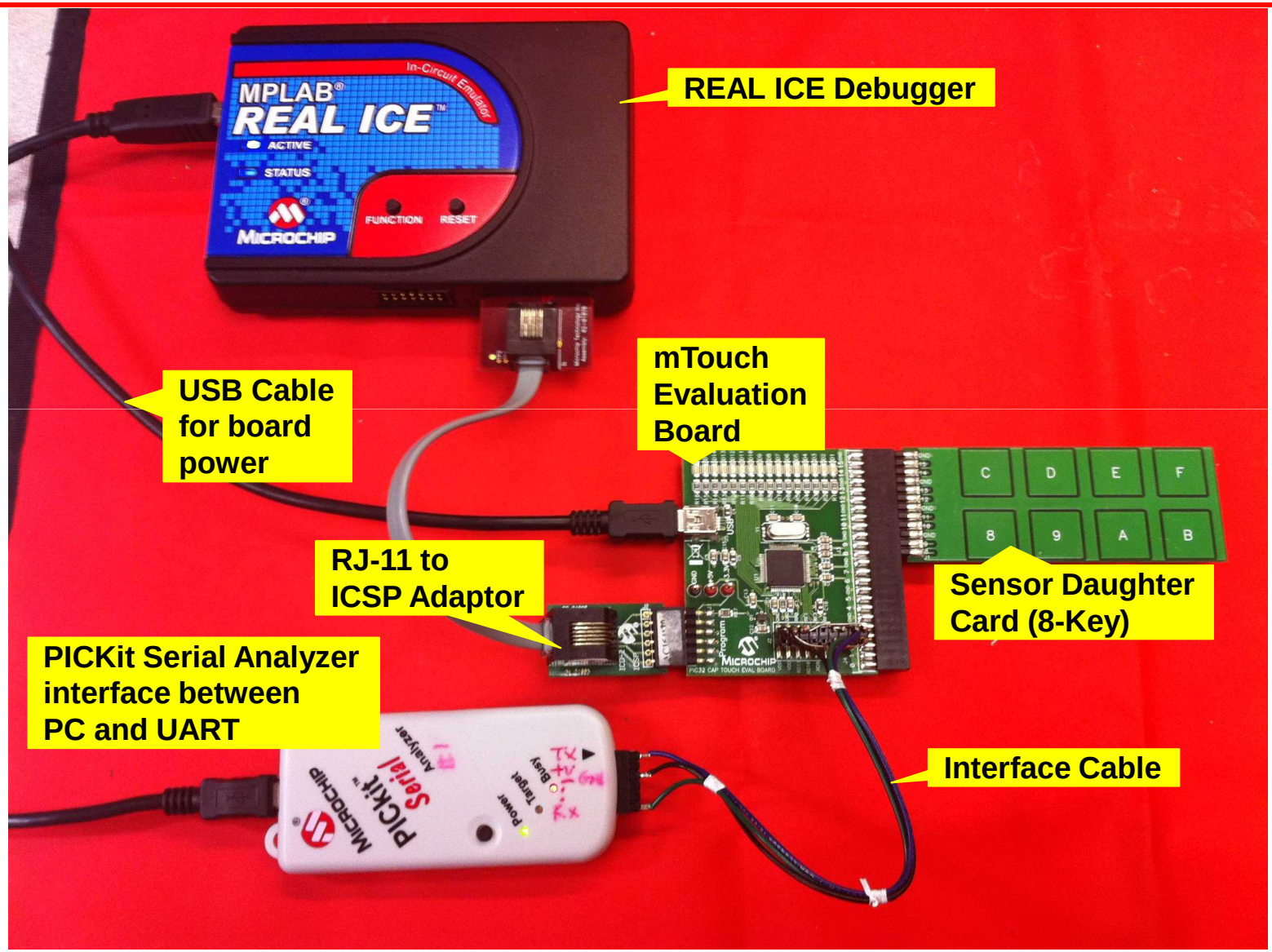
Real-Time Debugging

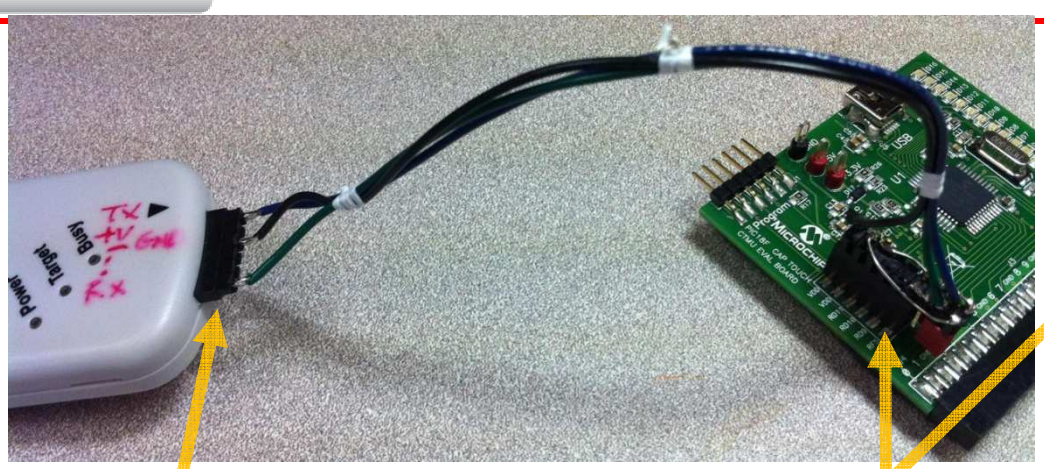
- **To assist in debugging button/slider behavior, Microchip has provided Profilab GUI project for use on your PC**
- **Profilab™ is like LabView™, but much cheaper**

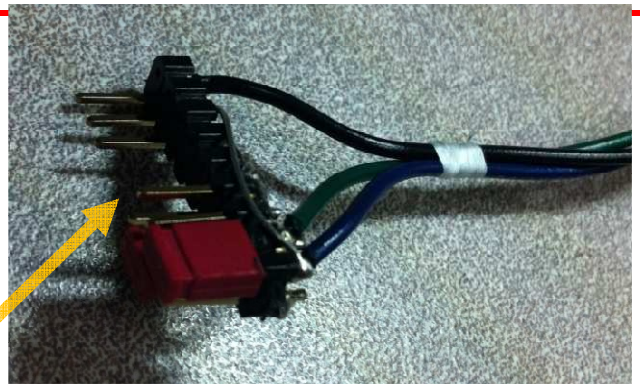
  http://www.abacom-online.de/uk/html/profilab-expert.html
- **Standalone Windows mTouch GUI.exe allows use of GUI without purchasing Profilab™**
- **Profilab™ projects can be customized to meet your debugging needs**
  - Plot average voltage and button voltage
  - Model product front panel on a GUI tab

Typical Bench-Top Setup



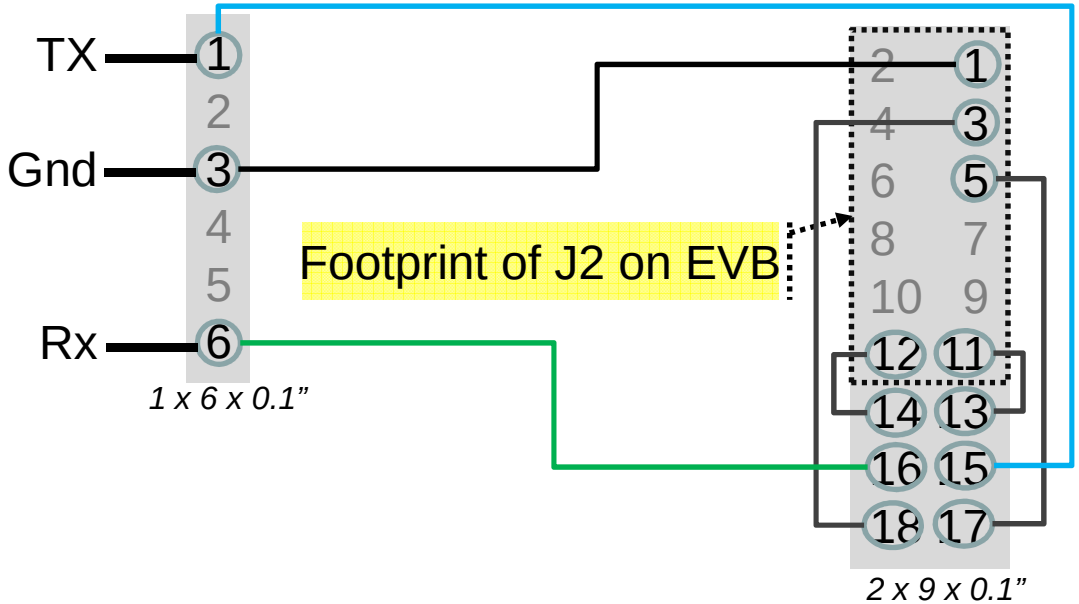
PKSA-EVB J2 Interface Cable



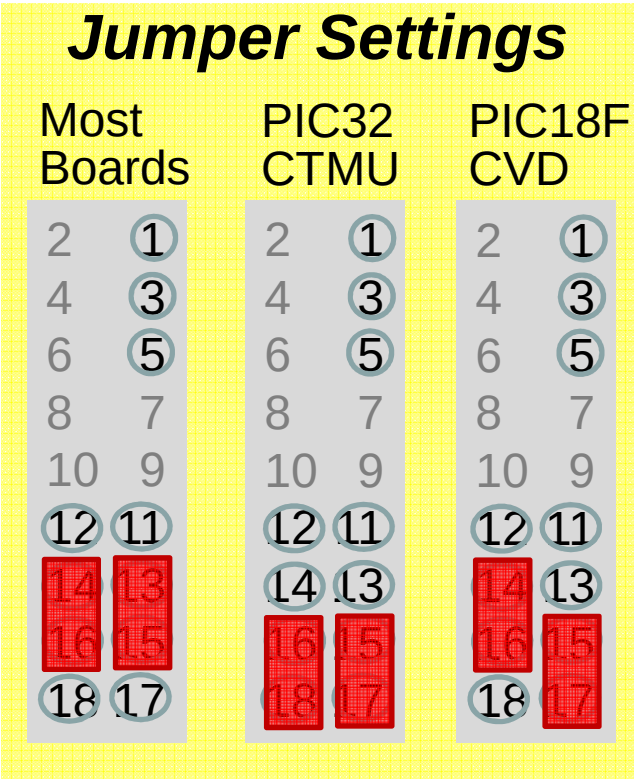


PKSA Plug

EVB Plug to J2

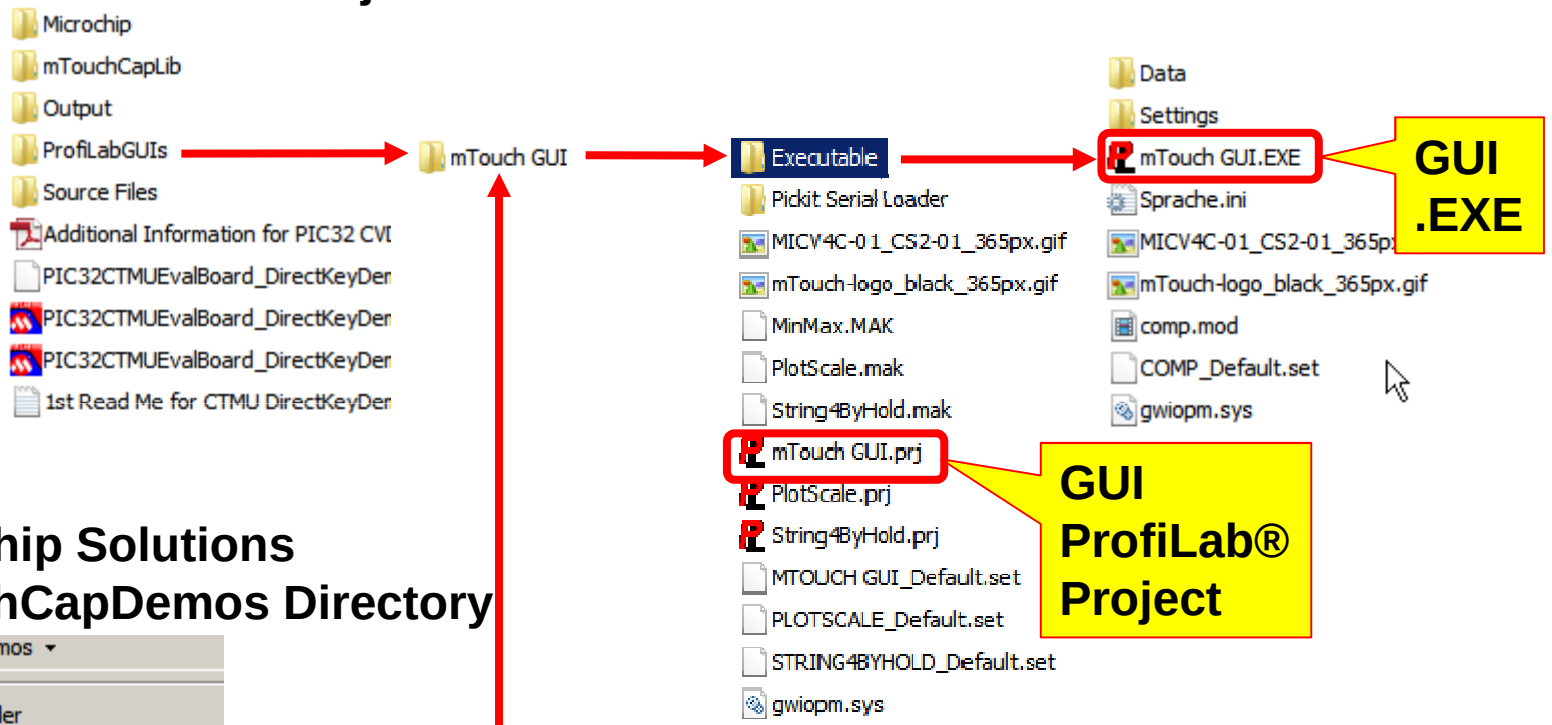


Jumper Settings

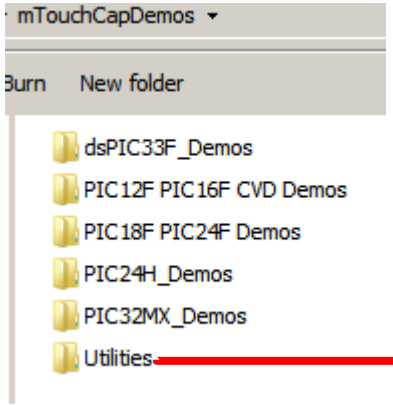


Finding the .EXE GUI File

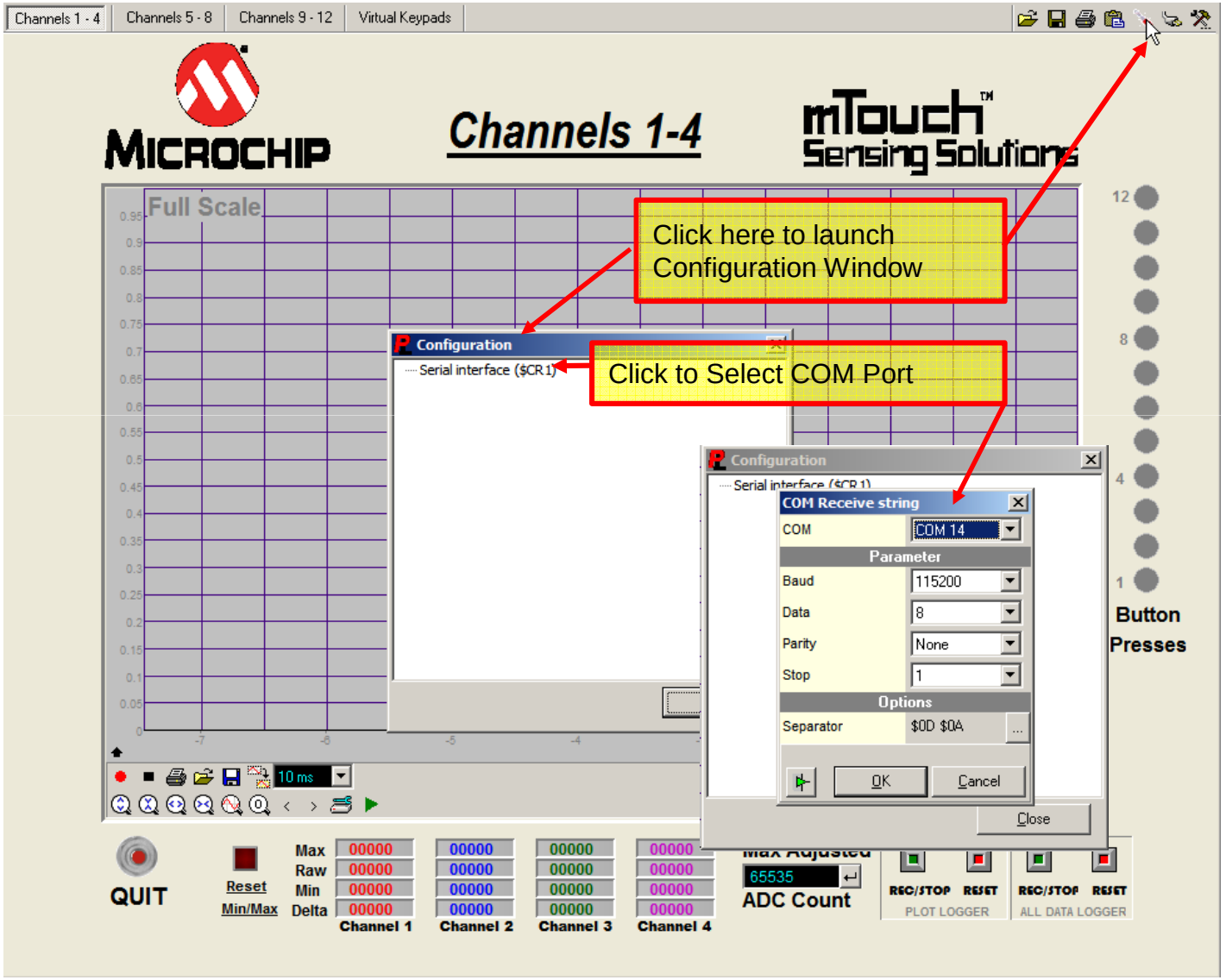
Standalone Project



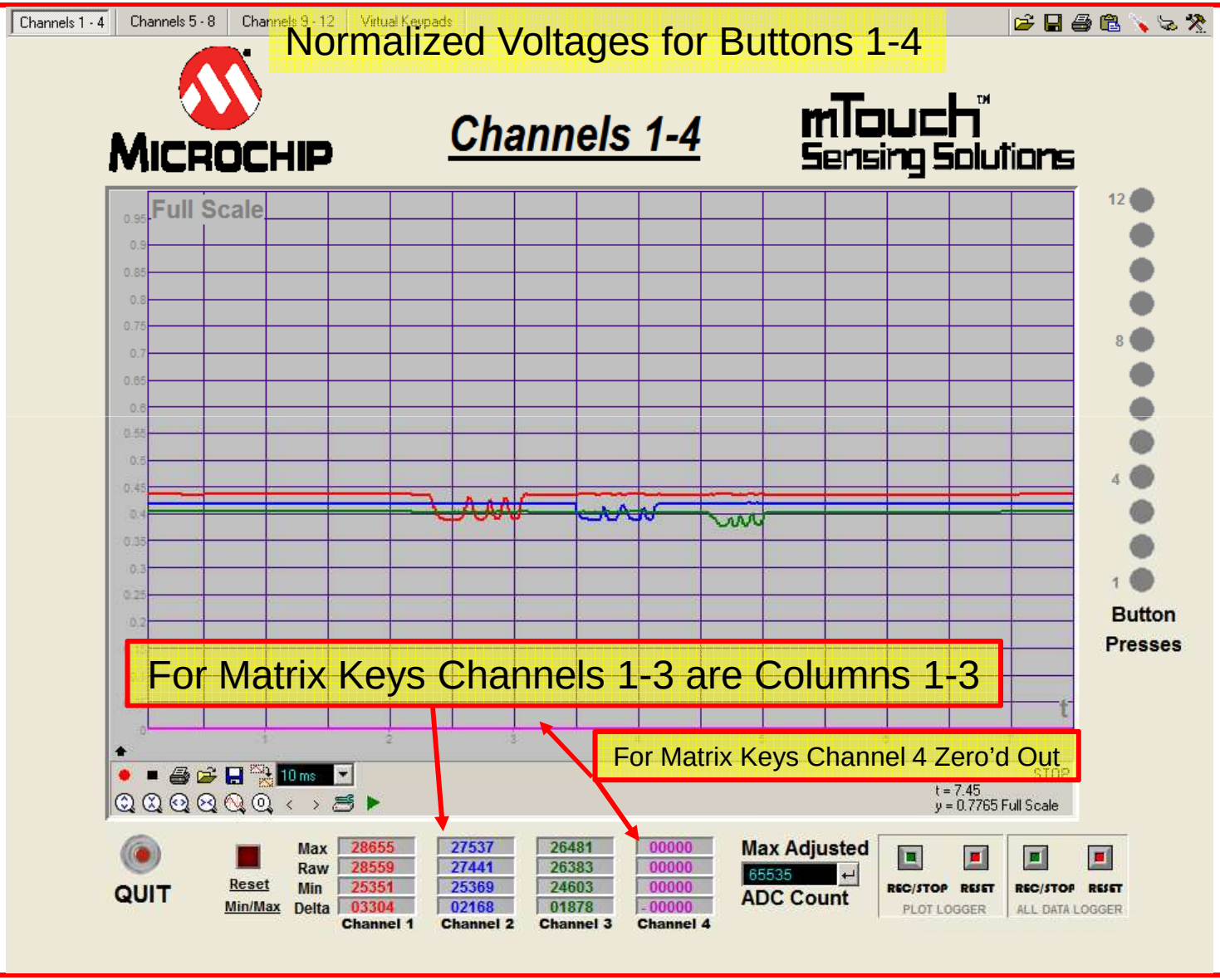
Microchip Solutions mTouchCapDemos Directory



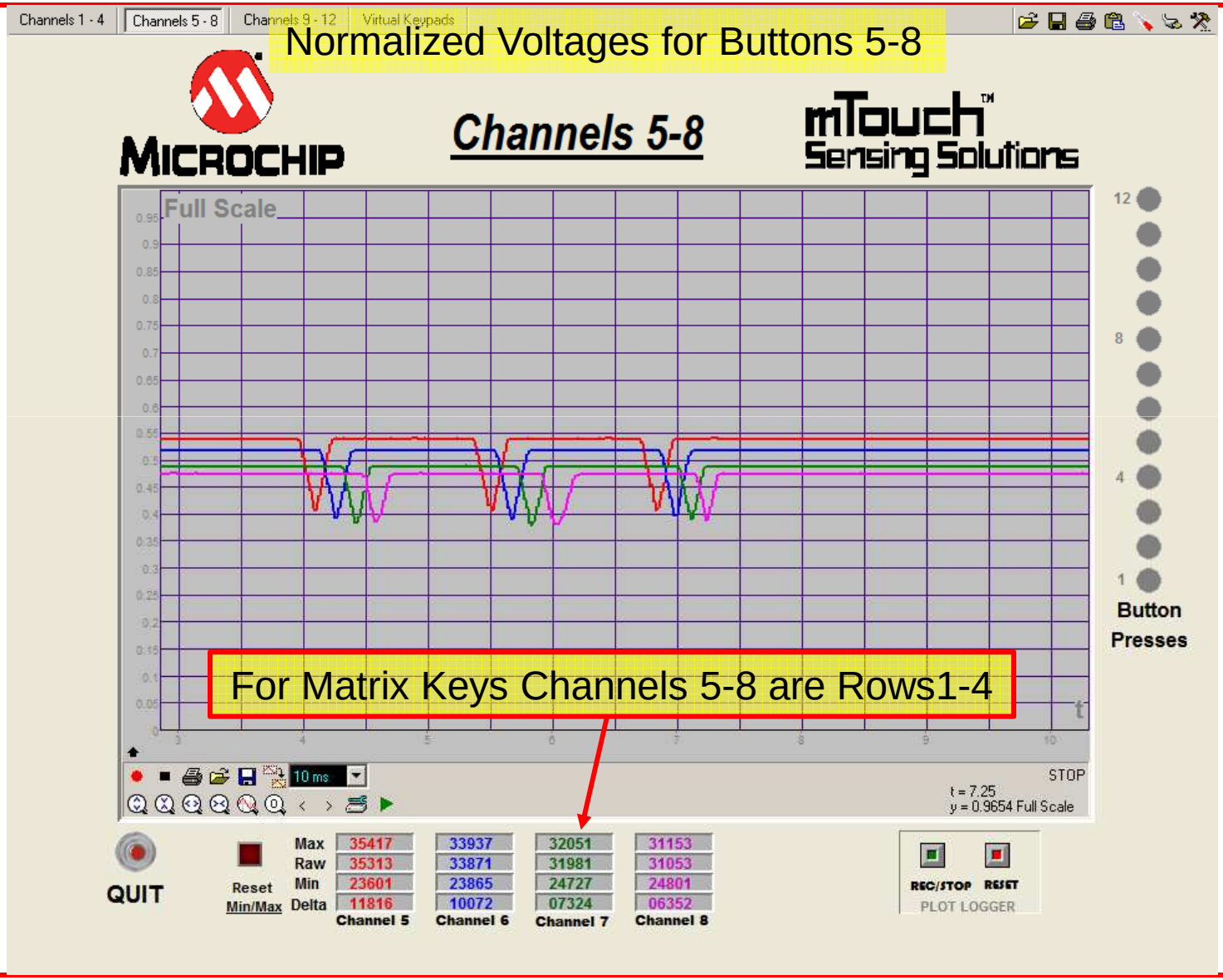
Setting Up GUI Com Parms



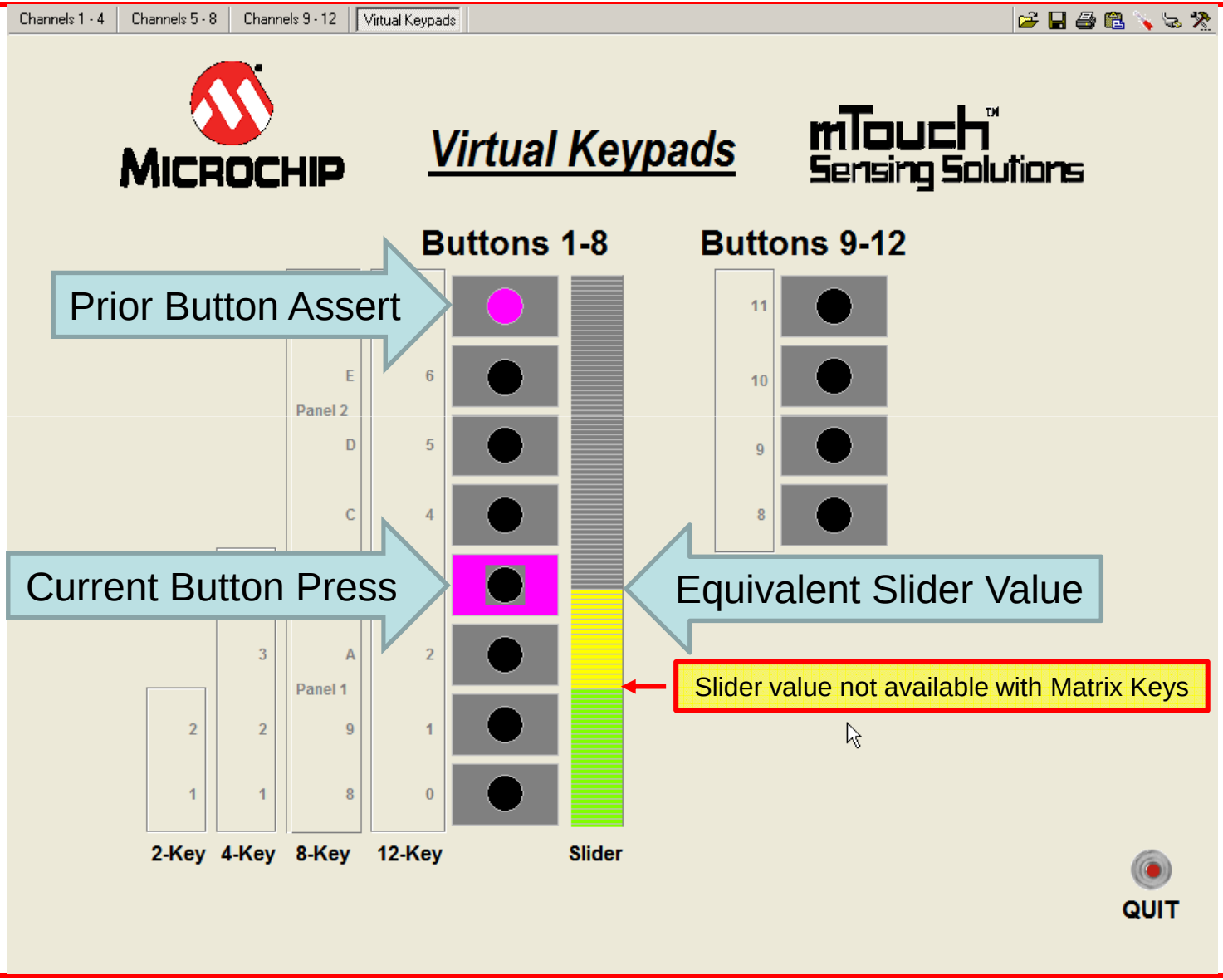
mTouch GUI Screen 1/3



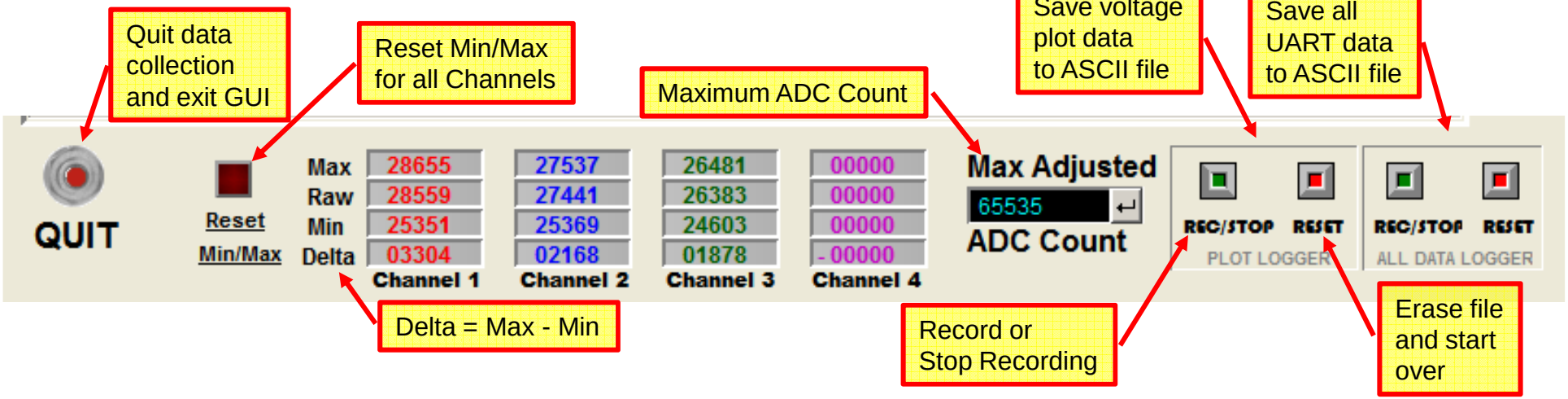
mTouch GUI Screen 2/3



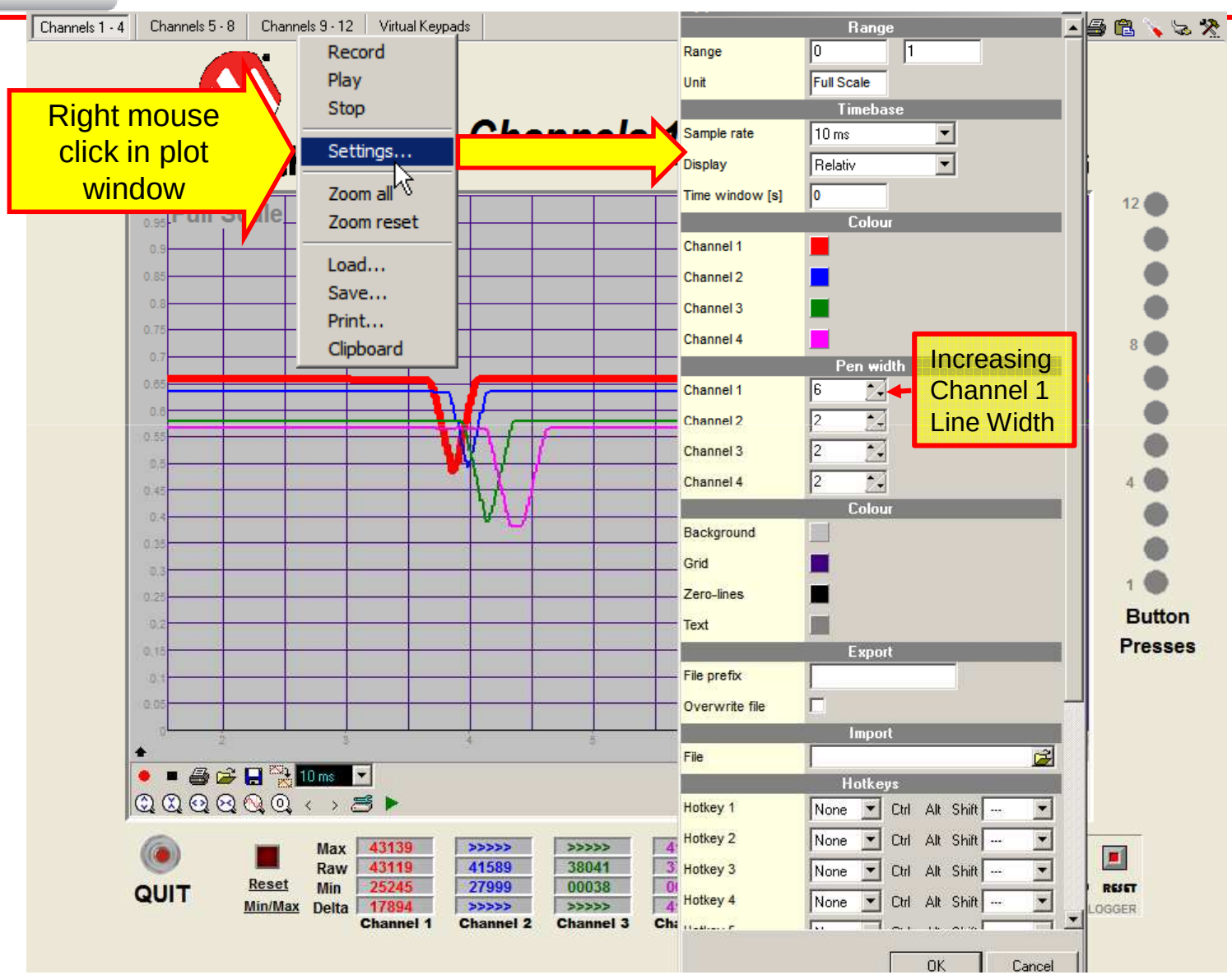
mTouch GUI Screen 3/3



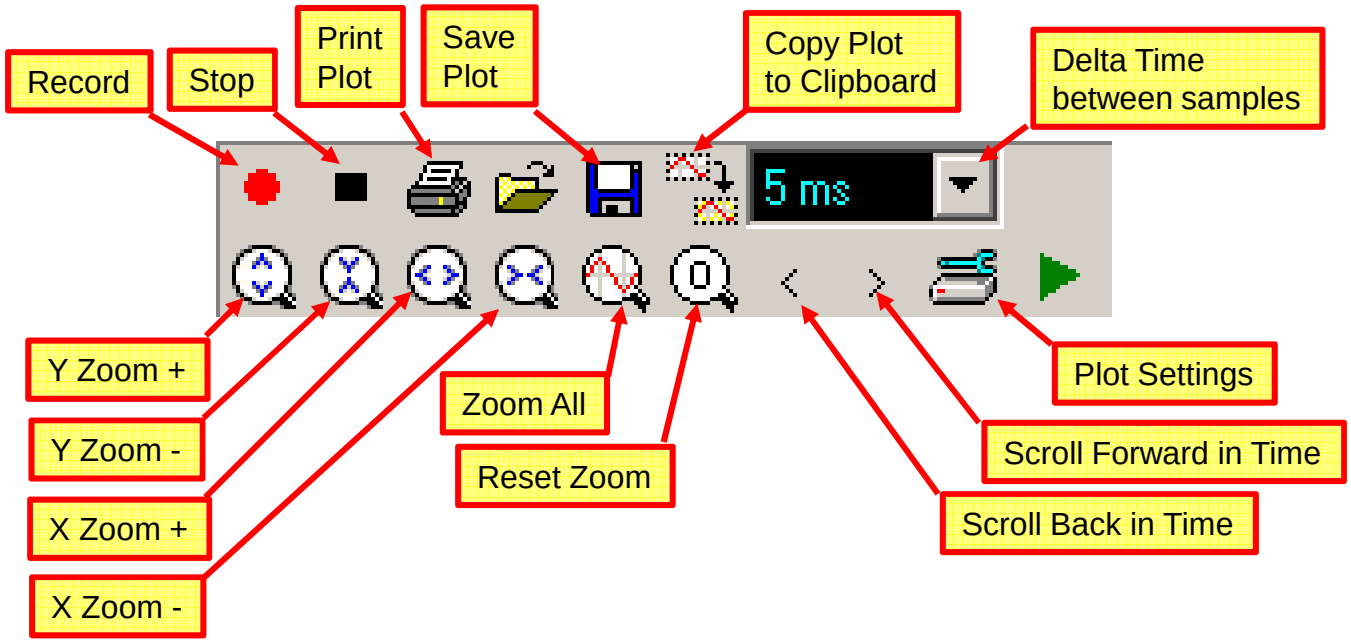
Voltage Plot Screen Controls



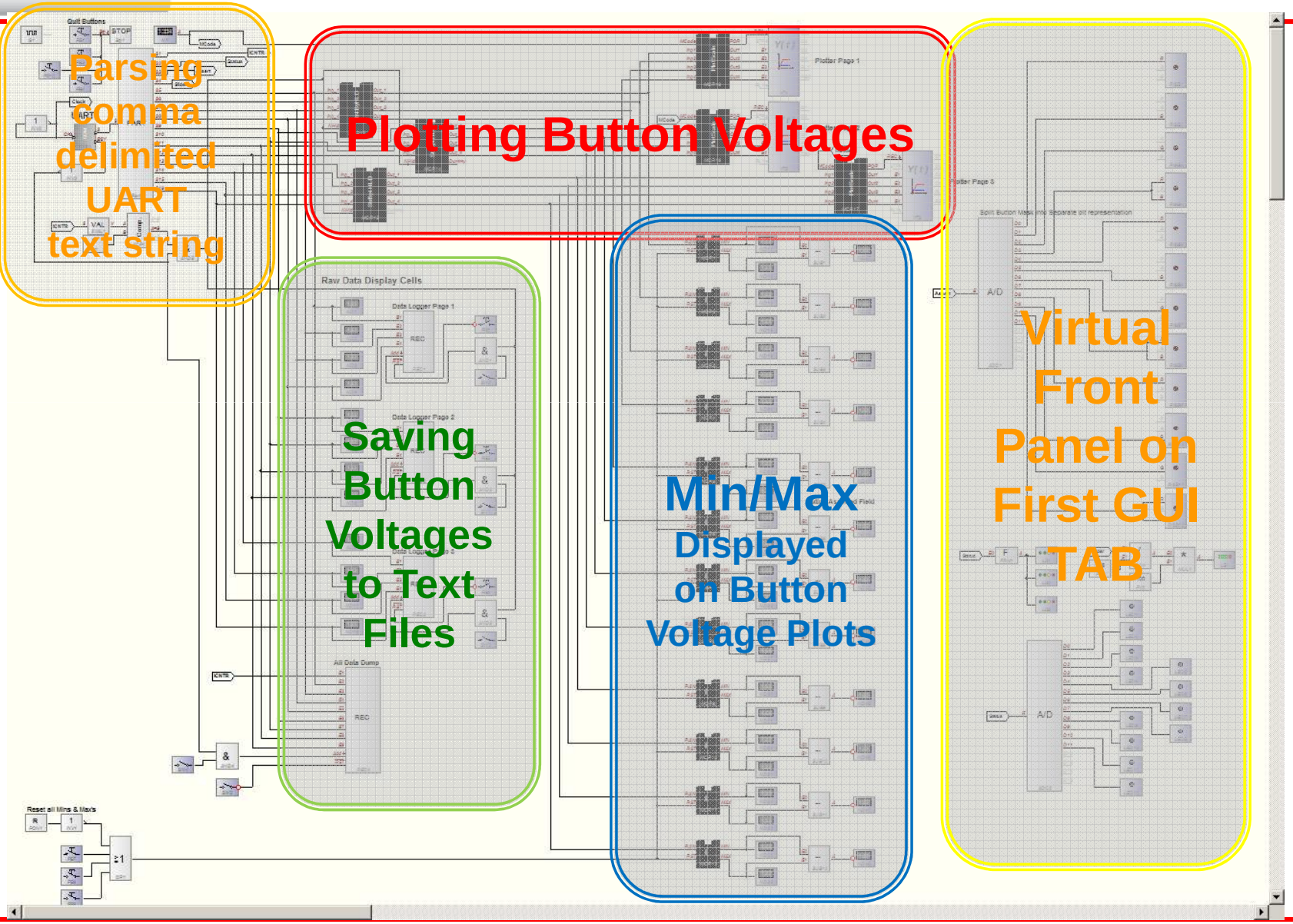
Configuring Voltage Plots



Plot Controls

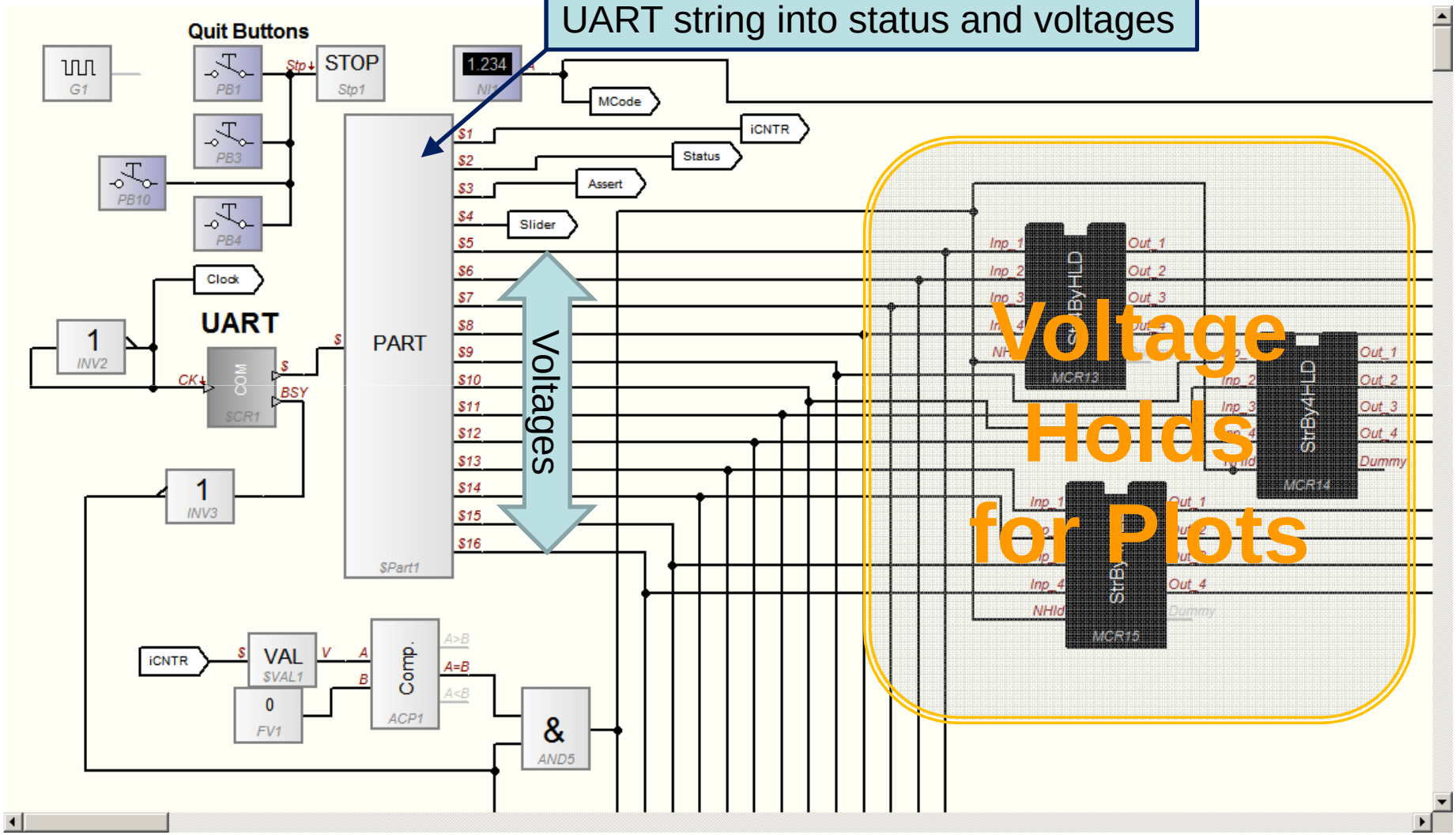


Profilab™ = LabView™ Lite

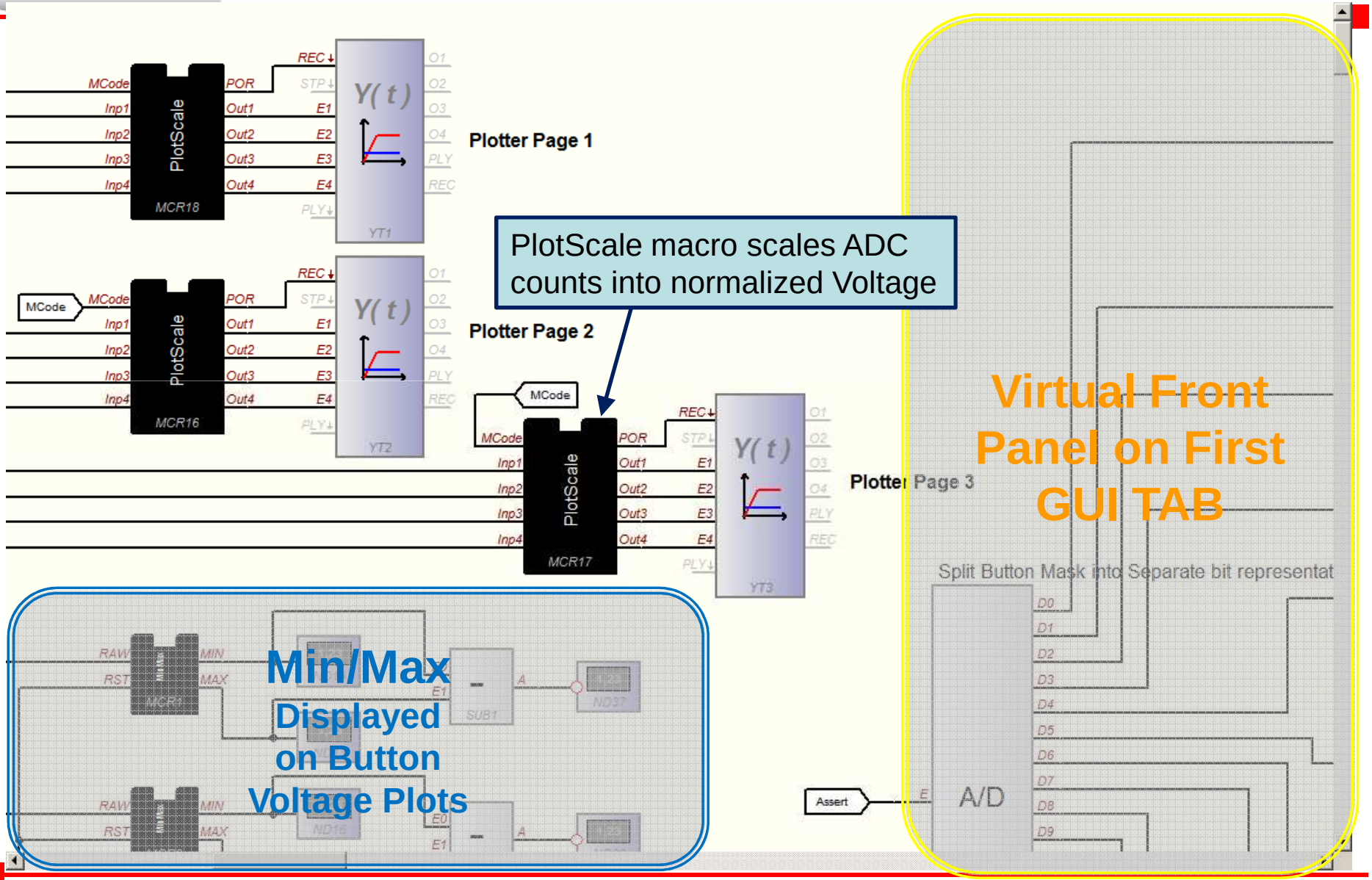


Parsing Comma Delimited Data

Block decodes comma delimited UART string into status and voltages

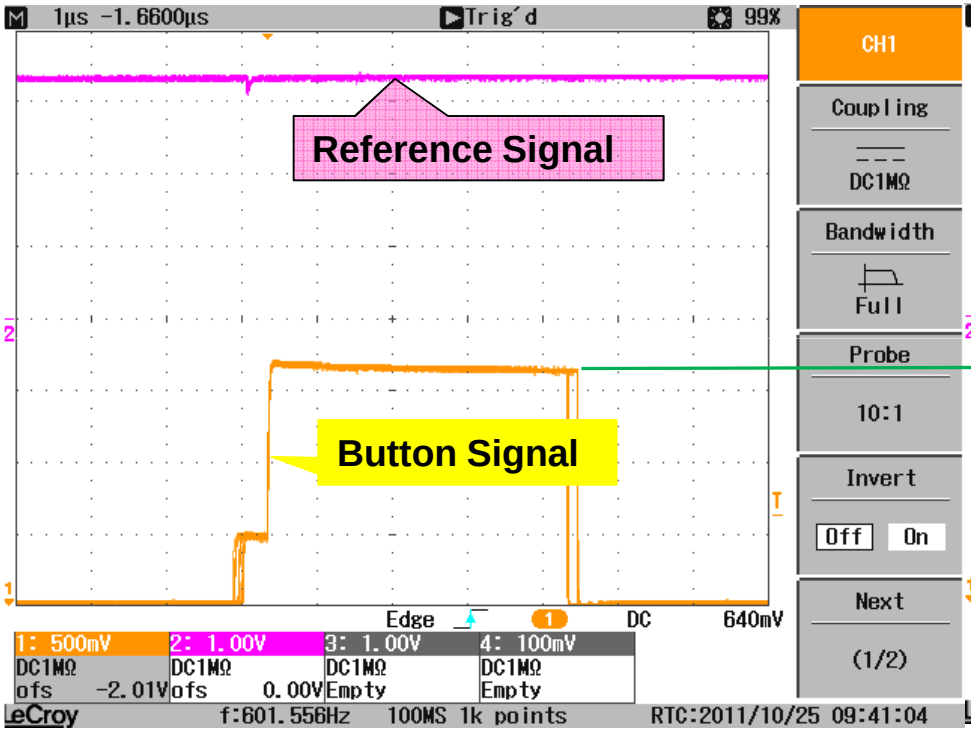


Scale and Plot Channels

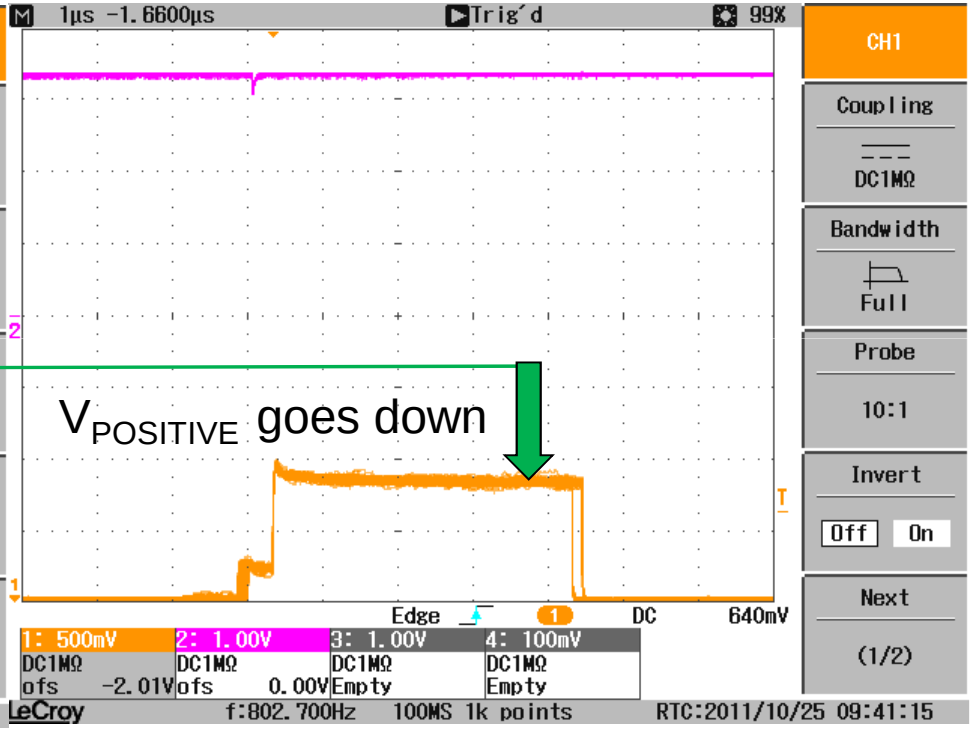


Example Single-Ended ‘Scope Signals

Unasserted

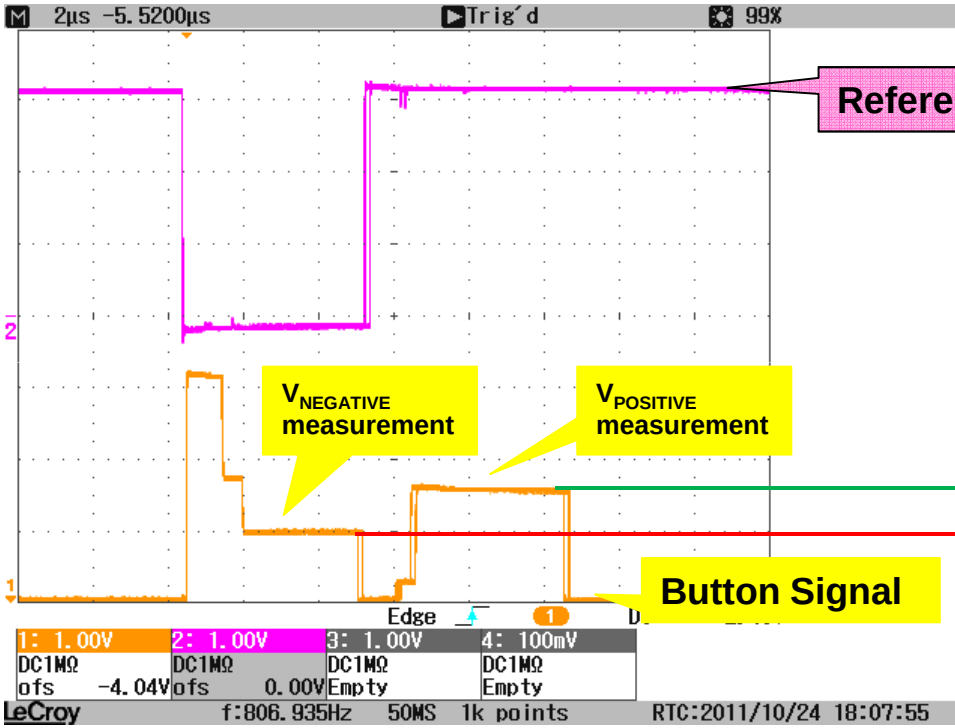


Asserted

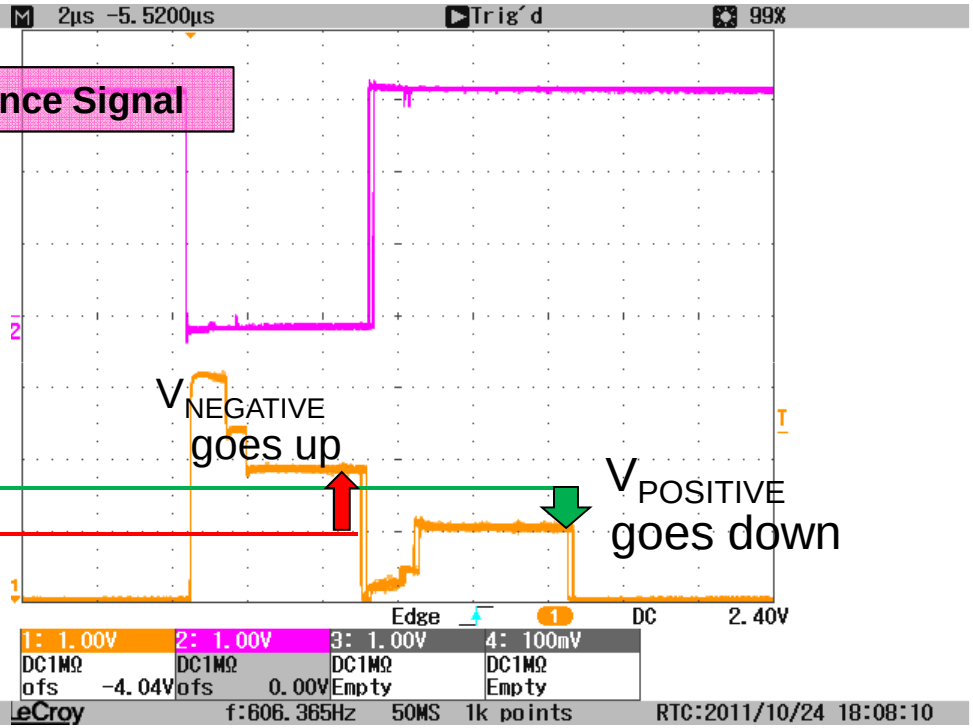


Example Differential ‘Scope Signals

Unasserted



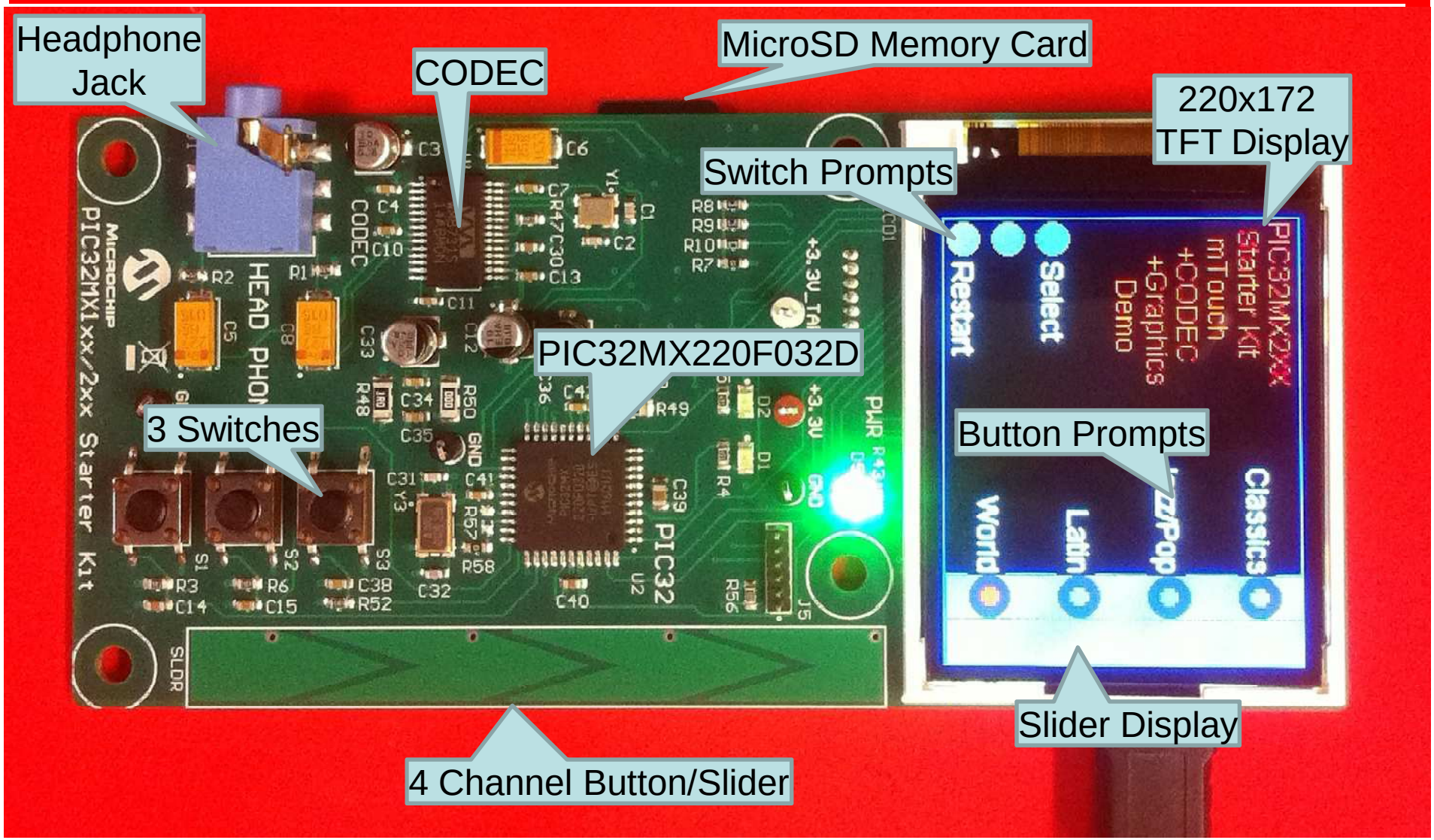
Asserted



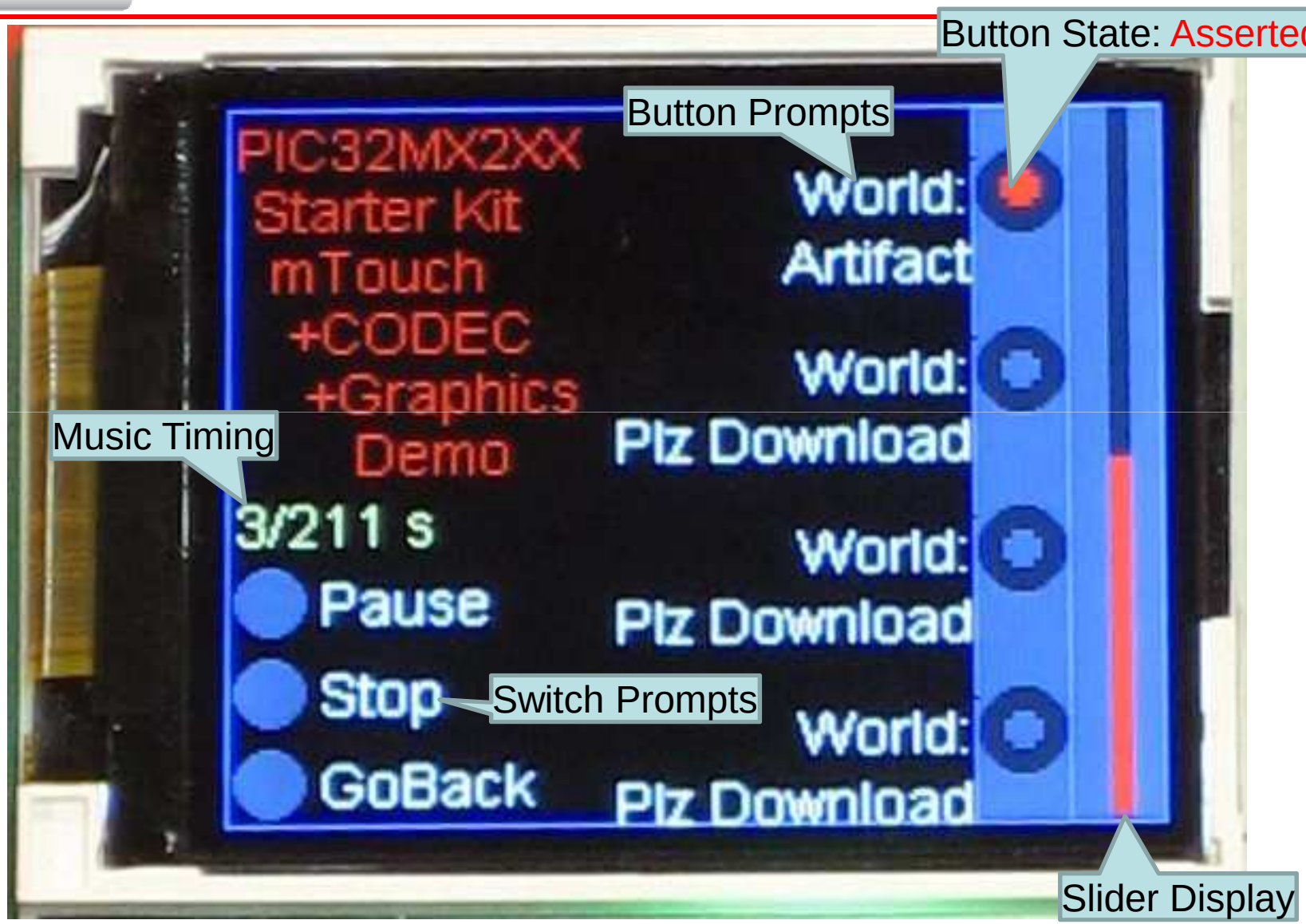
PIC32MX2xx Starter Kit App

- **CTMU Cap Touch on 4-channel slider**
  - Selects music
  - Selects music volume
- **Three switches**
- **I2S I/F to CODEC**
- **PMP I/F to 220x172 pixel TFT display**
- **SPI I/F to microSD music card**
- **Playback of 44.1 Ksps .WAV files**

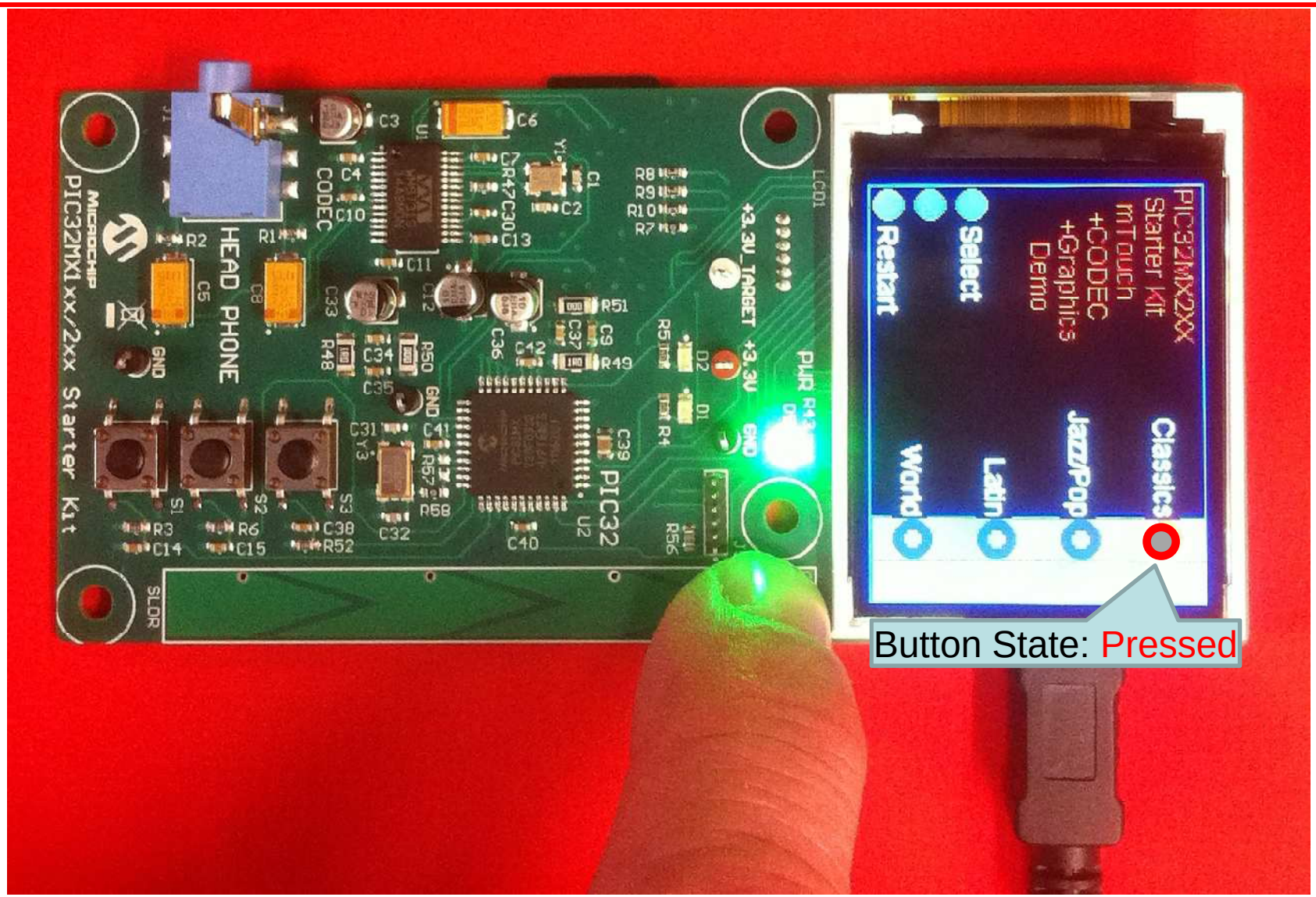
PIC32MX2xx Starter Kit Board



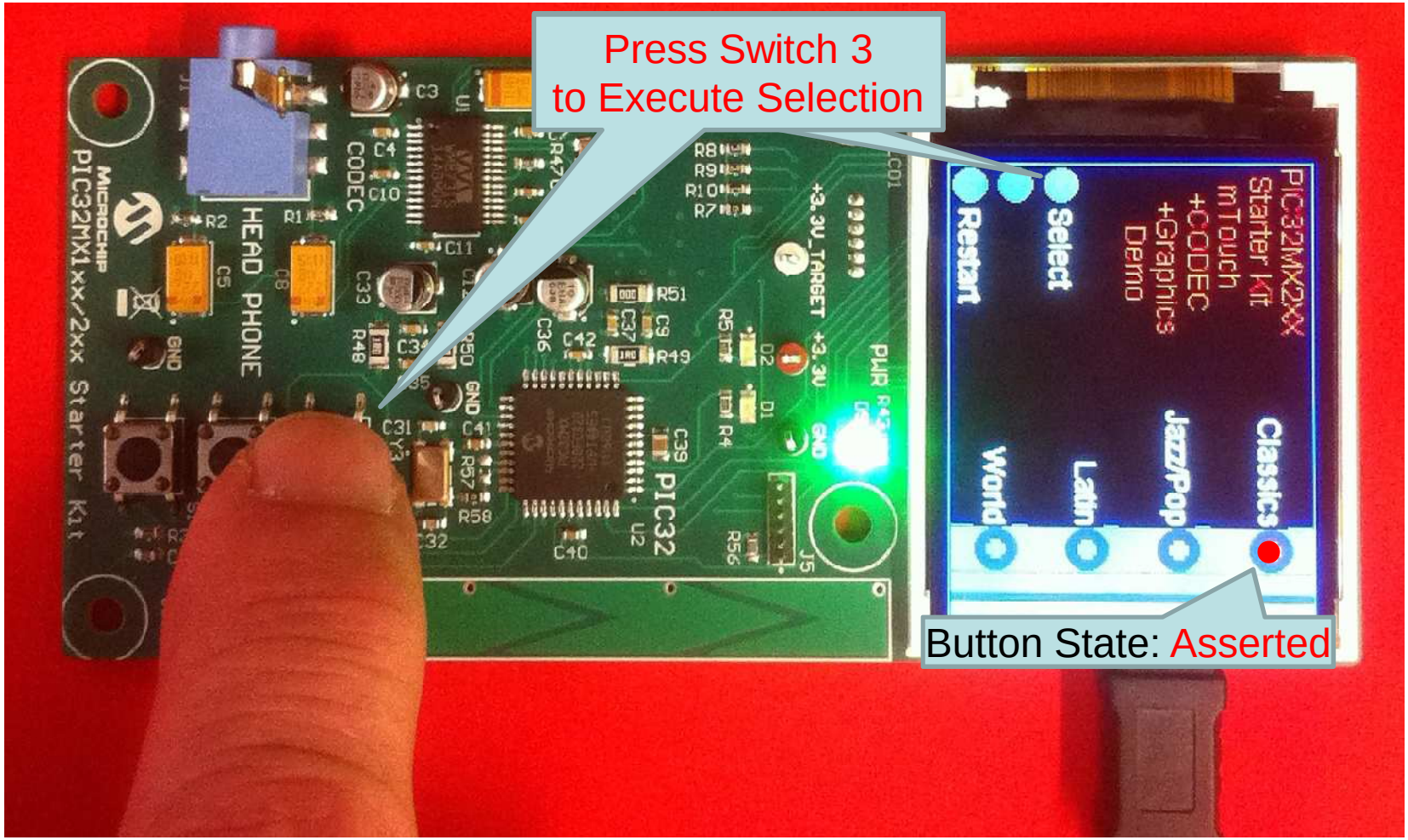
PIC32MX2xx Starter Kit Display



Selecting Music 1/2



Selecting Music 2/2



Cap Touch Tricks 1/2

- **Leave interpretation of button/slider status to the main application, only it knows context of the measurements!**

```
while(1)
{    // Update switches
    Switch1St8 = UpdateSwitch( 1, CheckSwitch1(), (char *)0 );
    Switch2St8 = UpdateSwitch( 2, CheckSwitch2(), (char *)0 );
    Switch3St8 = UpdateSwitch( 3, CheckSwitch3(), (char *)0 );

    // Update buttons/slider
    if( ApplicationState != STARTUP &&
        mTouchCapStatus_Check( &CurrentButtonStatus, &CurrentButtonAsserts, &Temp ) )
    {
        mTouchUpdated = TRUE;

        if ( IgnoreSlider != TRUE )
        {
            SliderValue = Temp;
            UpdateSlider( SliderValue );
        }
        if ( IgnoreButtons != TRUE )
        {
            UpdateButton( 1,(CurrentButtonStatus  >> 0)&0x1,(CurrentButtonAsserts >> 0)&0x1,(char *)0);
            UpdateButton( 2,(CurrentButtonStatus  >> 1)&0x1,(CurrentButtonAsserts >> 1)&0x1,(char *)0);
            UpdateButton( 3,(CurrentButtonStatus  >> 2)&0x1,(CurrentButtonAsserts >> 2)&0x1,(char *)0);
            UpdateButton( 4,(CurrentButtonStatus  >> 3)&0x1,(CurrentButtonAsserts >> 3)&0x1,(char *)0);
        }
    }//end if( mTouchCheckStatus...

    switch( ApplicationState )
    {
```

Cap Touch Tricks 2/2

- **Only update screen after completion of button scan to prevent crosstalk between PMP screen pins and button inputs**

```
 case FILE_PLAYING_SETUP:
    if ( mTouchUpdated == TRUE ) // Only update display when mTouch
    {                            // has been updated and isn't running.
        UpdateSwitch(3,-1, "Pause" );
        UpdateSwitch(2,-1, "Stop"  );
        UpdateSwitch(1,-1, "GoBack");

        IgnoreButtons = TRUE;
        IgnoreSlider  = FALSE;
        mTouchCapStatus_Reset(128);
        UpdateSlider(128);
        ApplicationState = FILE_PLAYING;
    }
    else // mTouch is still running don't do anything
    {
        ApplicationState = FILE_PLAYING_SETUP;
    }
    break;

case FILE_PLAYING:
    PMADDRSET = 1<<10;   // Turn on LED
    WM8731Codec_MusicOn(TRUE);   // Start playing
```