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Industrial Control Design AS



CDPTouchScreen

User Manual

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1. Introduction

1.1. About

This document describes how to set up and use the CDPTouchScreen CDPUI touch-screen component with the CDP system. The CDPTouchScreen component has the following features:

- Works under On-Time RTOS32 (RS232/USB) and Windows (RS232)
- RS232 Drivers:
 - D-Wav,
 - Penmount
 - EloTouch (Intellitouch/Accutouch)
- USB Drivers (on RTOS32):
 - 3M SC800
 - ELO CTR-250000-IT-USB-00
 - ELO 3000U.
 - EloTouch (Intellitouch/Accutouch)
- Requires an application built with CDP and CDPUI.

2. Configuration

Configuration is done by modifying the component xml file inside the Application\Components\ folder. It should not be necessary to modify the model xml file. An example of CDPTouchScreen.xml file (component xml) is found in 3.1.

2.1. fs

The <fs> element specifies the frequency of which to run the calibration checking. <fs>10</fs> means 10 Hz, so every 100 milliseconds it will check if calibration should be done. Typically, the normal fs for the CDPTouchScreen is 10 Hz.

2.2. Serial Configuration

2.2.1. Description

The serial configuration is the same in all components using a serial connection. It has XML similar to this, and is explained fully in the document 'UM-Serial Setup.pdf'.

2.2.2. Example XML

```
<IRQ>0</IRQ>
<BaudRate>19200</BaudRate>
<Parity>None</Parity>
<StopBits>1</StopBits>
<DataBits>8</DataBits>
<ClockFrequencyMhz>1.8432</ClockFrequencyMhz>
<Protocol>None</Protocol>
<BufferSize>1024</BufferSize>
<MultiDrop>None</MultiDrop>
<ComPort Number="1" BaseAddress="0" NetworkConvert="0"></ComPort>
```

2.3. TouchBufferSizeBytes

2.3.1. Description

The number of bytes to use for the touchscreen driver, typically 64 should be enough.

2.3.2. Example XML

```
<TouchBufferSizeBytes>64</TouchBufferSizeBytes>
```

2.3.3. Elements

Element	Description
TouchBufferSizeBytes	Number of bytes to use for touchscreen buffer

2.4. TouchDisplayName

2.4.1. Description

Contains the name of the touchscreen device that we want to use.

2.4.2. Example XML

```
<TouchDisplayName>D-Wav</TouchDisplayName>
```

2.4.3. Elements

Element	Description
TouchDisplayName	Supported devices are 'D-Wav', 'penmount', 'elotouch'

For RTOS32 you can also specify 'USB' as device, this will enable using RTOS32-supported USB touchscreen devices:

```
<TouchDisplayName>USB</TouchDisplayName>
```

When USB is specified, to Swap X and Y coordinates, you can specify

```
<SwapXY>1</SwapXY>
```

To use a *USB* based *Elotouch* device on RTOS 32, specify TouchDisplayName as USB like shown above, and then add:

```
<USB DeviceID="" VendorID="" ShowDevices="1"></USB>
```

On controller startup, the USB devices will be printed in the CDP MessageLog. You can then get the VendorID and DeviceID for the USB device you need and insert them into the XML shown above. You can then set ShowDevices="0" to stop listing USB devices on startup.

2.5. Subcomponents

2.5.1. Description

Contain the subcomponents of this component. It is expected that the subcomponents listed here are of type UIPage, and that they are called CalibrationPage1 and CalibrationPage2. These are the calibration pages shown when doing touch-screen calibration through message 'Calibrate'.

2.5.2. Example XML

```
<Subcomponents>
  <Subcomponent Name="CalibrationPage1" Type="UIPage" src="Components\CalibrationPage1.xml"></Subcomponent>
  <Subcomponent Name="CalibrationPage2" Type="UIPage" src="Components\CalibrationPage2.xml"></Subcomponent>
</Subcomponents>
```

2.5.3. Elements

Element	Description
Subcomponents	The Subcomponents element encloses zero or more subcomponent declarations. You must list the two calibrationpages here for calibration to work correctly.
Subcomponent	Lists the subcomponents to start as children of this component.

2.6. Calibration Pages

For calibration to work, you need two calibration-pages, named “CalibrationPage1” and “CalibrationPage2”. Below is the .xml for CalibrationPage1:

```
<?xml version="1.0" ?>
<!-- Main user interface page component. -->
<Component Name="CalibrationPage1" Type="UIPage">
  <InstanceHelp></InstanceHelp>
  <HtmlPage></HtmlPage>
  <Activate>1</Activate>
  <x>0</x>
  <y>0</y>
  <dx></dx>
  <dy></dy>
  <Visible>0</Visible>
  <AutoScroll>0</AutoScroll>
  <Background>#0f0f0f</Background>
  <SlowUpdateInterval>0.2</SlowUpdateInterval>
  <fs>10</fs>

  <!-- Info text -->
  <UIObject Name="Step1" Text="Calibration step 1/2:" Type="UIText" x="200" y="200" dx="220" Font="ICD16" Color="#8080ff"
  Visible="1"></UIObject>
  <UIObject Name="Info1" Text="Tap the red X at position 1" Type="UIText" x="180" y="250" dx="280" Font="ICD16"
  Color="#8080ff" Visible="1"></UIObject>

  <!-- page select btns : Do not move or resize!! -->
  <UIObject Name="1" Text="1" Type="UIText" x="20" y="41" dx="20" Font="ICD16" Color="#8080ff" Visible="1"></UIObject>
  <UIObject Name="1st X" Type="UIPicture" x="41" y="41" Picture="Pictures\CalibrationPoint.png" Transparent="#ffffff"
  Color="#8080ff" Visible="1"></UIObject>
</Component>
```

Below is the .xml for CalibrationPage2:

```
<?xml version="1.0" ?>
<!-- Main user interface page component. -->
<Component Name="CalibrationPage2" Type="UIPage">
  <InstanceHelp></InstanceHelp>
  <HtmlPage></HtmlPage>
  <Activate>1</Activate>
  <x>0</x>
  <y>0</y>
  <dx></dx>
  <dy></dy>
  <Visible>0</Visible>
  <AutoScroll>0</AutoScroll>
  <Background>#0f0f0f</Background>
  <SlowUpdateInterval>0.2</SlowUpdateInterval>
  <fs>10</fs>

  <!-- Info text -->
  <UIObject Name="Step2" Text="Calibration step 2/2:" Type="UIText" x="200" y="200" dx="220" Font="ICD16" Color="#8080ff"
  Visible="1"></UIObject>
  <UIObject Name="Info2" Text="Tap the red X at position 2" Type="UIText" x="180" y="250" dx="280" Font="ICD16"
  Color="#8080ff" Visible="1"></UIObject>

  <!-- page select btns -->
  <UIObject Name="2" Text="2" Type="UIText" x="560" y="421" dx="20" Font="ICD16" Color="#8080ff" Visible="1"></UIObject>
  <UIObject Name="2nd X" Type="UIPicture" x="581" y="421" Picture="Pictures\CalibrationPoint.png" Transparent="#ffffff"
  Color="#8080ff" Visible="1"></UIObject>
</Component>
```

2.7. Calibration

The TouchScreen can be calibrated by sending a “Calibrate” text-message to the CDPTouchScreen component. You can use the web-interface to do this (browse to the touch-screen component, show 'Messages' and click the 'Calibrate' message), or you can use the CDPBrowser to send the 'Calibrate' message.

When calibration has started, the displayed image will change, and the operator must click the top left and bottom right markers (as instructed on the screen) to calibrate the screen.

3. Appendix

3.1. Example CDPTouchScreen XML-file

```

<?xml version="1.0" encoding="utf-8"?>

<Component Name="TouchScreen" Type="CDPTouchScreen">
  <Activate>1</Activate>

  <IRQ>0</IRQ>
  <BaudRate>19200</BaudRate>
  <Parity>None</Parity>
  <StopBits>1</StopBits>
  <DataBits>8</DataBits>
  <ClockFrequencyMhz>1.8432</ClockFrequencyMhz>
  <Protocol>None</Protocol>
  <BufferSize>1024</BufferSize>
  <ComPort Number="1" BaseAddress="0" NetworkConvert="0"></ComPort>

  <TouchBufferSizeBytes>16</TouchBufferSizeBytes>
  <TouchDisplayName>Penmount</TouchDisplayName>

  <Subcomponents>
    <Subcomponent Name="CalibrationPage1" Type="UIPage" src="Components\CalibrationPage1.xml">
    </Subcomponent>
    <Subcomponent Name="CalibrationPage2" Type="UIPage" src="Components\CalibrationPage2.xml">
    </Subcomponent>
  </Subcomponents>

  <Parameters>
    <Parma Name="EventTimeout" Unit="s" Value="0.1" DefaultValue="0.4" PreviousValue="0.3"
    TimeLastChanged="Mon Apr 05 11:05:14 2004" Description="Event timeout for touchscreen pressed
    messages"></Parma>
    <Parma Name="minTouchX" Value="123" DefaultValue="0" PreviousValue="144" TimeLastChanged="Mon May 03
    11:53:59 2004" Description="Left TouchScreen-calibration position"></Parma>
    <Parma Name="minTouchY" Value="1823" DefaultValue="0" PreviousValue="1798" TimeLastChanged="Mon May 03
    11:53:59 2004" Description="Top TouchScreen-calibration position"></Parma>
    <Parma Name="maxTouchX" Value="1886" DefaultValue="2048" PreviousValue="1830" TimeLastChanged="Mon May
    03 11:54:02 2004" Description="Right TouchScreen-calibration position"></Parma>
    <Parma Name="maxTouchY" Value="194" DefaultValue="2048" PreviousValue="253" TimeLastChanged="Mon May
    03 11:54:02 2004" Description="Bottom TouchScreen-calibration position"></Parma>
  </Parameters>

  <Alarms>
    <Alarm Name="Broken signal routing" Level="Error" Enabled="0" Text="Something is wrong with the
    routing for one or more of the signals." Description="Something is wrong with the routing
    for one or more of the signals."></Alarm>
    <Alarm Name="Signal not updated" Level="Error" Enabled="0" Text="The signal is not updated (time
    stamp too old). Probably lost connection with i/o." Description="The signal is not updated (time stamp
    too old). Probably lost connection with i/o."></Alarm>
  </Alarms>
</Component>

```