

# **USER GUIDE**

## **T430U\_HBZ9 Display Evaluation Kit**

**For 1.1" and 1.38" Displays**

**Rev. 2**

Revision	Date	Reason of Modification
1	17. Dec. 2014	Initial Version
2	15. Dec. 2016	1.1" Display Type added

## Content

<b>1</b>	<b>About Plastic Logic's Display Evaluation Kit.....</b>	<b>4</b>
<b>2</b>	<b>About this document .....</b>	<b>4</b>
<b>3</b>	<b>Safety Points .....</b>	<b>4</b>
<b>4</b>	<b>Getting Started .....</b>	<b>5</b>
4.1	Unpacking the Kit.....	5
4.2	Connecting up the Kit.....	5
4.3	System Boot and Image Display .....	6
<b>5</b>	<b>Generate own images for the slideshow .....</b>	<b>6</b>
5.1	Image format PGM.....	6
5.2	Generated or convert .....	6
5.3	Copy new images to the SD card .....	6
<b>6</b>	<b>Setting Display Specific Waveform and VCOM.....</b>	<b>6</b>
<b>7</b>	<b>Troubleshooting.....</b>	<b>6</b>

## 1 About Plastic Logic's Display Evaluation Kit

Plastic Logic's Display Evaluation Kit (PLDEK) has been designed to be used for a range of activities including:

1. Evaluating Plastic Logic's display technology.
2. Evaluating the appearance of customer and 3<sup>rd</sup> party content on Plastic Logic displays.
3. Building expertise with Plastic Logic Display systems prior to designing products or systems that incorporate our displays.
4. Application development.

## 2 About this document

This document is a user guide for **TI-MSP430 microcontroller tiny display evaluation kit**. It is only to be used for kits containing a Parrot microcontroller board and a Hummingbird Z9 interface board. It is intended to give sufficient information to:

1. Safely unpack and power up the PLDEK.
2. Start displaying images in .pgm format.
3. Understand how to start using the Plastic Logic software development Kit (SDK).

## 3 Safety Points

### Warning:



- To avoid risk of electric shock or damage to the display, disconnect the display module from its power source before handling it.
- Do not touch the connections or circuits whilst the display is in operation.

### Caution:



- Follow ESD handling procedures to avoid circuit damage. Use a grounded wrist strap.
- Do not press on the display panel or its edges as damage can result.

### Important Notice

The Plastic Logic Display Evaluation Kit ("the Kit") is intended for use for ENGINEERING DEVELOPMENT, DEMONSTRATION OR EVALUATION PURPOSES ONLY and is not considered by Plastic Logic to be a finished end-product fit for general consumer use. Persons handling the Kit must have electronics training and observe good engineering practice standards. As such, the kit being provided is not intended to be complete in terms of required design-, marketing-, and/or manufacturing-related protective considerations, including product safety and environmental measures typically found in end products that incorporate such semiconductor components or circuit boards. The kit does not fall within the scope of the European directives regarding electromagnetic compatibility, restricted substances (RoHS), recycling (WEEE), FCC, CE or UL, and therefore may not meet the technical requirements of these directives or other related directives.

## 4 Getting Started

Prior to unpacking the kit, the user is strongly urged to take appropriate ESD and safety precautions.

### 4.1 Unpacking the Kit

The kit is shipped with the items listed in the table below. Please ensure that the items listed on the next page have been included in your kit.

No.	Item	Description
1	Board 1	Microcontroller board – Parrot
2	Board 2	Interface board – Hummingbird Z9
3	Flat Ribbon Cable	Cable to connect board 1 and 2. This cable is already connected to the Z9-board at one side.
5	Micro - SD Card	Contains slide-show images, display specific waveforms and voltages, documentation, source code. The Micro-SD card is mounted in the socket of board 1.
6	SD Card Adaptor	Adaptor from $\mu$ SD to standard SD form-factor
7	USB cable	Currently only used for power supply

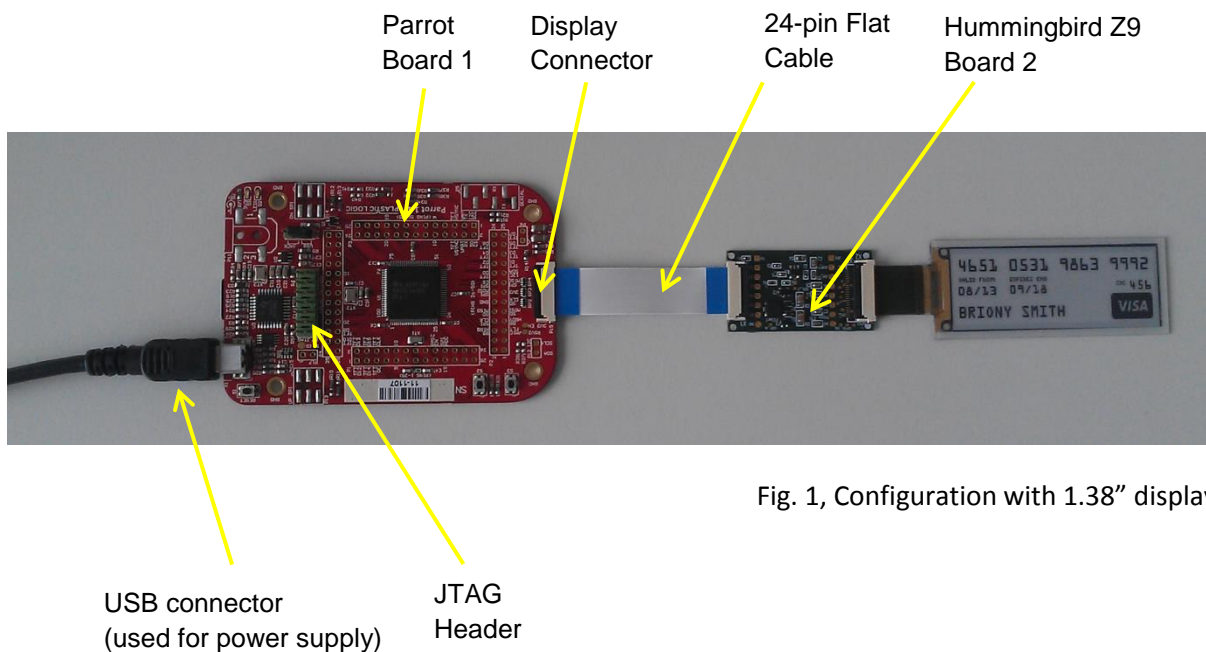


Fig. 1, Configuration with 1.38" display

### 4.2 Connecting up the Kit

Connect the Parrot board with the Z9 board using the Flat Ribbon Cable. Plug in the 1.1" display or 1.38" display into the display connector of the Hummingbird Z9 board. It is important to connect the display before powering up the kit to avoid damages of any parts.

**Attention: Do not change or remove the display during the kit is powered up!**

## 4.3 System Boot and Image Display

After the display is plugged in please connect the USB connector to power the Parrot board. The image slide-show will start almost immediately.

## 5 Generate own images for the slideshow

### 5.1 Image format PGM

For simplicity the MSP430 code only supports image files in the PGM graphics file format. This is a simple, uncompressed, grey-scale file format. For further details please check [http://en.wikipedia.org/wiki/Netpbm\\_format](http://en.wikipedia.org/wiki/Netpbm_format).

### 5.2 Generated or convert

PGM files can be generated or converted by several image software tools. A good free option is for example GIMP (<http://www.gimp.org/downloads/>).

If you generate new images or convert existing images they have to follow these rules:

- Portrait orientation
- 240 pixel in column direction

GIMP export:

- File → Export As ...
- Choose "PGM image (\*.pgm)"
- Change file-name extension to .pgm
- Click "Export" button
- Choose "Data formatting" = "Raw" and click "Export" button

### 5.3 Copy new images to the SD card

1. Disconnect the Parrot-board from power
2. Remove  $\mu$ SD-card from Parrot-board
3. Use your own laptop or card-reader to copy images into the  $\mu$ SD-card. You can use the standard SD-card adapter which is part of the Eval-Kit.
4. Copy your image to the corresponding image folder ("240x80" or "240x160")
5. Put the  $\mu$ SD-card back to the Parrot-board
6. If you power the Parrot-board now again, you should see your new images played in the slide-show

## 6 Setting Display Specific Waveform and VCOM

Waveform and Vcom voltage is programmed into the display controller internal non-volatile memory (MTP). Different to other Plastic Logic displays there is no need to set waveform and/or Vcom from user perspective.

## 7 Troubleshooting

In case of any problems please email [techsupport@plasticlogic.com](mailto:techsupport@plasticlogic.com)