



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





[Embedded Pico Systems]

User's Guide
USB2TCM_v1.1

Classification: Public

Document Revision: A

© MpicoSys – 2014

All rights reserved. Reproduction in whole or in part is prohibited without the written consent of the copyright owner.

Table of Contents

1	<u>Introduction</u>	3
2	<u>Supported Devices</u>	3
3	<u>Supported Operating Systems</u>	4
4	<u>Usage</u>	4
	4.1 <u>Connection</u>	4
	4.2 <u>Uploading Image to TCM</u>	5
	4.3 <u>Image Conversion to EPD Format</u>	5
	4.4 <u>Reset Button</u>	6
5	<u>Known Issues</u>	6
6	<u>Troubleshooting</u>	7
7	<u>Revision History</u>	8
8	<u>Legal Information</u>	9
	8.1 <u>Disclaimers</u>	9
9	<u>Contact Information</u>	10

1 Introduction

USB2TCM_v1.1 interface is an easy to use USB Mass Storage device, which allows uploading images from a computer to MpicoSys Timing Controller Module for Pervasive Displays (TCM.)



Figure 2.1: UCB2TCM_v1.1

2 Supported Devices

USB2TCM_v1.1 is designed to interface a computer and the following TCM devices:

- TCM-P441_v1.1
- TCM-P441-230_v1.0
- TCM-P74-110_v1.1
- TCM-P74-220_v1.1
- TCM-P74-230_v1.0
- TCM-P102-220_v1.1



Figure 2.2: USB2TCM_v1.1 connected to a TCM-P441



Figure 2.3: USB2TCM_v1.1 interface connected to a TCM-P74

3 Supported Operating Systems

- Microsoft Windows XP and above (32-bit and 64-bit)
- Apple Mac OS (tested on OS X Mavericks)
- Linux (tested on Ubuntu 13 64-bit)

4 Usage

4.1 Connection

Use a USB A Mini-B cable to connect the USB2TCM_v1.1 to a computer USB port.

NOTE USB2TCM_v1.1 may not work properly when connected to a passive USB hub (i.e. a USB hub with no external power supply. Please make sure to use a fully-powered (100 mA) USB socket.

Connect the USB2TCM_v1.1 10-pin female header with the TCM 10-pin male header. Please mind the correct orientation i.e. the components on both the boards should be facing the same side.

4.2 Uploading Image to TCM

Connected to the computer the USB2TCM_v1.1 device acts like a flash drive. Images in EPD format¹ can be copied on that drive and will be automatically sent to TCM, where the e-paper display will be updated.

The procedure is as follows:

- 1) Check that the USB2TCM_v1.1 is properly connected to a computer and to a TCM
- 2) Check whether PWR LED on USB2TCM_v1.1 is on
- 3) Check whether USB2TCM_v1.1 is properly recognized and mounted by your operating system (it should be visible as Removable Disk with 484 KB free space)
- 4) Copy an image in EPD format suitable for TCM module used (P441, P74 or P102) to the USB2TCM Removable Disk
- 5) After copying, the USB2TCM will forward this image to the TCM, which is indicated by the COM LED being lit constantly
- 6) If the image was sent correctly, COM LED will turn off. If there was erroneous TCM operation – COM LED will blink until the device is restarted
- 7) Remove the previously sent image from USB2TCM Removable Disk before uploading a new one

NOTE If the COM LED continues blinking the transfer from the USB2TCM_v1.1 to the TCM failed. The USB2TCM_v1.1 must be reset by power cycling – disconnecting and reconnecting the USB cable.

4.3 Image Conversion to EPD Format

Image in the typical format like JPEG or PNG can be converted to EPD by using the Convert tool. The Convert tool can be downloaded from the Pervasive Displays Inc. website (www.pervasivedisplays.com.)

The Convert tool accepts any image resolution, aspect ratio and colour depth, however for the best results it is recommended to prepare an input image file already scaled-down to the target display resolution and orientation and to monochrome in a graphical program on your computer.

Run the Convert application using Java Runtime Environment.

¹ For more information please refer to *Timing Controller Solutions for Pervasive Displays 4.41", 7.4" and 10.2" Panels – Developer's Guide*; File name *TCS-P_DevelopersGuide_rF.pdf*; Document reference 0874/13-MK; Section 6.



Figure 4.1: Convert application for TCM-P74

To convert an image simply drag and drop the file from the file explorer window to the Convert window area. Application will then create output folder with output files in the same location as the original image file.

Output folder named *PDIxx_Converted* contains four output files:

- *PDIxx_ImageName_1bit.epd* – file with image converted to EPD format
- *PDIxx_ImageName_1bit.h* – C-type header file – an array with bytes corresponding to the image pixels, that can be directly included in your C project source code
- *PDIxx_ImageName_1bit.png* – PNG image file in 1-bit colour scale – for preview on a computer
- *PDIxx_ImageName_4bit.png* – PNG image file in 4-bit colour scale – for preview on a computer

where:

- *xx* – the display type for which the image is created (PDI441, PDI74 or PDI102)
- *ImageName* – original image file name

File suitable to be sent to TCM is the one with the EPD extension.

4.4 Reset Button

The reset button located next to the mini-USB socket can be used to reset the USB2TCM_v1.1 e.g. when the COM LED is blinking. The reset is automatically followed by sending the stored image to the TCM and refreshing the display.

5 Known Issues

When the USB2TCM_v1.1 is plugged in a USB port on a Mac OS computer with TCM disconnected, the COM LED will blink. In that case please connect the TCM and reset USB2TCM_v1.1 by pressing the reset button or by disconnecting the USB cable and connecting it again.

This issue is caused by the Mac OS writing proprietary hidden files to any FAT-formatted drive.

6 Troubleshooting

Issue	Possible cause	Solution
USB2TCM_v1.1 device is not found by the operating system	USB cable damage	Check whether PWR LED on USB2TCM board is on. Replace the USB cable.
COM LED is constantly blinking	Problem with TCM module connection	Check connection between USB2TCM and TCM board. Restart USB2TCM board by USB cable disconnecting and connecting again or by pressing the reset button.
Picture on TCM display is distorted	EPD file uploaded to TCM is not appropriate for the used TCM	Ensure that EPD file is according to used panel size.
EPD file can't be copied on USB2TCM drive – not enough space	USB2TCM memory is occupied	Delete previously sent EPD file from USB2TCM removable disk.

Table 6.1: Troubleshooting

7 Revision History

Document Revision	Release Date	Document Status	Supersedes
A	2014-07-30	Approved	-

Table 7.1: Revision history

Document Revision	Change Log
A	Initial version

Table 7.2: Change log

8 Legal Information

Draft

The document is a draft version only. The content is still under internal review and subject to formal approval, which may result in modifications or additions. MpicoSys does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

Short data sheet

A short data sheet is an extract from a full data sheet with the same product type number(s) and title. A short data sheet is intended for quick reference only and should not be relied upon to contain detailed and full information. For detailed and full information see the relevant full data sheet, which is available on request via the local MpicoSys sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

Data sheet

A document intended to give a full description of the product details that a customer needs to implement the product in their design.

8.1 Disclaimers

General

Information in this document is believed to be accurate and reliable. However, MpicoSys does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Right to make changes

MpicoSys reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

Suitability for use

MpicoSys products are not designed, authorized or warranted to be suitable for use in medical, military, aircraft, space or life support equipment, nor in applications where failure or malfunction of a MpicoSys product can reasonably be expected to result in personal injury, death or severe property or environmental damage. MpicoSys accepts no liability for inclusion and/or use of MpicoSys products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk. Product described in this document is intended for development purposes only and comes without any warranty. MpicoSys accepts no liability for inclusion and/or use of MpicoSys products in commercial products or applications and therefore such inclusion and/or use is at the customer's own risk.

Any software is provided "as is" and any expressed or implied warranties are disclaimed. In no event shall MpicoSys be liable for any direct, indirect, incidental, special, exemplary, or consequential damages (including, but not limited to, procurement of substitute goods or services; loss of use, data, or profits; or business interruption) however caused and on any theory of liability, arising in any way out of the use of the software.

Applications

Applications that are described herein for any of these products are for illustrative purposes only. MpicoSys makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

Absolute maximum ratings

Stress above one or more limiting values of Absolute Maximum Ratings System (as defined in the Absolute Maximum Ratings System of IEC 60134) may cause permanent damage to the device. Limiting values are stress ratings only and operation of the device at these or any other conditions above those given in the Characteristics sections of this document is not implied. Exposure to limiting values for extended periods may affect device reliability.

Terms and conditions of sale

MpicoSys products are sold subject to the general terms and conditions of commercial sale, as published at <http://www.mpicosys.com/terms>, including those pertaining to warranty, intellectual property rights infringement and limitation of liability, unless explicitly otherwise agreed to in writing by MpicoSys. In case of any inconsistency or conflict between information in this document and such terms and conditions, the latter will prevail.

No offer to sell or license

Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

9 Contact Information

For additional information please visit mpicosys.com.

Please contact sales@mpicosys.com for commercial information.