



[Embedded Pico Systems]

Errata Sheet

**Timing Controller Solutions – Generation 2
for Pervasive Displays 4.41” and 10.2”
Panels**

**TCM2-P441-231_v1.1, TC2-P441-231_v1.1
TCM2-P102-231_v1.1**

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Table of Contents

1	<u>Introduction</u>	3
2	<u>Problem Summary</u>	3
3	<u>Problem Details</u>	3
	<u>3.1 TC Freezing after Response Readout</u>	3
4	<u>Revision History</u>	5
5	<u>Legal Information</u>	6
	<u>5.1 Disclaimers</u>	6
6	<u>Contact Information</u>	7

1 Introduction

This errata sheet describes problems with the product and differences to the specification revealed after the product release. In each problem's description there is an indication which particular product code it is relevant to. All the products from the product family listed on the front page of this document are tested against each of the revealed problems. If a specific product code is not mentioned in a particular problem description, it means it has been tested and is not affected by that problem.

All the problems are summarized in a table, and described in details further in the document.

2 Problem Summary

Problem	Affected Products
TC Freezing after Response Readout	TCS2-P441-231_v1.1

Table 2.1: Problem summary

3 Problem Details

3.1 TC Freezing after Response Readout

TC host interface freezes for 1 ms after response readout by sending 0x00 bytes on MOSI line. If the host tries to communicate to TC in this state, the TC will hang and reset (either immediately or after watchdog timeout equal to 1 sec.)

Affected Products

TCS2-P441-231_v1.1

Details

The freeze/hang state lasts for 1 ms. The state is not indicated by any external signal. The state occurrence probability is estimated to 10%.

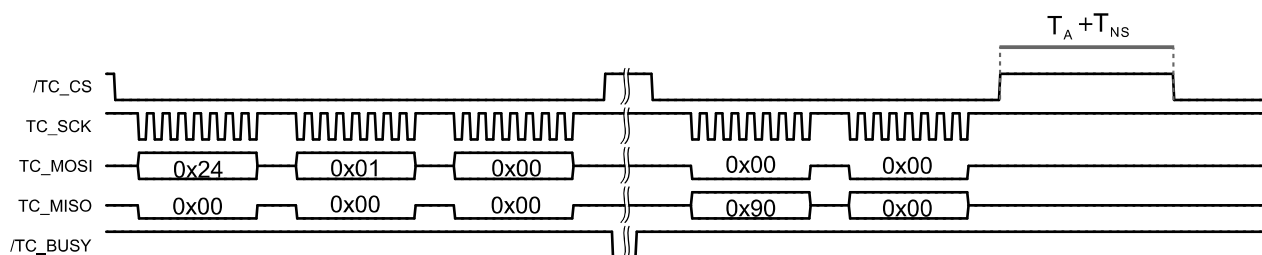


Figure 3.1: Timing diagram – command and response

The time is indicated by $T_A + T_{NS}$ on the above diagram, showing the command and the response readout by sending two 0x00 bytes. Note no /TC_BUSY pulse after response readout.

Solutions

Any of the three solutions described below can be implemented to work around the problem.

Solution 1) Add 1.1 ms delay time after response readout

To prevent the reset caused by communication during the freeze/hang state, the time T_A+T_{NS} has to be extended to 1.1 ms. The impact of this solution is rather negligible in case of single commands, however it becomes more significant in case of image data upload, where tens of commands are sent one after another.

Solution 2) Read out the response while transmitting the following command

This solution is mostly useful for image upload sequence, as it decreases the transmission time compared to the use case where response is read after each command by sending 0x00 bytes.

Host can read TC response during the next command transmission as shown on the diagram below. This way is more effective than sending 0x00 bytes to read out the response, at the cost of more complicated error response handling on the host side. A recommended implementation is for the host to abort the communication if an error response is recognized at the first two bytes of the response.

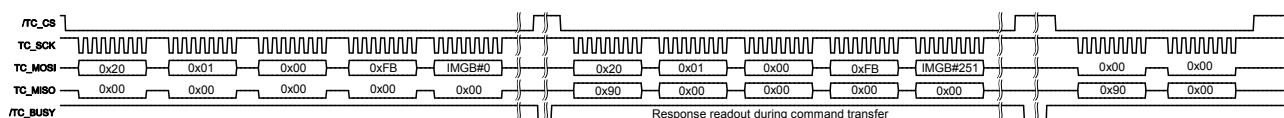


Figure 3.2: Example timing diagram – response read while transmitting the next command

Example on the timing diagram above shows a part of image upload procedure: two UploadImageData commands with consecutive responses. Note that 250 bytes of image data are hidden by time compressor in each command.

After the last UploadImageData command, the response can be read out by sending 0x00 bytes, after which the time T_A+T_{NS} has to be extended to 1.1 ms.

Solution 3) Reponse readout by 0xFF bytes

Response readout can be done by transmission of dummy bytes (i.e. unsupported command, e.g. 0xFF bytes) after each command. In this case the /TC_BUSY signal is driven LOW (the same way as during supported commands processing); interface timings the same as for supported commands. Note that the next response will contain an error code which should be ignored by the host logic.

4 Revision History

Document Revision	Release Date	Document Status	Supersedes
A	2016-03-21	Approved	-

Table 4.1: Revision history

Document Revision	Change Log
A	Initial version

Table 4.2: Change log

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Draft

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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.

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6 Contact Information

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Please contact sales@mpicosys.com for commercial information.