TWR-K60N512 Tower Module

Hardware Errata and Changes

Rev. 0

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Revision History

Revision	Date	Changes
0	July, 11 2011	Initial Release

Introduction

This document provides a list of the known errata for the TWR-K60N512 Tower Controller Module.

Hardware Revision Identification

The Freescale Tower hardware design components each have a unique identifier in the format of AAA-XXXXX where AAA is a document identifier and XXXX is a numerical identifier. The possible document identifiers (AAA) are:

- 700 – The entire printed wiring assembly (PWA) design
- LAY – Layout source (Allegro)
- NET – Netlist (OrCad/Allegro)
- GRB – Gerber files
- ODB – ODB++ files
- FAB – Fabrication document
- UNI – UniCAM file
- CEN – placement file
- BOM – Bill of Materials
- SCH – Schematic source (OrCad)
- SPF – Schematic PDF

The numerical identifier for the TWR-K60N512 is 26548. On the PCB you will find one printed label with the 700-26548 (complete assembly) revision number and another with the SCH-26548 (schematic) revision number. Use these labels to help identify the revision of your Tower Module.

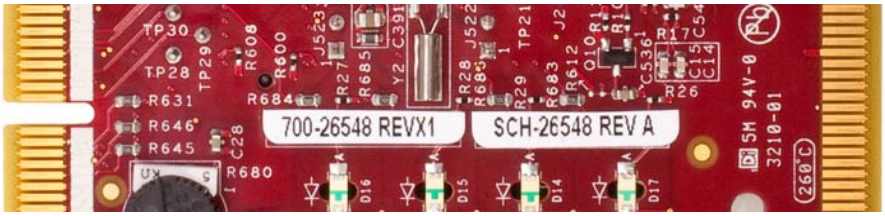


Figure 1. Hardware Revision Identification

Hardware Errata Summary

The following table summarizes the list of known errata and the affected schematic revisions. An “X” in the revision column indicates that the revision is affected by the errata.

Table 1. Hardware Errata Summary (by Schematic Revision)

Errata ID	Errata Title	Rev A	Rev B	Rev C	Rev D
TWRK60N512_01:	Infrared Detector Isolation	X	X	X	
TWRK60N512_02:	JTAG TMS Pull-up Resistor	X	X	X	
TWRK60N512_03:	Lack of Reset Output	X	X	X	
TWRK60N512_04:	Potentiometer Voltage Reference	X	X	X	
TWRK60N512_05:	GPIO7/PTE27 and RSTOUT Interference				X

Hardware Change Summary

The changes to each revision of the schematic are described in the following sections.

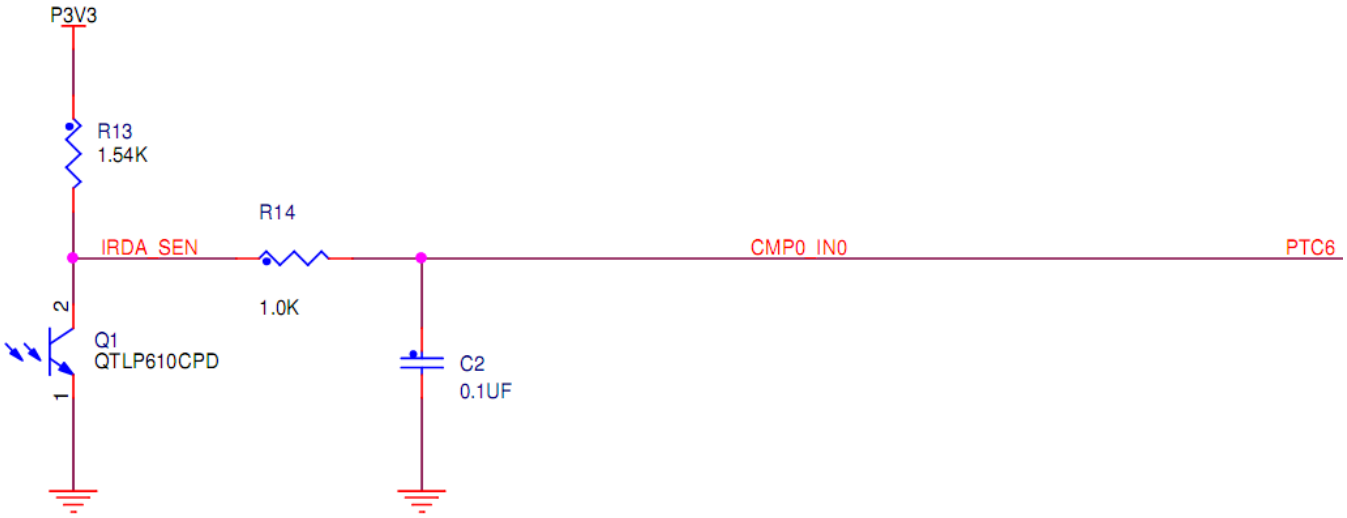
Table 2. Hardware Change Summary (by Schematic Revision)

Revision	Release Date	Changes
A	08/02/2010	Prototype Release
B	09/22/2010	First Production Release
C	10/21/2010	No functional changes. Fixed notes and net names in schematic.
D	01/14/2011	1. Added an isolation jumper to allow PTC6/FB_AD9 to be isolated from the infrared circuit. See *TWRK60N512_01*. 2. Added a pull-up resistor on the JTAG TMS signal. See *TWRK60N512_02*. 3. Pin 7 of the debug header was removed to comply with the Cortex Debug + ETM connector standard. 4. Disconnected RSTOUT signal from RSTIN signal on the Tower Primary Elevator Connector. RSTIN remains connected to RESET_B on the MCU. The RSTOUT signal was connected to PTE27. See *TWRK60N512_03*. 5. The potentiometer power connections were changes. See *TWRK60N512_04*.

TWRK60N512_01: Infrared Detector Isolation

Description

The PTC6 is multiplexed with FB_AD9 and CMP0_IN0. Both of these functions are used on the TWR-K60N512: PTC6 is connected to the infrared receiver circuit and also to the Flexbus interface on the Primary Connector. This dual-usage can lead to contention and interference.

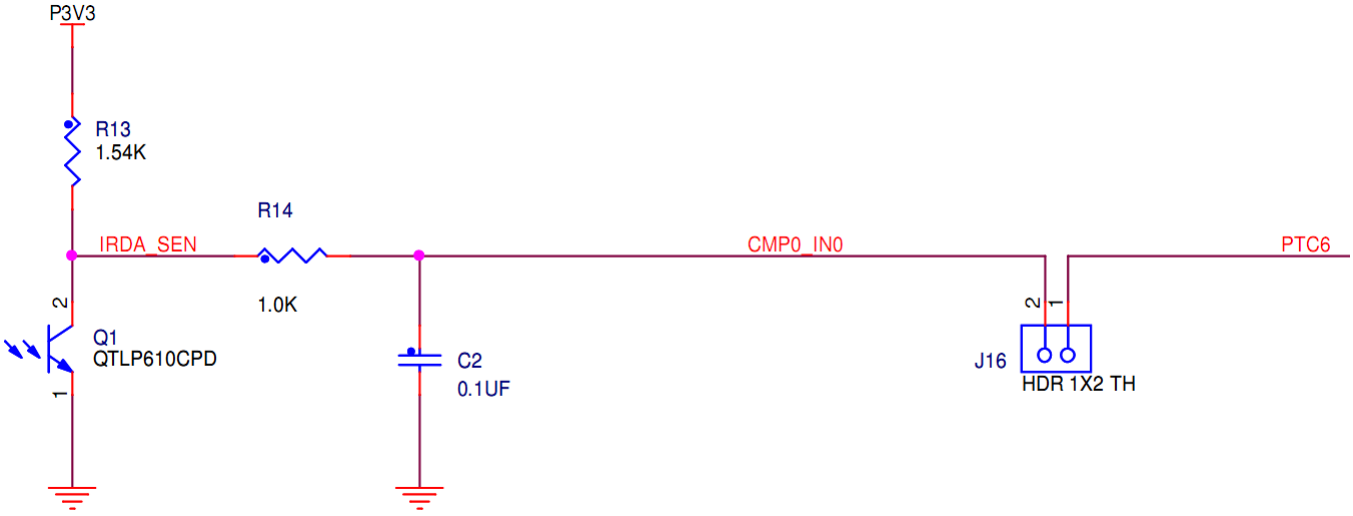


Workaround

To avoid interference on the Flexbus signal, R14 and C2 can be removed.

Status

A jumper to isolate the infrared received circuit was added to revision D of the schematics.



TWRK60N512_02: JTAG TMS Pull-up Resistor

Description

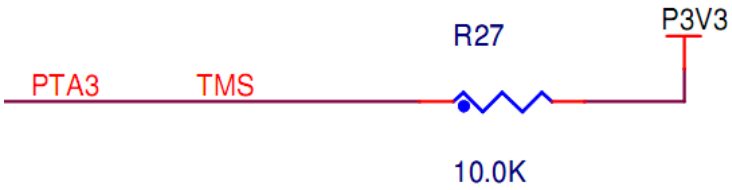
The pull-up resistor on the TMS signal is too strong and doesn't follow the JTAG standard.

Workaround

Replace R27 with a 10K resistor.

Status

The value of R27 was changed to 10.0K ohms starting with revision D of the schematics.



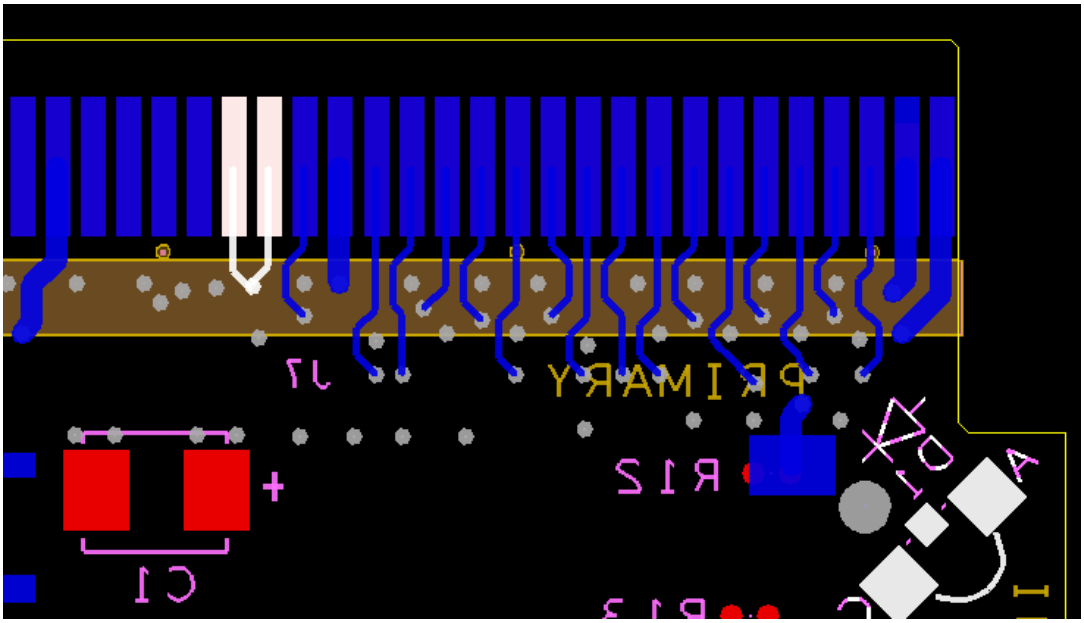
TWRK60N512_03: Lack of Reset Output

Description

The RSTOUT pin on the Elevator Primary Connector (A63) is connected to the RSTIN pin (A62) which is connected to RESET_B on the MCU. There is no way for the MCU to control the RESET_B pin in GPIO mode so that it can drive RSTOUT to other Tower Peripheral Modules. Some ICs on Tower Peripheral Modules need to be independently reset as part of their initialization sequence (e.g. the LCD controller on the TWR-LCD).

Workaround

There is no easily implemented workaround for this erratum. It is possible to cut the trace connecting RSTOUT (bottom side of PCB, shown as the highlighted pin on the right in the figure below) to RSTIN and solder a wire from the pad to an available GPIO pin from the K60 MCU. Care must be taken when soldering to the pad not to interfere with the ability to plug the card into a TWR-ELEV board.



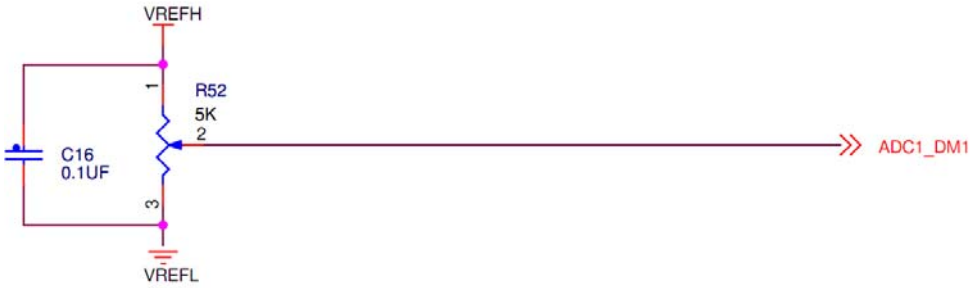
Status

PTE27 is used to drive RSTOUT on revision D of the schematics. However, PTE27 is also used as the GPIO7/SD_WP_DET signal—pin A11 on the Primary Elevator. This introduces possible interference with SD Cards and peripheral modules that utilize GPIO7. See *TWRK60N512_05: GPIO7/PTE27 and RSTOUT Interference.*

TWRK60N512_04: Potentiometer Voltage Reference

Description

The potentiometer is connected between VREFH and VREFL. These supplies are derived from the P3V3_MCU. The potentiometer works as expected but the supply connection loads the processor voltage rail and limits the ability to measure the power consumed by only the MCU.

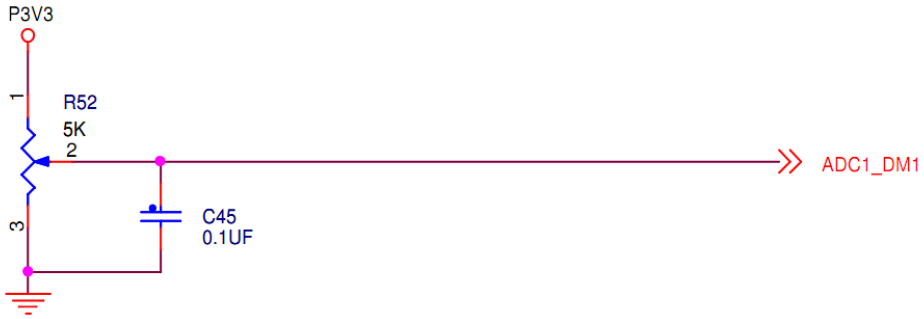


Workaround

The potentiometer can be removed to measure the current consumed by only the MCU.

Status

Starting with revision D of the schematics, the supply voltage to the potentiometer was changed.



TWRK60N512_05: GPIO7/PTE27 and RSTOUT Interference

Description

PTE27 is used to drive RSTOUT on revision D of the schematics. However, PTE27 is also used as the GPIO7/SD_WP_DET signal—pin A11 on the Primary Elevator. This introduces possible interference with SD Cards and peripheral modules that utilize GPIO7.

Workaround

In may be possible to insert a delay in software to wait for any external ICs to come out of a reset caused by the assertion of GPIO7/PTE27. If using an SD Card, the card will cause the GPIO7/PTE27/RSTOUT signal to assert. If the SD Card has a lock/unlock mechanical switch, the switch should be placed into the “locked” position to avoid continuous assertion of the GPIO7/PTE27/RSTOUT signal.

Status

An alternate signal will be used on a future revision to drive GPIO7 and RSTOUT and to detect SD Card write-protect.