

# TE0823 CPLD

## Table of contents

- 1 [Table of contents](#)
- 2 [Overview](#)
  - 2.1 [Feature Summary](#)
  - 2.2 [Firmware Revision and supported PCB Revision](#)
- 3 [Product Specification](#)
  - 3.1 [Port Description](#)
  - 3.2 [Functional Description](#)
    - 3.2.1 [JTAG](#)
    - 3.2.2 [Boot Mode](#)
    - 3.2.3 [Power](#)
- 4 [Appx. A: Change History](#)
  - 4.1 [Revision Changes](#)
  - 4.2 [Document Change History](#)
- 5 [Appx. B: Legal Notices](#)
  - 5.1 [Data Privacy](#)
  - 5.2 [Document Warranty](#)
  - 5.3 [Limitation of Liability](#)
  - 5.4 [Copyright Notice](#)
  - 5.5 [Technology Licenses](#)
  - 5.6 [Environmental Protection](#)
  - 5.7 [REACH, RoHS and WEEE](#)

## Overview

CPLD Device with designator U21: LCMX02-256HC

## Feature Summary

- JTAG routing
- Boot Mode settings
- Power Managment

## Firmware Revision and supported PCB Revision

See Document Change History

## Product Specification

### Port Description

Name / opt. VHD Name	Direction	Pin	Bank Power	Description
C_TCK	in	30	3.3VIN	JTAG B2B
C_TDI	in	32	3.3VIN	JTAG B2B
C_TDO	out	1	3.3VIN	JTAG B2B

C_TMS	in	29	3.3VIN	JTAG B2B
PG_FPD	in	27	3.3VIN	Power GOOD from SOC FPD regulators
RESIN	inout	4	3.3VIN	Reset control and minitoring
EN_MGT	out	5	3.3VIN	enable GTR Power Domain
JTAGEN	in	26	3.3VIN	Enable JTAG access to CPLD for Firmware update (zero: JTAG routed to module, one: CPLD access)
MODE	in	25	3.3VIN	Boot Mode for Zynq/ZynqMP Devices (Flash or SD)
MODE0	out	12	1.8V	ZynqMP Boot Mode Pin 0
MODE1	out	13	1.8V	ZynqMP Boot Mode Pin 1
MODE2	out	14	1.8V	ZynqMP Boot Mode Pin 2
MODE3	out	16	1.8V	ZynqMP Boot Mode Pin 3
NOSEQ	inout	23	3.3VIN	usage CPLD Variant depends
PGOOD	inout	28	3.3VIN	Module Power Good (FPD + MGT(if not disabled by user))
PG_MGT	in	17	1.8V	Power Good of GTR power domain
TCK	out	9	1.8V	JTAG ZynqMP
TDI	out	8	1.8V	JTAG ZynqMP
TDO	in	10	1.8V	JTAG ZynqMP
TMS	out	11	1.8V	JTAG ZynqMP
X0	in	20	VCCO_65	X0 X1 can be used to disable MGT Power
X1	in	21	VCCO_65	X0 X1 can be used to disable MGT Power

## Functional Description

### JTAG

JTAG signals routed directly through the CPLD to FPGA. Access between CPLD and FPGA can be multiplexed via JTAGEN (logical one for CPLD, logical zero for FPGA) on JM1-89.

### Boot Mode

Boot Modes can be selected via B2B Pin Mode. Trenz Electronic provides currently 4 Firmware variants, one for SD/JTAG, one for JTAG/QSPI, one for SD /QSPI and SD/QSPI/JTAG usage.

Mode	JTAG/QSPI-Variant	SD/JTAG-Variant	SD/QSPI (default Firmware)	SD/QSPI/JTAG
low	JTAG	Boot from SD	Boot from SD	JTAG Mode, if NOSEQ* is high otherwise boot from SD
high	Boot from Flash	JTAG	Boot from Flash	JTAG Mode, if NOSEQ* is high otherwise boot from Flash

For other UltraScale+ Boot Modes options custom firmware is needed, see also Table 11.1 Boot Modes from Xilinx UG1085.



A special FSBL is provided on 2017.4 or newer reference designs to write boot image to QSPI with Xilinx tools (Vivado or SDK) on Boot Mode unequal JTAG .



NOSEQ\*: Please check the carrier board documentation, before using the SD/QSPI/JTAG firmware variant on TE0823. In the most cases special carrier CPLD firmware is needed.

## Power

PGOOD is zero if PG\_FPD is low or if PG\_MGT is low (as long as it is enabled by user) otherwise it's high impedance

## Appx. A: Change History

### Revision Changes

- REV01
  - initial release

### Document Change History

To get content of older revision got to "Change History" of this page and select older document revision number.

Date	Document Revision	CPLD Firmware Revision	Supported PCB Revision	Authors	Description
------	-------------------	------------------------------	------------------------------	---------	-------------

	<div><p><b>Error rendering macro 'page-info'</b></p><p>Ambiguous method overloading for method jdk.proxy241.\$Proxy3496#hasContentLevelPermission. Cannot resolve which method to invoke for [null, class java.lang.String, class com.atlassian.confluence.pages.Page] due to overlapping prototypes between: [interface com.atlassian.confluence.user.ConfluenceUser, class java.lang.String, class com.atlassian.confluence.core.ContentEntityObject] [interface com.atlassian.user.User, class java.lang.String, class com.atlassian.confluence.core.ContentEntityObject]</p></div>	REV01	REV01	<div><p><b>Error rendering macro 'page-info'</b></p><p>Ambiguous method overloading for method jdk.proxy241.\$Proxy3496#hasContentLevelPermission. Cannot resolve which method to invoke for [null, class java.lang.String, class com.atlassian.confluence.pages.Page] due to overlapping prototypes between: [interface com.atlassian.confluence.user.ConfluenceUser, class java.lang.String, class com.atlassian.confluence.core.ContentEntityObject] [interface com.atlassian.user.User, class java.lang.String, class com.atlassian.confluence.core.ContentEntityObject]</p></div>	Typo
--	--	-------	-------	--	------

<div><p><b>Error rendering macro 'page-info'</b></p><p>Ambiguous method overloading for method jdk. proxy241.\$Proxy3496#hasContentLevelPermission. Cannot resolve which method to invoke for [null, class java.lang.String, class com.atlassian. confluence.pages.Page] due to overlapping prototypes between: [interface com.atlassian. confluence.user.ConfluenceUser, class java.lang. String, class com.atlassian.confluence.core. ContentEntityObject] [interface com.atlassian.user. User, class java.lang.String, class com.atlassian. confluence.core.ContentEntityObject]</p></div>	REV01	REV01	John	<ul style="list-style-type: none"><li>Initial release</li></ul>
---	-------	-------	------	---

	All				<div><p><b>Error rendering macro 'page-info'</b></p><p>Ambiguous method overloading for method jdk.proxy241.\$Proxy3496#hasContentLevelPermission. Cannot resolve which method to invoke for [null, class java.lang.String, class com.atlassian.confluence.pages.Page] due to overlapping prototypes between: [interface com.atlassian.confluence.user.ConfluenceUser, class java.lang.String, class com.atlassian.confluence.core.ContentEntityObject] [interface com.atlassian.user.User, class java.lang.String, class com.atlassian.confluence.core.ContentEntityObject]</p></div>
--	-----	--	--	--	--

## Appx. B: Legal Notices

### Data Privacy

Please also note our data protection declaration at <https://www.trenz-electronic.de/en/Data-protection-Privacy>

### Document Warranty

The material contained in this document is provided "as is" and is subject to being changed at any time without notice. Trenz Electronic does not warrant the accuracy and completeness of the materials in this document. Further, to the maximum extent permitted by applicable law, Trenz Electronic disclaims all warranties, either express or implied, with regard to this document and any information contained herein, including but not limited to the implied warranties of merchantability, fitness for a particular purpose or non infringement of intellectual property. Trenz Electronic shall not be liable for errors or for incidental or consequential damages in connection with the furnishing, use, or performance of this document or of any information contained herein.

### Limitation of Liability

In no event will Trenz Electronic, its suppliers, or other third parties mentioned in this document be liable for any damages whatsoever (including, without limitation, those resulting from lost profits, lost data or business interruption) arising out of the use, inability to use, or the results of use of this document, any documents linked to this document, or the materials or information contained at any or all such documents. If your use of the materials or information from this document results in the need for servicing, repair or correction of equipment or data, you assume all costs thereof.

## Copyright Notice

No part of this manual may be reproduced in any form or by any means (including electronic storage and retrieval or translation into a foreign language) without prior agreement and written consent from Trenz Electronic.

## Technology Licenses

The hardware / firmware / software described in this document are furnished under a license and may be used /modified / copied only in accordance with the terms of such license.

## Environmental Protection

To confront directly with the responsibility toward the environment, the global community and eventually also oneself. Such a resolution should be integral part not only of everybody's life. Also enterprises shall be conscious of their social responsibility and contribute to the preservation of our common living space. That is why Trenz Electronic invests in the protection of our Environment.

## REACH, RoHS and WEEE

### REACH

Trenz Electronic is a manufacturer and a distributor of electronic products. It is therefore a so called downstream user in the sense of [REACH](#). The products we supply to you are solely non-chemical products (goods). Moreover and under normal and reasonably foreseeable circumstances of application, the goods supplied to you shall not release any substance. For that, Trenz Electronic is obliged to neither register nor to provide safety data sheet. According to present knowledge and to best of our knowledge, no [SVHC \(Substances of Very High Concern\) on the Candidate List](#) are contained in our products. Furthermore, we will immediately and unsolicited inform our customers in compliance with REACH - Article 33 if any substance present in our goods (above a concentration of 0,1 % weight by weight) will be classified as SVHC by the [European Chemicals Agency \(ECHA\)](#).

### RoHS

Trenz Electronic GmbH herewith declares that all its products are developed, manufactured and distributed RoHS compliant.

### WEEE

Information for users within the European Union in accordance with Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE).

Users of electrical and electronic equipment in private households are required not to dispose of waste electrical and electronic equipment as unsorted municipal waste and to collect such waste electrical and electronic equipment separately. By the 13 August 2005, Member States shall have ensured that systems are set up allowing final holders and distributors to return waste electrical and electronic equipment at least free of charge. Member States shall ensure the availability and accessibility of the necessary collection facilities. Separate collection is the precondition to ensure specific treatment and recycling of waste electrical and electronic equipment and is necessary to achieve the chosen level of protection of human health and the environment in the European Union. Consumers have to actively contribute to the success of such collection and the return of waste electrical and electronic equipment. Presence of hazardous substances in electrical and electronic equipment results in potential effects on the environment and human health. The symbol consisting of the crossed-out wheeled bin indicates separate collection for waste electrical and electronic equipment.

Trenz Electronic is registered under WEEE-Reg.-Nr. DE97922676.

Ambiguous method overloading for method `jdk.proxy241.$Proxy3496#hasContentLevelPermission`. Cannot resolve which method to invoke for `[null, class java.lang.String, class com.atlassian.confluence.pages.Page]` due to overlapping prototypes between: `[interface com.atlassian.confluence.user.ConfluenceUser, class java.lang.String, class com.atlassian.confluence.core.ContentEntityObject]` `[interface com.atlassian.user.User, class java.lang.String, class com.atlassian.confluence.core.ContentEntityObject]`