TEP0006 TRM

Download PDF version of this document.

Table of Contents

Overview

The Trenz Electronic TEP0006 is an Ultra96 LS Expansion to Pmod adapter.

Refer to http://trenz.org/tep0006-info for the current online version of this manual and other available documentation.
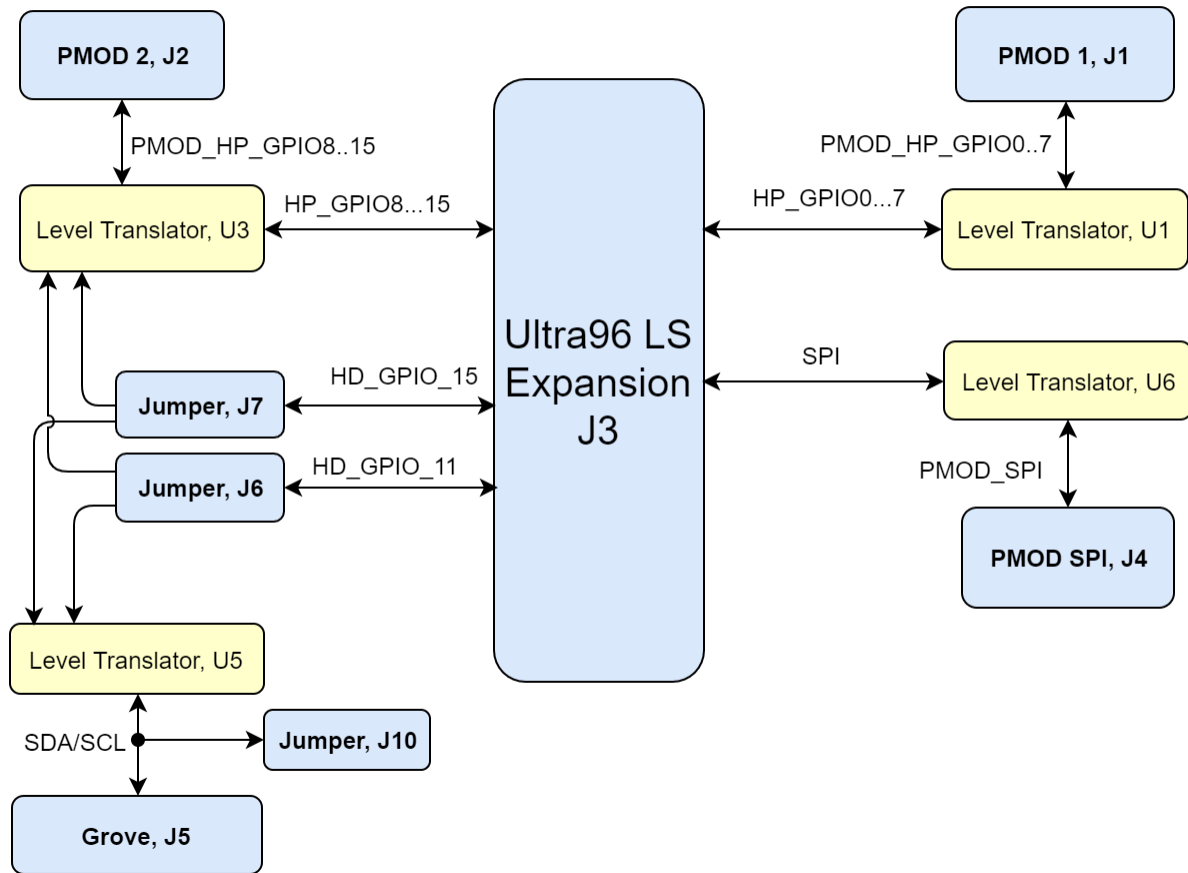
Key Features

- **On Board:**
    - 4x Voltage Level Translators
    - 2x Voltage Regulators
- **Interface:**
    - 1x Ultra96 LS Expansion Header (40 Pins)
    - 3x Pmod Connectors
    - 3x Jumpers
- **Power:**
    - 5V
    - VCC_PSAUX
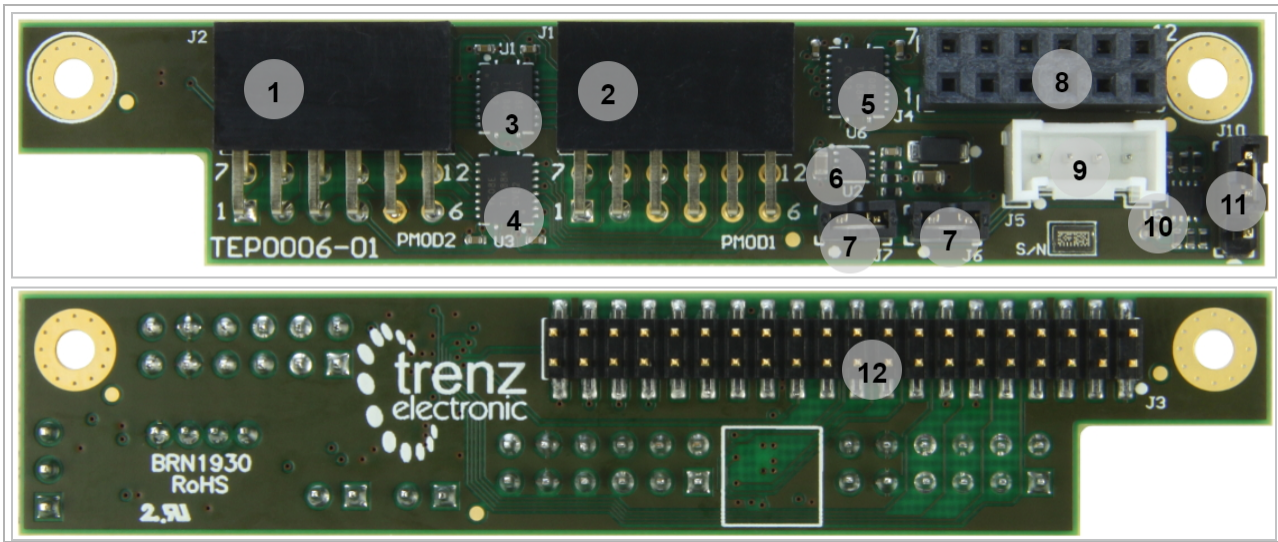- **Dimension:**
    - 85 mm x 17 mm

Block Diagram

TEP0006 block diagram

Main Components

TEP0006 Main Components

1. PMod 2x6 Host Socke (PMOD 2) ,J2
2. PMod 2x6 Host Socke (PMOD 2) ,J1
3. Level Translator (HP_GPIO[0..7]) ,U1
4. Level Translator (HP_GPIO[8..15]),U3
5. Level Translator PMOD(SPI),U6
6. Linear Voltage Regulator,U2
7. Jumper,J6-J7
8. PMod 2x6 Host Socke (SPI),J4
9. GROVE,J5
10. Level Translator (GROVE) ,U5
11. Jumper (Voltage select),J10
12. Ultra96 LS Expansion Header (40 Pos),J3

Initial Delivery State

Storage device name	Content	Notes
---	---	---

Initial delivery state of programmable devices on the module

Configuration Signals

Signals, Interfaces and Pins

Low Speed Expansion Connector

The SMD Header J3 has 40 pin (20x2) and it is compatible with Ultra96 LS Expansion Connector. You can find General information about the LS Expansion connector in the following table.

Schematic	Connected to	Notes
HD_GPIO0...7	Level Translator HP_GPIO[0...7], U1	GPIO0...7

HD_GPIO8...15	Level Translator HP_GPIO[8...15], U3	GPIO8...15
MIO36...37	Level Translator PMOD(SPI)	PS_GPIO_0...1
MIO38, MIO41...43	Level Translator PMOD(SPI)	SPI
VCC_PSAUX	Level Translator, U1-U3-U5-U6 Voltage Regulator, U2	1.8 V nPOK
5V	Voltage Regulator, U2 Jumper, J10	Vin Pull up Voltage

Ultra96 LS Expansion information

Pmod Connectors

The TEP0006 is equipped with three Pmod connectors. Pmod Connectors are the expanded outputs from Ultra96 Board.

Pin	Connected to			Notes
	Pmod 1, J1	**Pmod 2, J2**	**Pmod SPI, J4**	
1	PMOD_HD-GPIO0	PMOD_HD-GPIO8	SS	
2	PMOD_HD-GPIO1	PMOD_HD-GPIO9	MOSI	
3	PMOD_HD-GPIO2	PMOD_HD-GPIO10	MISO	
4	PMOD_HD-GPIO3	PMOD_HD-GPIO11	SCK	
5	GND	GND	GND	
6	3.3 V	3.3 V	3.3 V	
7	PMOD_HD-GPIO4	PMOD_HD-GPIO12	INIT	
8	PMOD_HD-GPIO5	PMOD_HD-GPIO13	RESET	
9	PMOD_HD-GPIO6	PMOD_HD-GPIO14	Not Connected	
10	PMOD_HD-GPIO7	PMOD_HD-GPIO15	Not Connected	
11	GND	GND	GND	
12	3.3 V	3.3 V	3.3 V	

Pmod Connectors information

Jumpers

Designator	Functionality	Connection Between	Notes
J6	HD_GPIO_15	Level Translator U3 and U5	If you install the jumper HD_GPIO_15 will be driven through Level Translator (U5) and Grove (J5) otherwise it goes to Level Translator (U3).
J7	HD_GPIO_11	Level Translator U3 and U5	If you put the jumper HD_GPIO_11 will be driven through Level Translator (U5) and Grove (J5) otherwise it goes to Level Translator (U3).
J10	Voltage select	5 V, 3.3 V	Pull up Voltage

Pmod Connectors information

On-board Peripherals

Chip/Interface	Designator	Notes
--	--	--

On board peripherals

Power and Power-On Sequence

Power Supply
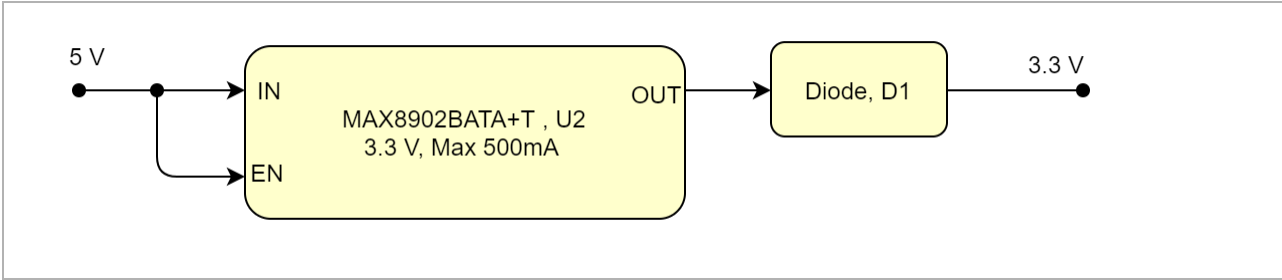
Power is supplied by Ultra96 Board through SMD Header J3.

Power Consumption

Power Input Pin	Typical Current
5V	TBD
VCC_PSAUX	TBD

Power Consumption

* TBD - To Be Determined

Power Distribution Dependencies

Power Distribution

Power-On Sequence

There is no specific power on sequence, after power on the Ultra96 Board all electrical components on TEP0006 will be enabled.

Power Rails

Power Rail Name	LS Expansion Connector Pin	Direction	Notes
+5V	37	Input	Supplied by Ultra96

VCC_PSAUX	35	Input	Supplied by Ultra96

Module power rails.

Technical Specifications

Absolute Maximum Ratings

Symbols	Description	Min	Max	Unit
T_STG	Storage Temperature	-55	150	°C

PS absolute maximum ratings

Recommended Operating Conditions

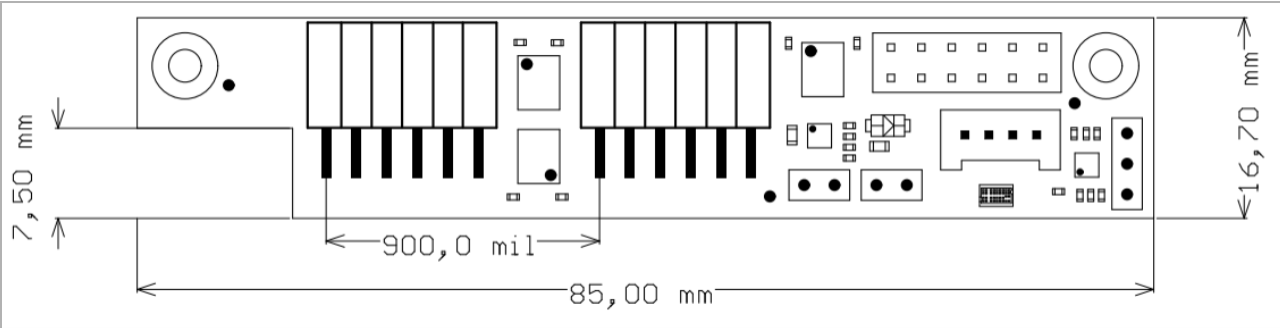Operating temperature range depends also on customer design and cooling solution. Please contact us for options.

Parameter	Min	Max	Units	Reference Document
T_OPT	-40	+85	°C	

Recommended operating conditions.

Physical Dimensions

- Module size: 85 mm × 17 mm. Please download the assembly diagram for exact numbers.

PCB thickness: 1.6 mm.

Physical Dimension

Currently Offered Variants

Trenz shop TEP0006 overview page	
English page	German page

Trenz Electronic Shop Overview

Revision History

Hardware Revision History

Date	Revision	Changes	Documentation Link
2019-07-19	01	Initial Release	REV01

Hardware Revision History

Hardware revision number can be found on the PCB board together with the module model number separated by the dash.

Board hardware revision number.

Document Change History

Date	Revision	Contributor	Description
			• Initial release
Error rendering macro 'page-info' Ambiguous method overloading for method jdk.proxy241.$Proxy3496#hasContentLevelPermission. Cannot resolve which method to invoke for [null, class java.lang.String, class com.atlassian.confluence.pages.Page] due to overlapping prototypes between: [interface com.atlassian.confluence.user.ConfluenceUser, class java.lang.String, class com.atlassian.confluence.core.ContentEntityObject] [interface com.atlassian.user.User,	**Error rendering macro 'page-info'** Ambiguous method overloading for method jdk.proxy241.$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	**Error rendering macro 'page-info'** 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	

class java.lang.String, class com.atlassian.confluence.core.ContentEntityObject]	java.lang.String, class com.atlassian.confluence.core.ContentEntityObject]	java.lang.String, class com.atlassian.confluence.core.ContentEntityObject]	
--	all	**Error rendering macro 'page-info'** 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]	• --

Document change history.

Disclaimer

Data Privacy

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

Document Warranty

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.

Error rendering macro 'page-info'

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]