CR00040 TRM

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Overview

The Trenz Electronic CR00040-01 is an CRUVI peripheral module with multiple sensors

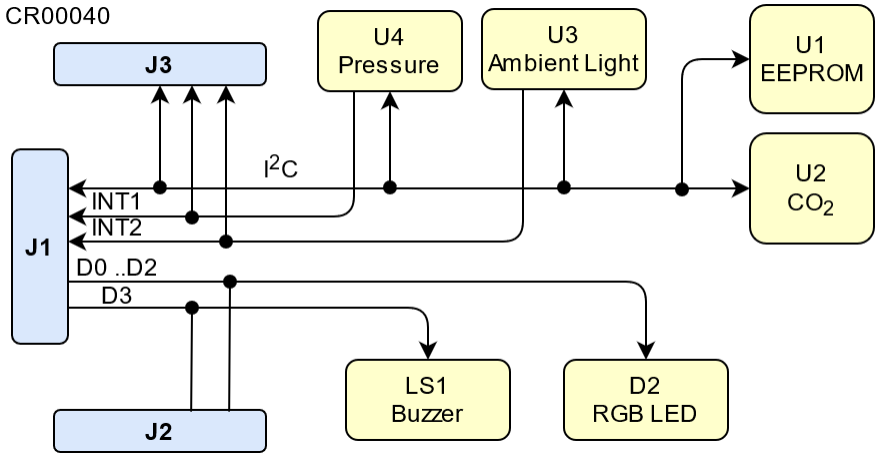
Refer to http://trenz.org/cr00040-info for the current online version of this manual and other available documentation.

Key Features

- **EEPROM/Unique Identifier**
  - 24AA025E48
- **CO2 Sensor (temperatur/humidity)**
  - SCD40 or SCD41 or none (depending on assembly variant)
- **Air Pressure Sensor**
  - LPS22HB
- **Ambient Light Sensor**

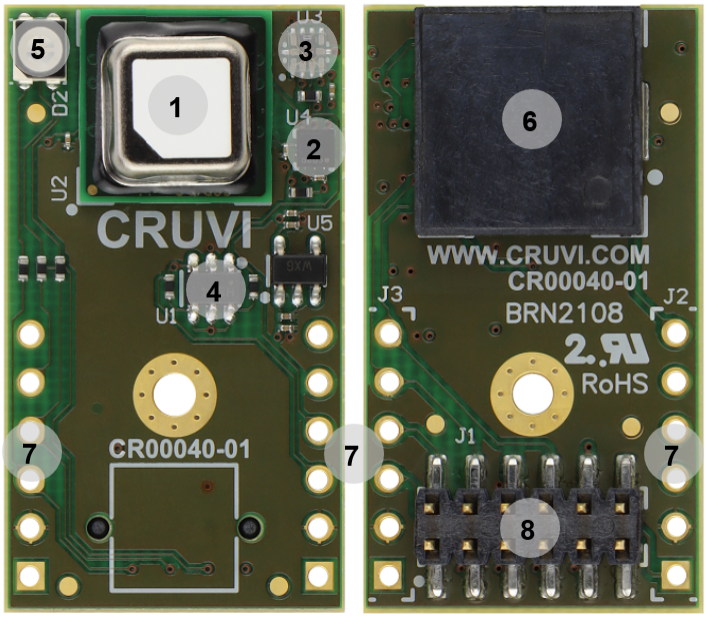
    - TSL25403M
- **On-board**
    - RGB LED
    - Buzzer
- **Power**
    - 3.3V
- **Dimension**
    - 32 x 18 mm

Block Diagram



CR00040 block diagram

Main Components



CR00040 main components

1. CO2 Sensor (not fitted on CR00040-XX-0)
2. Air Pressure Sensor

3. Ambient Light Sensor
4. EEPROM
5. RGB LED
6. Buzzer
7. Pin Headers (not fitted)
8. CRUVI Low Speed Connector

Initial Delivery State

Storage device name	Content	Notes
EEPROM	EUI-48 Node Identity	at offset 0xFA, 6 bytes

Initial delivery state of programmable devices on the module

Signals, Interfaces and Pins

Module I/Os

Module signals connected to the B2B connector:

B2B Connector	I/O Signal Count	Voltage Level	Notes
J1	8	VCC (3.3V)	
J2	4		parallel to J1
J3	4		parallel to J1

General PL I/O to B2B connectors information

J1 is the main CRUVI connector and should be used to connect the CR00040 to any CRUVI baseboard with CRUVI LS connector fitter. J2 and J2 are un-populated 100 mil pin-headers that allow solder-in pin-headers to use the CR00040 with solder-less breadboards or fly-wires.

On-board Peripherals

Chip/Interface	Designator	Notes
EEPROM	U1	
CO2 Sensor	U2	
Ambient Light Sensor	U3	
Pressure Sensor	U4	
RGB LED	D2	
Buzzer	LS1	

On board peripherals

Air Pressure Sensor

J1 Pin	Schematic	U4 Pin	Notes
2	SCL	2	

1	SDA	4	

Air Pressure Sensor interface pins

I2C Address	Designator	Notes
1011_101x	U4	

I2C address for Air Pressure Sensor

Ambient Light Sensor

J1 Pin	Schematic	U3 Pin	Notes
2	SCL	3	
1	SDA	4	

Ambient Light Sensor interface pins

I2C Address	Designator	Notes
0111_001x	U3	

I2C address for Ambient Light Sensor

CO2 Sensor

J1 Pin	Schematic	U2 Pin	Notes
2	SCL	9	
1	SDA	10	

I2C EEPROM interface pins

I2C Address	Designator	Notes
1100_010x	U2	

I2C address for EEPROM

EEPROM

J1 Pin	Schematic	U1 Pin	Notes
2	SCL	1	
1	SDA	3	

I2C EEPROM interface pins

I2C Address	Designator	Notes
1010_011x	U1	

I2C address for EEPROM

LEDs

Designator	Color	Connected to	Active Level	Note
D2	Red	D0	Low	
D2	Green	D1	Low	
D2	Blue	D2	Low	

On-board LEDs

Power and Power-On Sequence

Power Supply

Power supply with minimum current capability of TBD A is recommended.

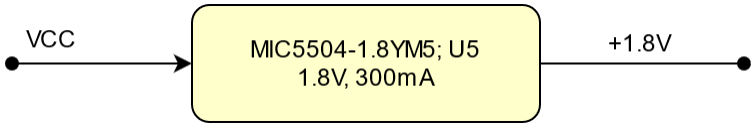
Power Consumption

Power Input Pin	Typical Current
VCC	TBD*
VBUS	0 (not used)

Power Consumption

* TBD - To Be Determined

Power Distribution Dependencies



Power Distribution

Power Rails

Power Rail Name	B2B Connector J1 Pin	B2B Connector J2 Pin	B2B Connector J3 Pin	Direction	Notes
VCC	10	1	-	in	
VBUS	12	-	1	n/a	not used

Module power rails.

Board to Board Connectors

CR00040 module uses one Samtec connector at the bottom side.

- 1 x TMMH-106-04-F-DV-A-M (12 pins, 6 per row)

Operating Temperature: -55°C ~ 105°C
Current Rating: 4.5A per Contact
Number of Positions: 6 (2 x 6)
Number of Rows: 2

Technical Specifications

Absolute Maximum Ratings

Symbols	Description	Min	Max	Unit
VCC	Main Power	-0.3	4.8	V
VBUS		n/a	n/a	V
SDA, SCL		-0.3	3.6	V
INT1		-0.3	VCC+0.3	V
INT2		-0.3	3.6	V
D0, D1, D2		-5	3.6	V
D3		-25*	25	V
Operating Temperature		-10	60	°C

Absolute maximum ratings

Recommended Operating Conditions

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

Parameter	Min	Typ	Max	Units	Reference Document
VCC	2.4	3.3	3.6	V	See LPS22HBTR datasheet.
VBUS	n/a	n/a	n/a	V	not used
Storage Temperature	10	-	50	°C	See SCD40 datasheet.
Short term storage Temperature	-40	-	70	°C	See SCD40 datasheet.
Operating Temperature	-10	-	60	°C	See SCD40 datasheet.

Recommended operating conditions.

Physical Dimensions

- Module size: 32 mm × 18 mm. Please download the assembly diagram for exact numbers.
- Mating height with standard connectors: 5 mm.

PCB thickness: 1.6 mm.

Currently Offered Variants

Trenz shop CR00040 overview page	
English page	German page

Revision History

Hardware Revision History

Date	Revision	Changes	Documentation Link
	01	Initial	

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

Error rendering macro 'page-info' Ambiguous method overloading for method jdk.proxy279.$Proxy4022#hasContentLevelPermission. Cannot resolve which method to invoke for [null, class java.lang.String, class com.atlassian.confluence.pages.Page] due to overlapping prototypes between: [interface com.atlassian.confluence.user.ConfluenceUser, class java.lang.String, class com.atlassian.confluence.core.ContentEntityObject] [interface com.atlassian.user.User, class java.lang.String, class com.atlassian.confluence.core.ContentEntityObject]	**Error rendering macro 'page-info'** Ambiguous method overloading for method jdk.proxy279.$Proxy4022#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]	**Error rendering macro 'page-info'** Ambiguous method overloading for method jdk.proxy279.$Proxy4022#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]	• added figure
24 Mar 2021	v.13	Antti Lukats	• Initial version

--	all	**Error rendering macro 'page-info'** Ambiguous method overloading for method jdk.proxy279.$Proxy4022#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]	• Created from template

Document change history.

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