### **CR00040 TRM**

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### Overview

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

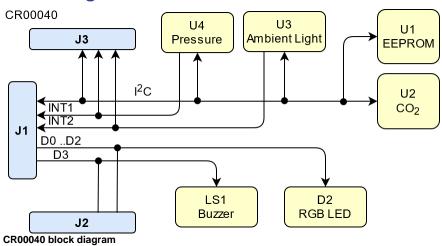
Refer to http://trenz.org/cr00040-info for the current online version of this manual and other available documentation.

#### **Key Features**

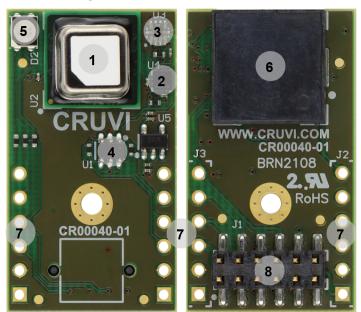
- EEPROM/Unique Identifier
  - ° 24AA025E48
- CO2 Sensor (temperatur/humidity)
  - SCD40 or SCD41 or none (depending on assembly variant)
- Air Pressure Sensor
  - ° LPS22HB
- Ambient Light Sensor

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

# **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 unpopulated 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**

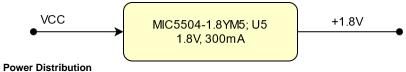
Power supply with minimum current capability of TBD A is recommended.

### **Power Consumption**

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

#### **Power Consumption**

# **Power Distribution Dependencies**



### **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)

<sup>\*</sup> TBD - To Be Determined

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	Тур	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 x 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

**Trenz Electronic Shop Overview** 

# **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	
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added figure

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24 Mar 2021 v.13 Antti Lukats

• Initial version

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Document change history.

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### **Data Privacy**

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

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