



LRDVK17INTERFACE User Guide

EFR32 LoRa® Shield Interface Board (PCB_E707V02C, BRD8102A)

Interfaces an LR-series radio shield to an EFR32 Development Kit for application firmware development.



Description

The LRDVK17INTERFACE (Silicon Labs Board ID: BRD8102A) is an interface board connecting the Silicon Labs EFR32 Development Kit (P/N: XG24-PK6010A) and any LR-series radio shield (ex. LR1110MB1LBKS). It is designed to work with the Silicon Labs Simplicity Studio Extension for Amazon Sidewalk version Simplicity SDK 2025.06 or later, which supports Semtech's LR-series transceivers.

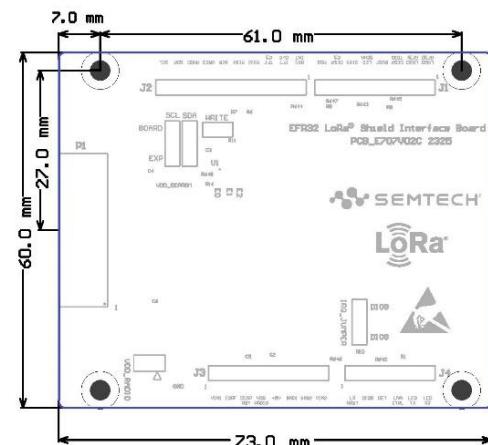
FEATURES

- For EFR32 Development P/N: XG24-PK6010A
- Supports Semtech development kit with Arduino headers for LR1110 (active/passive), LR1120 (active/passive), LR1121, LR2021
- Test points for Arduino headers and VDD (current measurement)
- EEPROM for identification in Simplicity Studio 5

Applications

- Amazon Sidewalk connectivity
- LoRaWAN® connectivity
- Geolocation (GNSS, Wi-Fi scan)
- Proprietary LoRa® protocol development

Package Dimensions

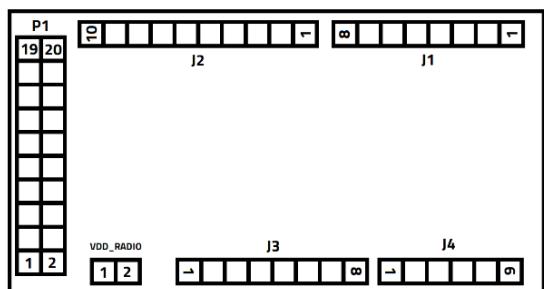


73 x 60 mm, Screw holes: M3 free (3.5 mm)

Characteristics

- Arduino style headers: J1, J2, J3, J4
- Main Board Extender 20-pin header: P1
- Selection jumpers for I²C and IRQ routing
- Pre-flashed EEPROM for board identification in Simplicity Studio 5 software
- Labeled test points for J1, J2, J3, J4 pins

Pin Configuration



Pin Mapping

P1	EXP	NAME	J1-J4	ARDUINO
1	GND	GND	2-7	GND
3	PB05	LNA_CTRL	4-4	A3
5	PA00	SNIFFING	1-5	D4
7	PA05	LED_TX	4-5	A4
9	PD02	LED_RX	4-6	A5
11	PDA06	ACC_INT1	2-1	D8
13	PA07	BUSY	1-4	D3
15	PC05	I2C_SCL	2-10	D15
17	B_SLC	BOARD_ID_SCL		
19	B_SDA	BOARD_ID_SDA		

P1	EXP	NAME	J1-J4	ARDUINO
2	VMCU	VDD_RADIO	3-4	+3V3
4	PC01	MOSI	2-4	D11
6	PC02	MISO	2-5	D12
8	PC03	SCK	2-6	D13
10	PC00	NSS	1-8	D7
12	PA08	DIO9 (LR11xx) DIO8 (LR20xx)	1-6 4-2	D5 A1
14	PA09	LR_NRESET	4-1	A0
16	PC07	I2C_SDA	2-9	D14
18	5V	EXP_5V	3-5	+5V
20	3V3	VDD_EEPROM		

Assembly

KIT HARDWARE REQUIREMENTS

- **EFR32 LoRa® Shield Interface Board** (P/N: LRDVK17INTERFACE)
- **Silicon Labs EFR32 Radio Board**; Options:
 - [EFR32MG24 Mighty Gecko Transceiver Evaluation Board](#) (P/N: XG24-PK6010A)
 - [Pro Kit for Amazon Sidewalk](#) (P/N: KG100S-PK6130A)
 - (These kits include a Mainboard and an EFR32MG24B Radio Board [supported: BRD4186B, BRD4186C, BRD4187B, or BRD4187C])
- **LR1110 LoRa® Shield 915 MHz for North America**; Options:
 - [Mbed Shield, LR1110](#) (P/N: LR1110MB1LBKS, contains 1 shield with passive GNSS antenna), order [Nucleo-L476RG](#) separately if needed.
 - [Development Kit, LR1110](#) (P/N: LR1110DVK1TCKS, contains 2 shields with active/passive GNSS antennas, Nucleo-L476RG, touchscreen)
- Sidewalk coverage; options:
 - [Amazon Echo v4](#) Sidewalk CSS/FSK/BLE enabled gateway
 - Existing local Sidewalk coverage
- **USB cable** and host computer or power supply
- **915 MHz antenna** (included in shield kit)
- **GNSS antenna** (included in shield kit, active/passive antenna for active/passive LR1110 shield variant)
- **2.4 GHz antenna** (included in shield kit)

KIT FIRMWARE/SOFTWARE REQUIREMENTS

- **Application** firmware for Silicon Labs EFR32x MCU family and the attached LoRa® shield (compiled .hex)
- LR11xx [microcode](#) firmware updater SWTL001 (for Nucleo host on LoRa-net/SWTL001)
- [Amazon Sidewalk manufacturing](#) page for Silicon Labs EFR32xG24 (.hex)
- **Firmware development environment;** Options:
 - [Simplicity Studio 5](#)
 - Visual Studio Code with the [Simplicity Studio for VS Code](#) extension
 - Simplicity Commander Tool (included in Simplicity Studio 5) with pre-compiled firmware files
- J-Link [RTT Viewer](#) (v7.84 or later)

ASSEMBLY

1. Plug the LR1110 LoRa® Shield's **J1-J4** into the EFR32 LoRa® Shield Interface Board's **J1-J4**.
2. Ensure **VDD_RADIO jumpers** are mounted on both boards.
3. Plug the EFR32MG24 Mainboard's **expansion header (EXP)** into the EFR32 LoRa® Shield Interface Board's **P1**.
4. Power on the board by plugging in the USB cable to the host computer.

OPERATION

5. If not done in the past, update the LR11xx microcode by flashing the **updater tool firmware** to the Nucleo board with the LoRa® Shield mounted. The current supported version at the time this guide was written is: lr1110_trx_0x0401.bin
6. Power on the **gateway** or be in an area with existing coverage for the desired link type (LoRa®/CSS, FSK, or BLE).
7. If not done in the past, erase the flash and flash the **manufacturing file**.
8. Flash the **application firmware** using Simplicity Commander or Visual Studio Code. After it's complete, unplug the USB and plug it back in to power on.
9. To observe the serial output, launch J-Link RTT Viewer. Connect to the board through USB using the detected target device profile (used: EFR32MG24BxxF1536).

For detailed hardware and software instructions, visit the Silicon Labs webpage "[Developing with Amazon Sidewalk](#)."

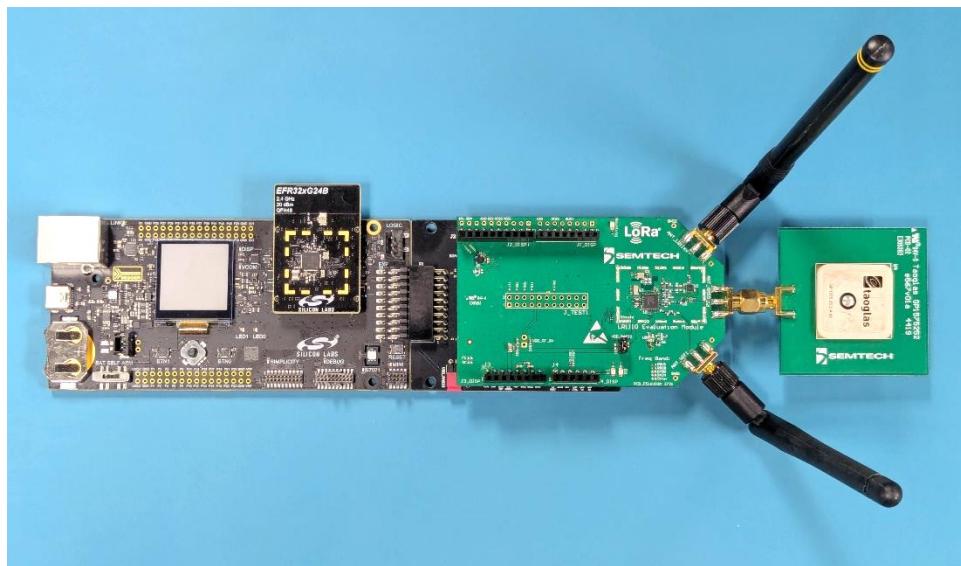
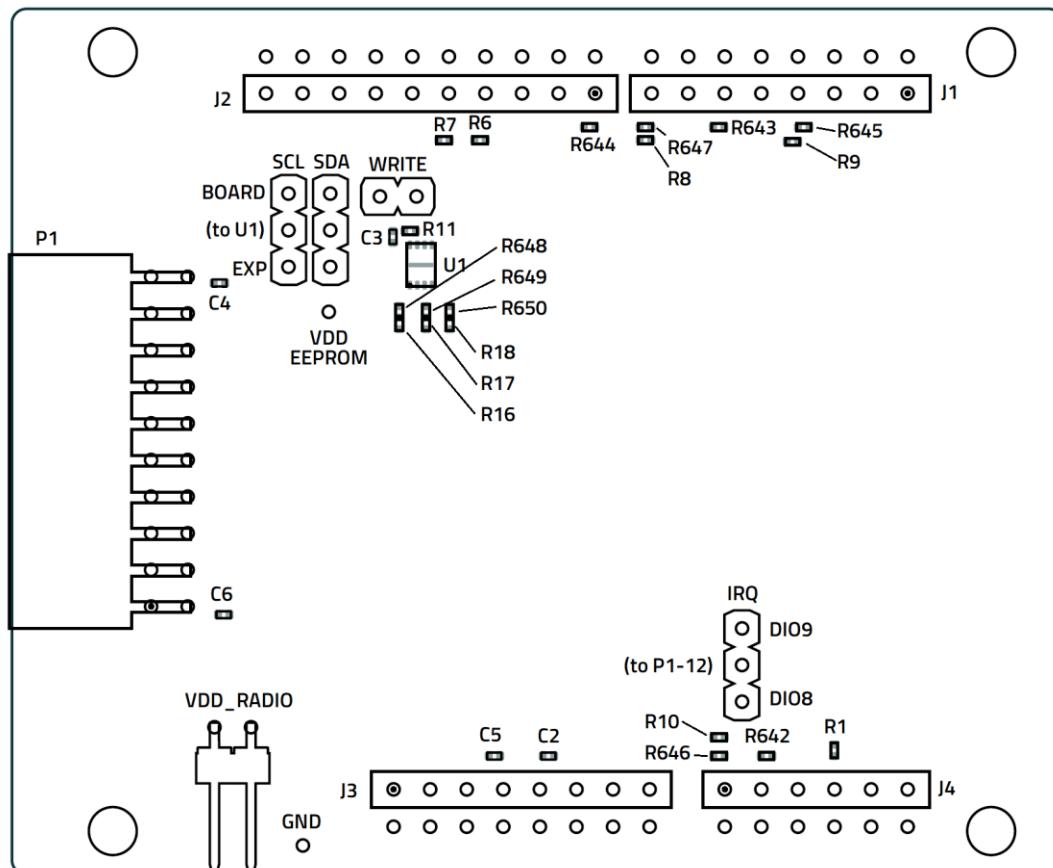


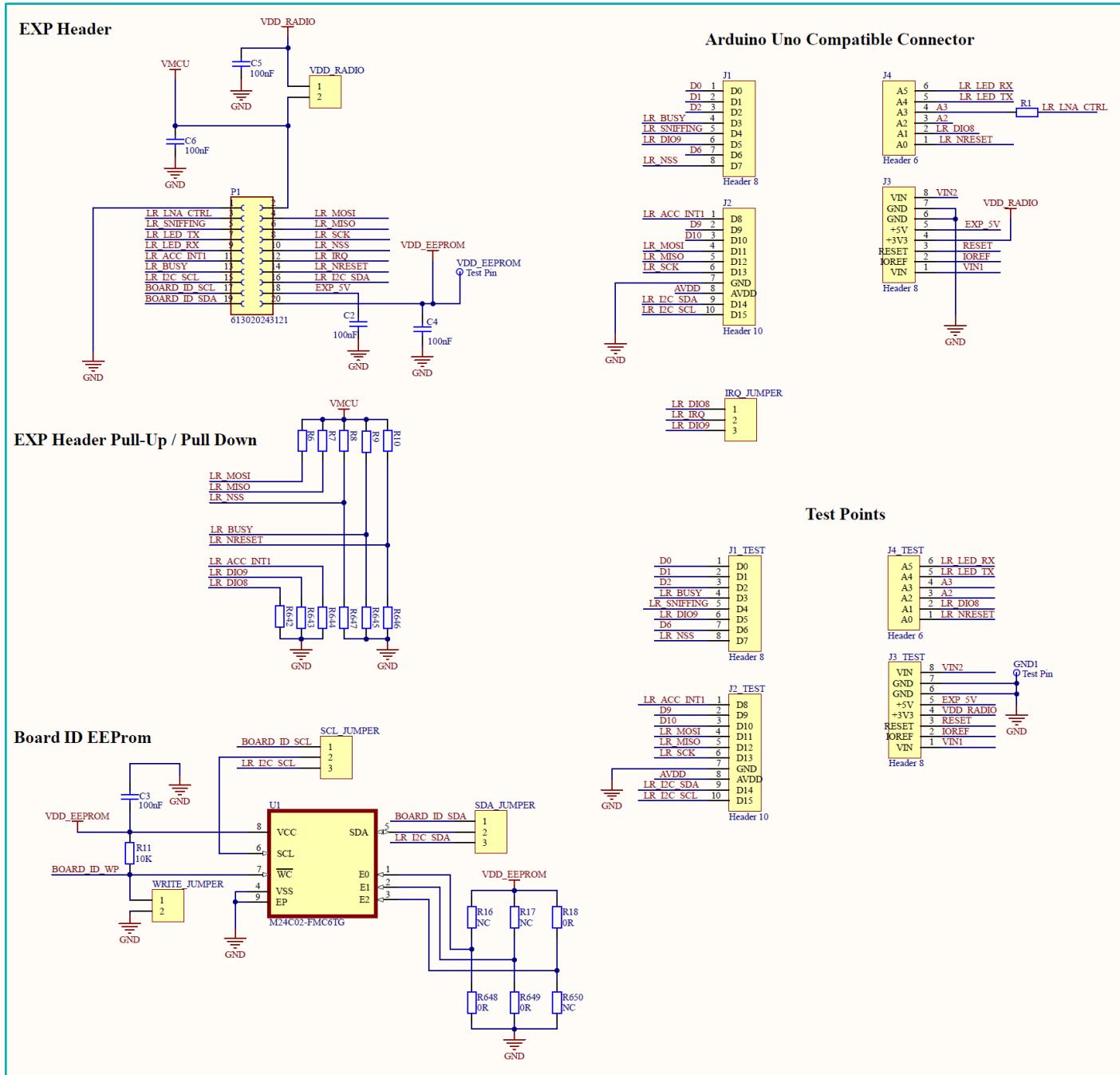
Figure 1, Assembled EFR32 + LR1110 (passive) kit

ADDITIONAL HARDWARE TIPS

- To probe J1 to J4 pins, use the adjacent test point, labeled as the typical name used in the LR-series radio shield's schematic. Only those needed for typical use are connected to P1, so if any others are needed for custom firmware development, these test points can be used to flywire other connections. Some of these test points might also be available on the LR-series radio shield. For easier access to test points, solder a 1x6/8/10 right-angle header such as Adam Tech P/N: PH1RB-0x-UA to top or bottom.
- To measure current consumption of the LR1110, disconnect the VDD_RADIO jumper and connect an ammeter in series to the jumper pins.
- Mounting the SCL and SDA jumpers to the BOARD positions (to P1-17 and P1-19) connects the mainboard to the EEPROM's I2C and allows Simplicity Studio 5 and Simplicity Commander to identify the interface board and list its name and board number in the devices list. These are stored in the on-board EEPROM.
- Mounting the SCL and SDA jumpers to the EXP positions (to P1-15 and P1-16) connects the mainboard to the EEPROM's I2C and the LoRa® Shield's I2C for accelerometer use on LR1110. The interface board may not show in the devices list in this configuration.
- The WRITE jumper is mounted during the EEPROM flashing process (already completed). VDD_EEPROM is available as a test point, typically +3.3V. Resistor jumpers near the E0 to E2 labels pull those pins to +3.3V (positions R16, R17, R18) or to Ground (R648, R649, R650) and do not typically need to be changed, but solder pads are available if they do.
- IRQ_JUMPER is used to connect PA08 (P1-12) to the appropriate Arduino header, DIO9 (J1-6, D5) for LR11xx and DIO8 (J4-2, A1) for LR20xx. The jumper options are labeled as DIO9 and DIO8 for convenience.
- If pull-up or pull-down are needed, solder resistors to the available unpopulated pads next to J1 to J4. For some connections this is possible through firmware using the LR-series transceiver's internal pull-up/down commands.
- The screw holes align horizontally with those of the mainboard, so the 4 mounting holes around P1 form a 54.0 x 20.0 mm rectangle. Screwing to a solid base plate or small top plate can prevent accidental unplugging of P1. The mounting holes are slightly larger on the interface board (M3 free, 3.5 mm) than on the mainboard (M3 tight, 3.0 mm) to allow for fabrication tolerance.

Assembly Drawing and Schematic





Order Information

Part Number	Qty	Packaging	Vendor	Ships from	COO
LRDK17INTERFACE	1	Individual	Digi-key	Camarillo, US	CN
LRDK17INTERFACE	1	Individual	Mouser	Camarillo, US	CN

Revision History

Version	ECO	Date	Changes
1.0	ECO-075739	June 2025	Document Creation



Important Notice

Information relating to this product and the application or design described herein is believed to be reliable, however such information is provided as a guide only and Semtech assumes no liability for any errors in this document, or for the application or design described herein. Semtech reserves the right to make changes to the product or this document at any time without notice. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. Semtech warrants performance of its products to the specifications applicable at the time of sale, and all sales are made in accordance with Semtech's standard terms and conditions of sale.

SEMTECH PRODUCTS ARE NOT DESIGNED, INTENDED, AUTHORIZED OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT APPLICATIONS, DEVICES OR SYSTEMS, OR IN NUCLEAR APPLICATIONS IN WHICH THE FAILURE COULD BE REASONABLY EXPECTED TO RESULT IN PERSONAL INJURY, LOSS OF LIFE OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. INCLUSION OF SEMTECH PRODUCTS IN SUCH APPLICATIONS IS UNDERSTOOD TO BE UNDERTAKEN SOLELY AT THE CUSTOMER'S OWN RISK. Should a customer purchase or use Semtech products for any such unauthorized application, the customer shall indemnify and hold Semtech and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs damages and attorney fees which could arise.

The Semtech name and logo are registered trademarks of the Semtech Corporation. All other trademarks and trade names mentioned may be marks and names of Semtech or their respective companies. Semtech reserves the right to make changes to, or discontinue any products described in this document without further notice. Semtech makes no warranty, representation or guarantee, express or implied, regarding the suitability of its products for any particular purpose. All rights reserved.

© Semtech 2023

Contact Information

Semtech Corporation
 Wireless & Sensing Products
 200 Flynn Road, Camarillo, CA 93012
 Phone: (805) 498-2111, Fax: (805) 498-3804
www.semtech.com