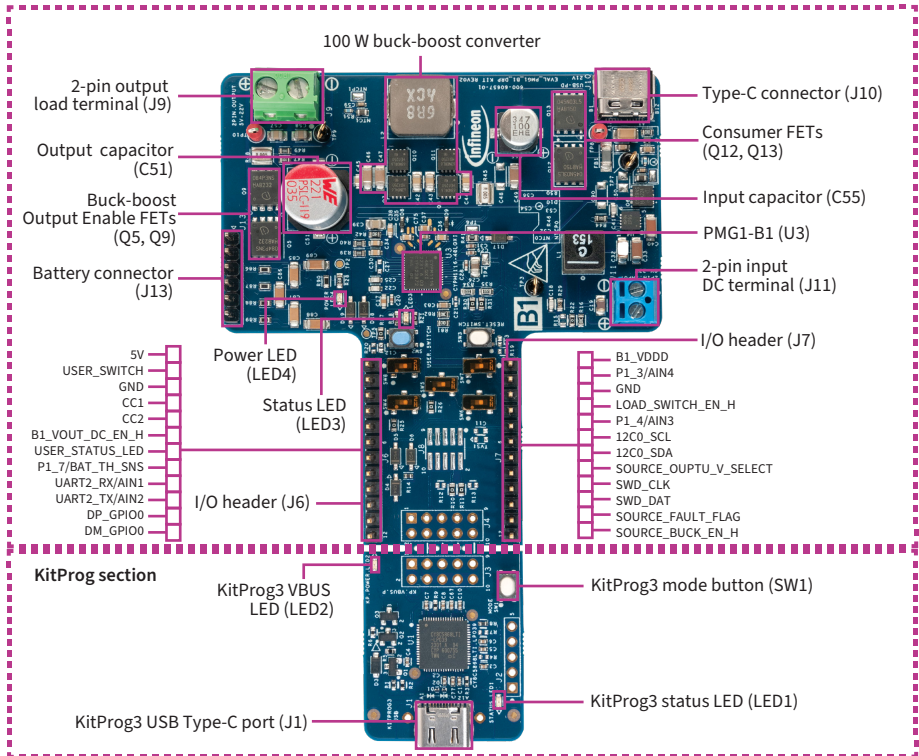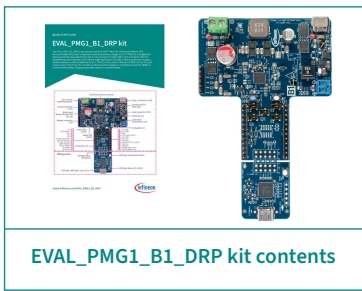# EVAL_PMG1_B1_DRP kit
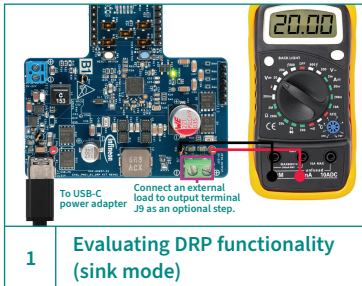
The EVAL_PMG1_B1_DRP is an evaluation kit for EZ-PD™ PMG1-B1 USB Power Delivery (PD) Microcontroller (MCU) with integrated buck-boost battery charger. EZ-PD™ PMG1-B1 is targeted for battery powered applications that sink or source power through USB-C port and needs a MCU to implement product features. Some of the target applications include cordless power tool chargers, wireless speakers, and portable electronics. The kit can be used to sink up to 100 W (20 V @ 5 A) and source up to 27 W (9 V @ 3 A). The kit can also be used to charge 2-5 cell batteries with the ability to customize the battery charging algorithm based on customer needs.


- 2-pin output load terminal (J9)
- Output capacitor (C51)
- Buck-boost Output Enable FETs (Q5, Q9)
- Battery connector (J13)
- 100 W buck-boost converter
- Type-C connector (J10)
- Consumer FETs (Q12, Q13)
- Input capacitor (C55)
- PMG1-B1 (U3)
- 2-pin input DC terminal (J11)
- I/O header (J7)

Power LED (LED4)
Status LED (LED3)
I/O header (J6)

I/O header (J6) labels (left):
- 5V
- USER_SWITCH
- GND
- CC1
- CC2
- B1_VOUT_DC_EN_H
- USER_STATUS_LED
- P1_7/BAT_TH_SNS
- UART2_RX/AIN1
- UART2_TX/AIN2
- DP_GPIO0
- DM_GPIO0

I/O header (J7) labels (right):
- B1_VDDD
- P1_3/AIN4
- GND
- LOAD_SWITCH_EN_H
- P1_4/AIN3
- I2C0_SCL
- I2C0_SDA
- SOURCE_OUPTU_V_SELECT
- SWD_CLK
- SWD_DAT
- SOURCE_FAULT_FLAG
- SOURCE_BUCK_EN_H

KitProg section

- KitProg3 VBUS LED (LED2)
- KitProg3 mode button (SW1)
- KitProg3 USB Type-C port (J1)
- KitProg3 status LED (LED1)

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EVAL_PMG1_B1_DRP kit contents

Before you start
− Ensure that you have a USB PD 3.1 capable USB-C power adapter (e.g., Apple 96 W USB-C power adapter) with a compatible USB PD 3.1 capable Type-C cable.
− Ensure that you have a power supply or AC/DC power adapter with 15V, 2A.

To USB-C power adapter

Connect an external load to output terminal J9 as an optional step.

| 1 | **Evaluating DRP functionality (sink mode)** |

Step 1: Evaluating DRP functionality (sink mode)
1 Connect the USB-C PD port (J10) of the EVAL_PMG1_B1_DRP kit to the USB-C power adapter using the USB-C cable.
2 To confirm that board is powered, verify that LED4 (Power LED) is ON (green). Additionally, verify that LED3 (Status LED) is blinking (green) to confirm the sink mode functionality.
3 (Optional): Connect a DC load (with 20 V and less than 14 W of power) to the output terminal (J9 - green color) of the EVAL_PMG1_B1_DRP kit. Verify that the output voltage is 20 V across the test points TP10 (+ve) and TP9 (GND) using a multimeter.

DC power supply

To any USB-C sink device

| 2 | **Evaluating DRP functionality (source mode)** |
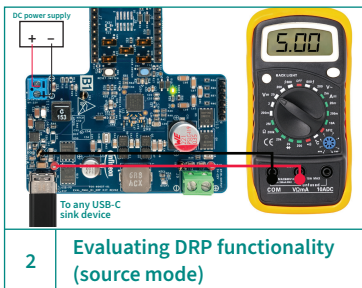
Step 2: Evaluating DRP functionality (source mode)
1 Disconnect all connections from the previous step and connect a 12 V to 20 V DC power supply with up to 3 A current rating to the input DC terminal (J11 - blue color).
2 Connect the USB-C sink device (e.g., a USB-C capable phone or a laptop supporting USB-C charging) to the USB-C PD port (J10) using a USB-C cable.
3 Verify that LED4 (Power LED) is ON (green) to confirm that the board is powered and LED3 (Status LED) is ON (green) to confirm source mode functionality.
4 Verify the charging status on the connected device. Optionally, using a multimeter, measure the voltage between test points TP8 (+ve) and TP7 (GND). The voltage should either be 5 V or 9 V depending on the connected USB-C sink device.

Next steps
− Download and unzip the EVAL_PMG1_B1_DRP release package from the EVAL_PMG1_B1_DRP kit webpage (**www.infineon.com/EVAL_PMG1_B1_DRP**).
− See the EVAL_PMG1_B1_DRP kit user guide (available as part of the EVAL_PMG1_B1_DRP kit release package) to learn more about the kit features and how to develop applications using ModusToolbox™ software.

QR label to be placed on this box