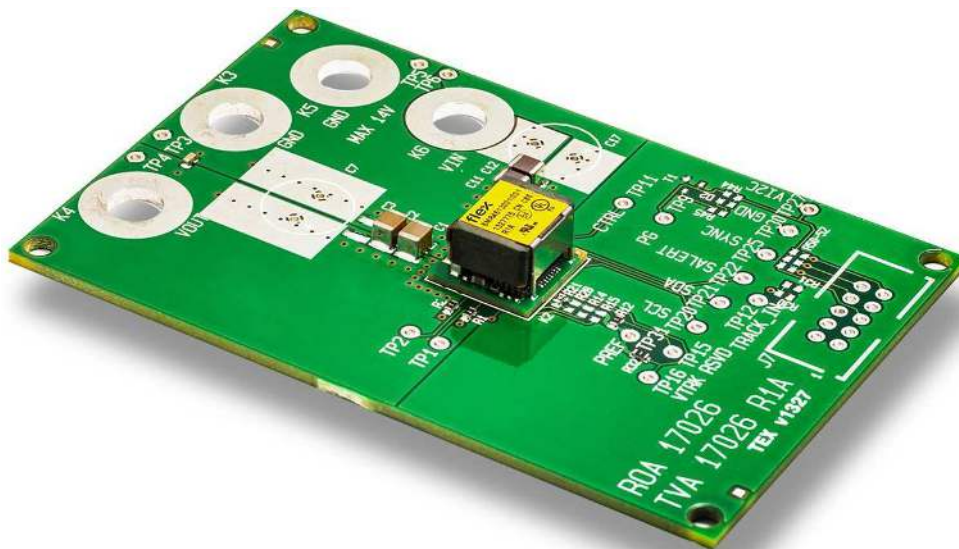




# POL BMR461 Simple Evaluation Board

ROA 170 26

User Guide



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# 1 Introduction

This User Guide provides a brief introduction and instruction on how to use the Evaluation board ROA 170 26. This board provides the possibility to evaluate the BMR 461 module. The ROA 170 26 board is a part of the 3E Design Kit.

## 1.1 Prerequisites

In order to operate the ROA 170 26 board the following is needed:

- Power supply 5-14 V.
- One or more BMR 461 modules, the module is soldered onto the board at delivery.
- PMBus-to-USB adaptor Flex Power KEP 910 17.
- The “Flex Power Power Designer” software package and a compatible Windows PC (see reference 1 for details). Users must be familiar with the Windows® operating system.

At delivery only a few components are mounted on the board, see picture below.

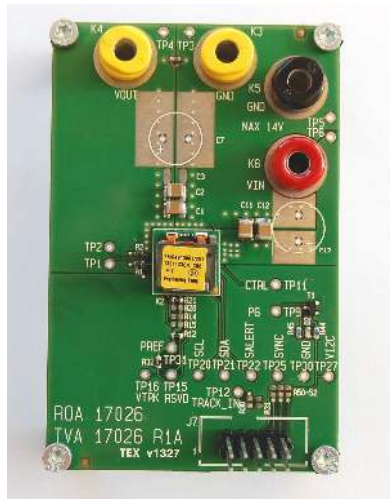
The pre-populated components are enough to operate the module standalone with static load. The customer may populate the board with additional components for better performance and/or additional functionality according to the table below.

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Function	Pos	Component example
Vin/Vout connection	K3-K6	Banana jacks
PMBus communication	J7	2x5 pin 2.54 mm header
Power good LED	R44, R45	1 kohm 5% resistor 0603
	D2	Green LED 0603
	T1	N-FET SOT23, e.g. 2N7002
PMBus address change	R14, R15	See section Pinstrap Resistors
Tracking	R30, R31	See section Pinstrap Resistors
Input capacitance	C17	The board is pre-populated with a reduced amount of input capacitance. Additional input capacitance is needed if the load is dynamic, especially at higher output voltages.
Output capacitance	C3, C7	Additional output capacitance can be populated to improve voltage deviation at load transients.

## 2 Evaluation Board ROA 170 26

Power the board by connecting 5-14V DC power to the “Vin” and “Gnd” connectors (1a-1b. Figure 1).

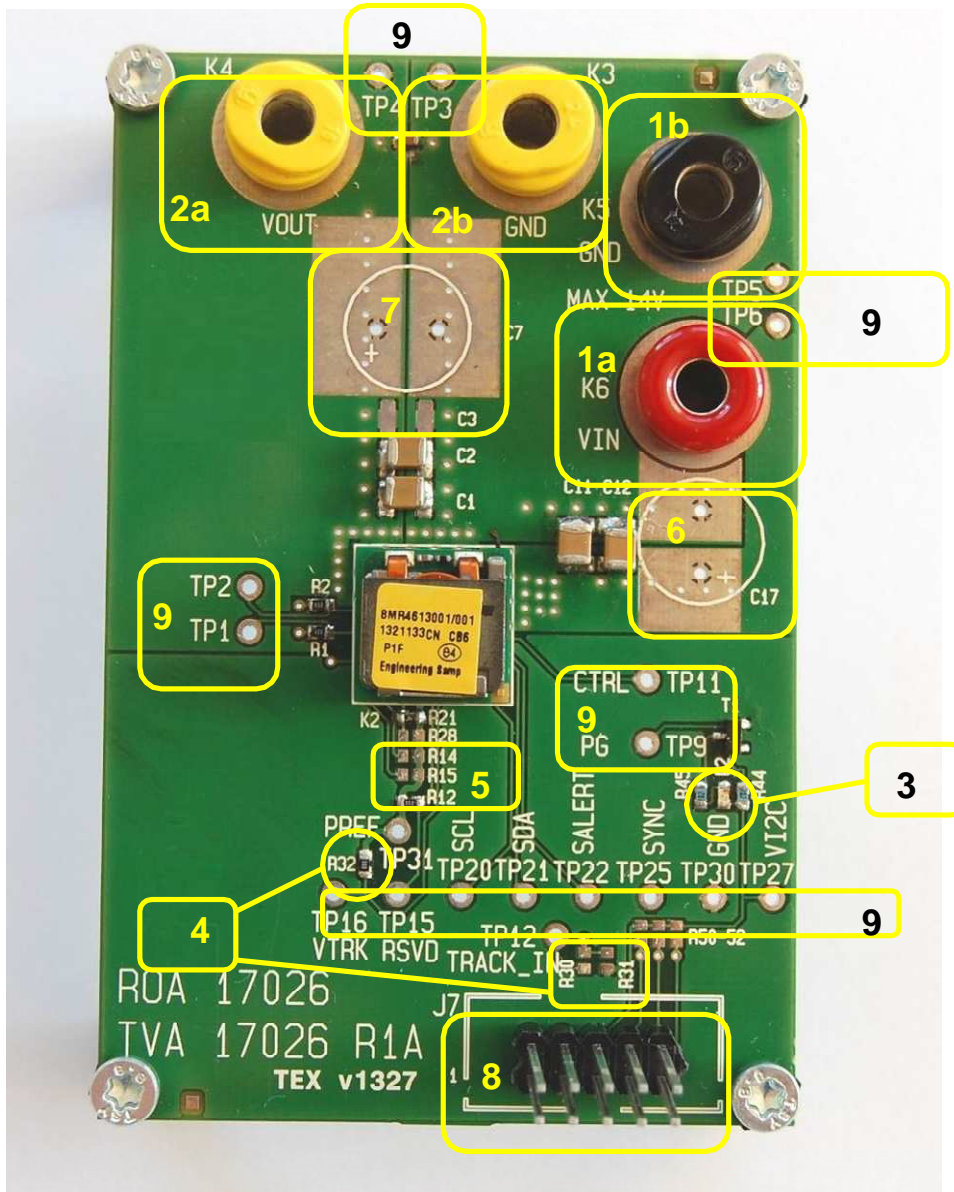


Figure 1. ROA 170 26 (top side).

### Position Description

- 1a Input voltage connector.
- 1b Input voltage connector GND.
- 2a Output voltage connector.
- 2b Output voltage connector GND.
- 3 Power good LED.
- 4 Pinstrap resistors.
- 5 Address resistors.
- 6 Space for additional input capacitors.
- 7 Space for additional output capacitors.
- 8 Connector for the Flex Power KEP 910 17 PMBus-to-USB adaptor.
- 9 Test points.

## 3 USB to PMBus adaptor

The USB to PMBus adaptor used with this board is the Flex Power KEP 910 17.

### 3.1 Connection of Flex Power KEP 910 17 USB to PMBus adaptor

Connect the Flex Power KEP 910 17 USB to PMBus adaptor, (8, Figure 1).

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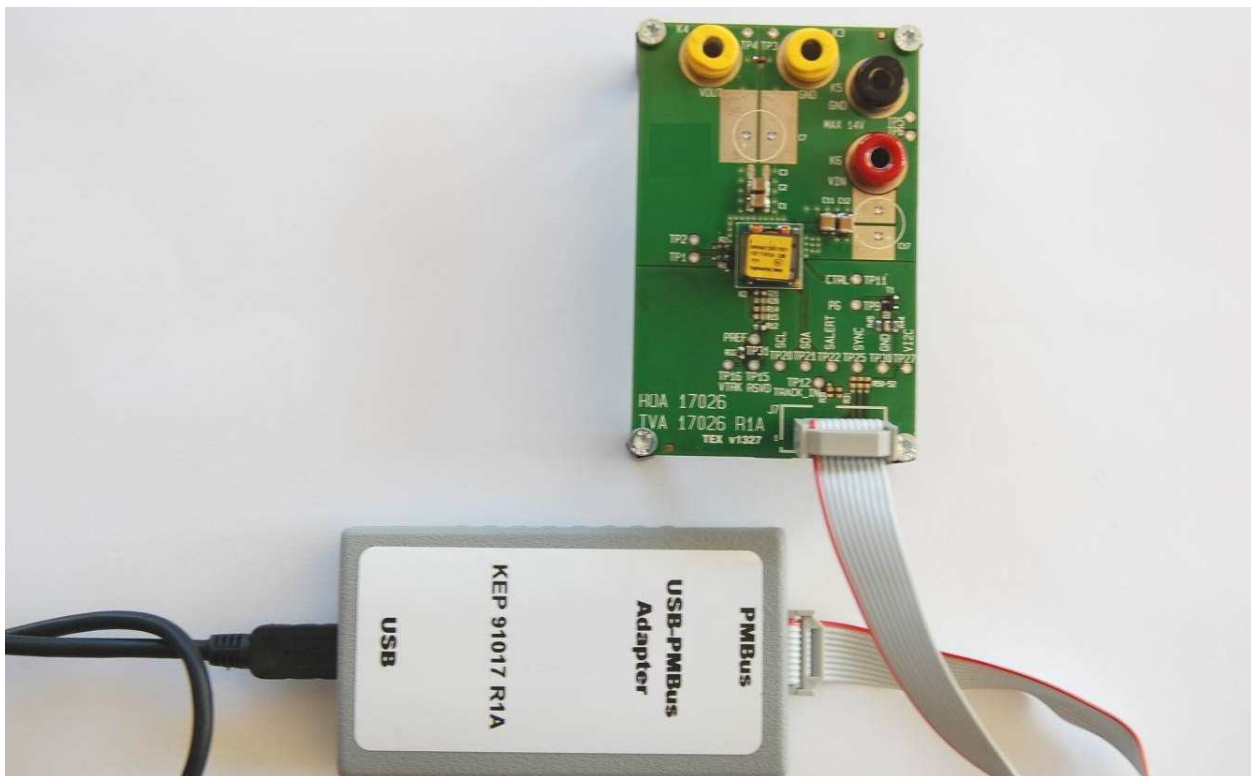


Figure 2. Connection of the Flex Power KEP 910 17 USB to PMBus adaptor.

## 4 Power-up and Power-down Instructions

### 4.1 Power-up instruction

- Make sure pinstrap resistors are properly set according to section 5.
- Connect the PMBus Adapter/Cable to the board.
- Connect and turn on the 5-14 V supply
- Start the software program.
- The power good LED should now give green light. The LED is controlled by PG output of BMR 461, but supplied from PMBus Adapter/Cable.

### 4.2 Power-down instruction

- Turn off position or turn Off the 5-14V supply.



## 5 Pin-strap resistors

This section describes the pin-strap resistors.

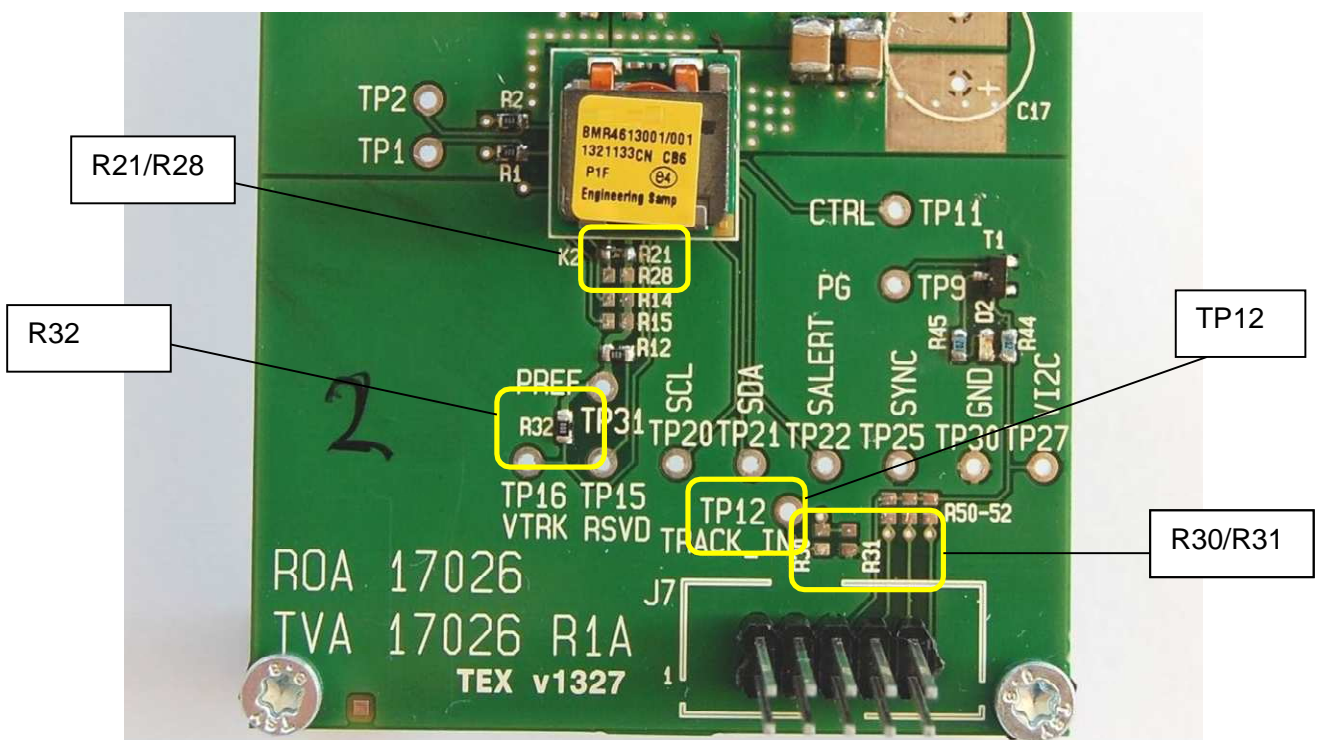


Figure 5.1 Pinstrap resistors.

The board can be operated in two different modes:

1. Normal mode (default):
  - a) Populate a 0 Ohm resistor in position R32 (CS\_VTRK pin to PREF).
  - b) Populate the desired output voltage pin-strap resistor in position R21 or R28 (VSET pin to PREF).

2. Tracking mode:
  - a) Make sure position R32 is not populated.
  - b) Populate a 0 ohm resistor in position R21 or R28 (VSET pin to PREF).
  - c) Populate a voltage divider in positions R30/R31 and apply the external tracking voltage to TP12. Note that in the technical specification for BMR 461 the tracking resistors are denominated R1 and R2. R1 corresponds to R31 and R2 to R30 on the board.

### 5.1 Adjustment of address resistors

To change the address change the resistor values as shown in fig. 5.2.

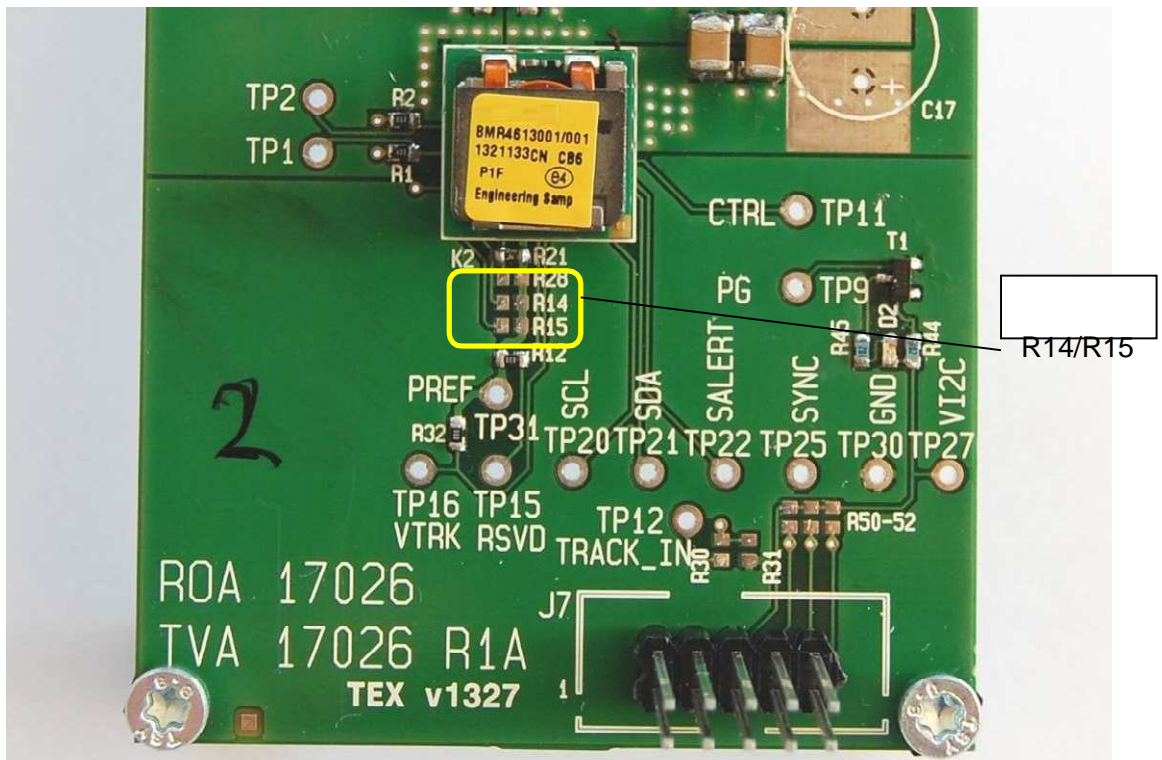


Fig 5.2 Address resistors.

Change resistors R14 (SA0 set) and R15 (SA1 set) to achieve the desired PMBus address. Refer to chapter “PMBus addressing” in the technical specification to select the values of R14 and R15.

## 6 Test Points

Input voltage should be measured at test points TP5/TP6 which are connected to the VIN plane of the board.

TP1/TP2 together with de-population of R1/R2 allows connection of external sense points.

Test points are provided for most signals according to printing on the test board.

## 7 Additional input and output capacitance

If additional input or output capacitance is desired, the possibility exists to mount extra electrolytic and/or ceramic capacitors. See fig 7.1

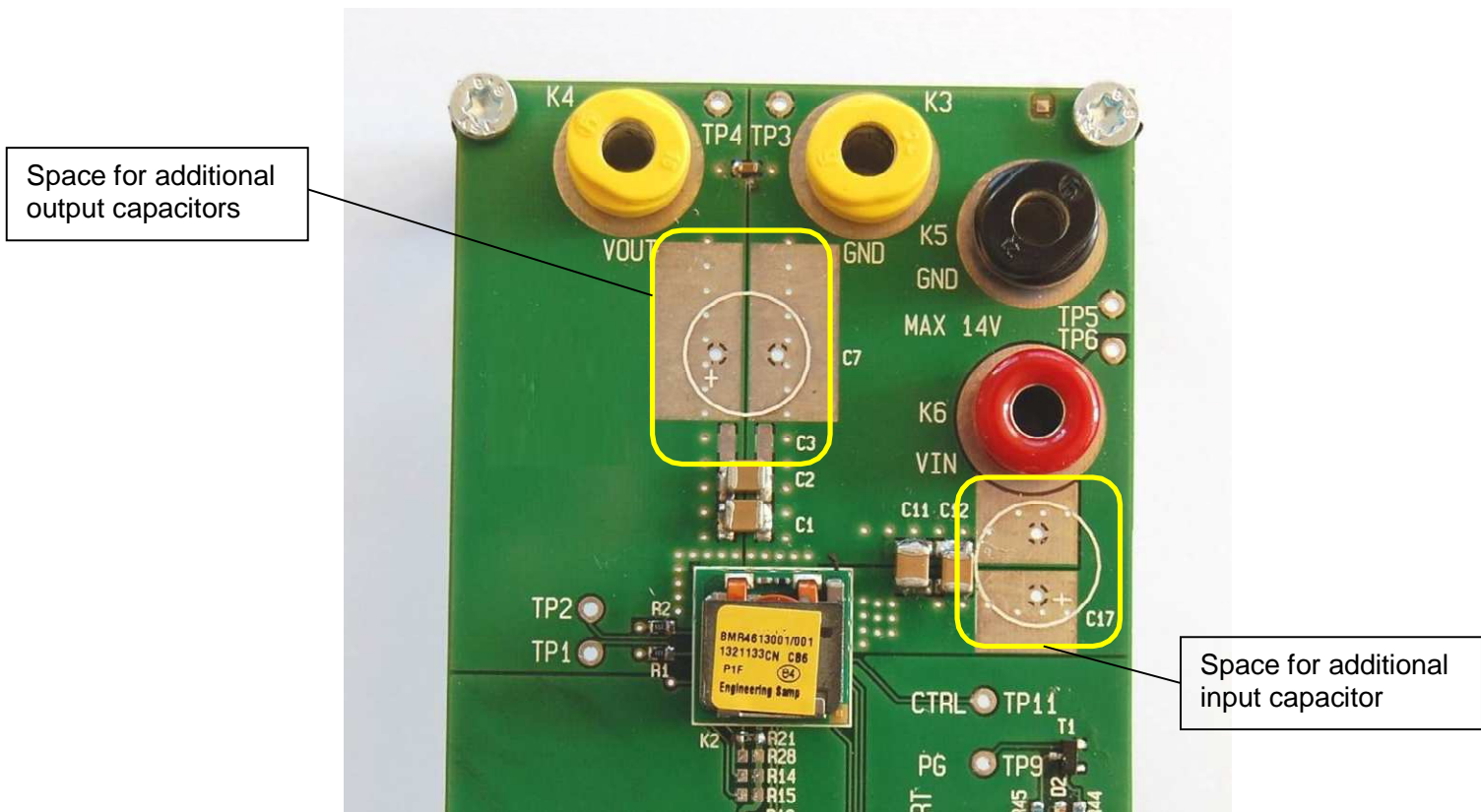


Fig 7.1 Space for additional capacitors.

At the bottom side of the board there is space for another 3 ceramic output capacitors.