

Data Sheet/User Manual

LNF-BOB

Eight Channel Break Out Box for Powering Low Noise HEMT Power Supplies





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1. Introduction

Before start using this product read this manual thoroughly.

Warning: This unit is ESD (electrostatic discharge) sensitive and, therefore, proper ESD precautions must be taken. Exposing to high energy ESD can lead to degraded performance or even permanent damage to the unit.

Warning: This unit must be wired as it is proposed in this section. Improper wiring can cause degradation of the performance or even fatal consequences like permanent damage of the unit.

Warning: This unit must be used withing specified limits – see Table 1, Table 2 and Table 3. Using it outside specified boundaries can cause degradation of the performance or even fatal consequences like permanent damage of the unit.

The LNF-BOB (Break Out Box) is intended to be used as adapter between LNF HEMT bias power supplies (up to eight units) and a standard customer supplied low noise (preferably linear) power supply which can provide with voltage of +/-12VDC and current up to +/-10A.

It is equipped with eight 3-Pin male M8 connector for connecting LNF-PSs and two banana connectors for connecting Common (GND) to Protection Earth (PE). The power entry is provided with reliable binding post connectors on its rear panel to ensure safe operation.

The enclosure is of 1U 10” size which provides with possibility to integrate it in a standard rack system.

2. Specifications

Input					
DC Supply Voltage	Description	Min	Nom	Max	Unit
V+	+12 V rail input voltage range	0	12	15	VDC
V-	-12 V rail input voltage range	-15	-12	0	VDC
I+	+12 V rail input current range	0	-	10	A
I-	-12 V rail input current range	0	-	10	A

Table 1 Input DC Ratings

Out 1 through Out 8					
Parameter	Description/Conditions	Min	Nom	Max	Unit
V+	Positive output voltage to HEMT power supply	0	12	15	VDC
V-	Negative output voltage to HEMT power supply	-15	-12	0	VDC
I+	Sum of Out 1 through Out 8 currents must not exceed 10A	0	-	1.5	A
I-	Sum of Out 1 through Out 8 currents must not exceed 10A	0	-	1.5	A

Table 2 Output DC Ratings

Environmental					
Parameter	Description/Conditions	Minimum	Nominal	Maximum	Unit
Storage Temperature		-40		85	°C
Operating Temperature		5		40	°C
Relative Humidity ¹	Non-Condensing	5		80	%RH

Table 3 Environment Requirements

¹ The LNF-BOB is for indoor use only, Pollution Degree 2.

Physical	
Weight	~720 g
Dimensions as bench top: Without mounting flanges	253 (W) x 50 (H) x 152 (D) millimeters 217 (W) x 50 (H) x 152 (D) millimeters
Dimensions as 10" sub-rack : With mounting flanges attached	217 (W) x 44 (H) x 152 (D) millimeters

Table 4 Physical Data

3. Description

The LNF-BOB has connectors on both front and rear panel. Figure 1 and Figure 2 are showing them:



Figure 1 LNF-BOB Front Panel



Figure 2 LNF-BOB Rear Panel

3.1. Front Panel

The front panel is equipped with eight M8 3-position connectors (manufacturer part number: T4040034031-000) for connecting LNF-PS3b, LNF-PS4 and LNF-PS8. The pinout is shown in Figure 3.



Figure 3 Out connector pinout - front view

The connectors are connected in parallel thus are sharing +, - and GND rails, i.e. are not isolated from each other. Each + and – pin (see Figure 3) is protected individually by using PTC resettable fuses with trip current 3A and hold current 1.5A.

Note: This is only to protect the connector from overload and care should be taken that normal load current is never more than its nominal, i.e. 1.5A. In case that the fuse trips the voltage of the specific Out which is overloaded is going to be much less than expected 12VDC which can cause malfunctioning of attached LNF-PS.

There are also two banana connectors on the front panel (see Figure 1 to the left) – one black (Common) and one green (Earth). They are used to connect Common (GND) to Chassi/Protective Earth (PE) in the house/local power grid. The connection to house Earth/local power grid is going to work only if it (Earth (PE)) is connected to the green binding post connector on the rear panel (see Figure 2). To connect between the Common (GND) and Earth (PE) banana connector you need: KURZ 19-4 IG MB NI / SW – please see Figure 4.

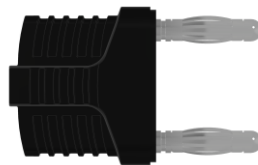


Figure 4 Jumper for connecting Common (GND) and Earth (PE)

Finally, there is a switch on the right side of the front panel (see Figure 1) which is accompanied with indication lamp – the green LED Outputs On/Off. The switch is used to turn On/Off all Outputs simultaneously.

The indication lamp has two main purposes:

- to indicate that Outputs are on - it does lit.
- to indicate that the incoming +/-rails from the power supply (see Figure 2) are swapped or some of them is missing – in both cases it does not lit.

3.2. Rear Panel

The rear panel (see Figure 2) is equipped with four binding post connectors for reliable connection to the PSU which is provided by the user. The nominal input voltage is +/-12 VDC but the LNF-BOB will work well from +/-9VDC to +/-15VDC without any problems.

3.3. Bottom Panel

The bottom panel is provided with four rubber feet to prevent sliding of the unit – see Figure 5.

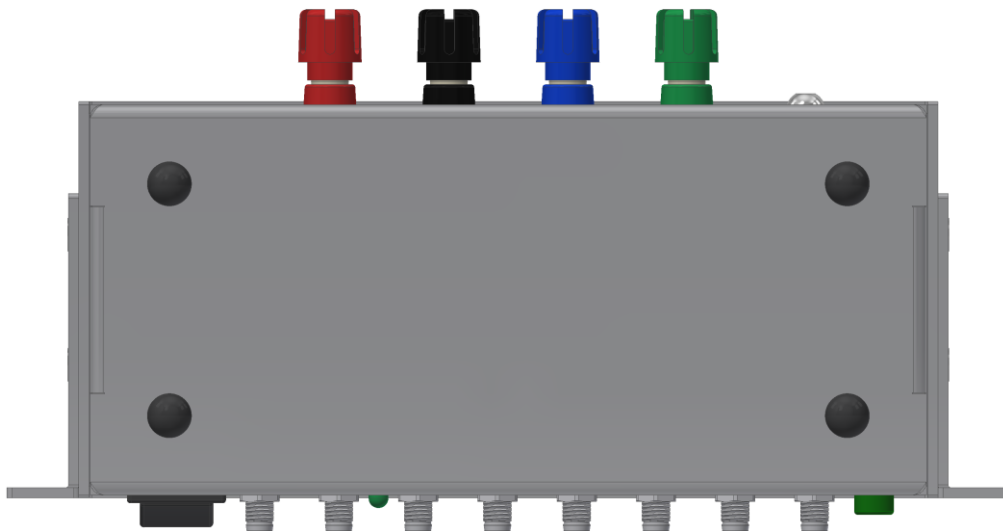


Figure 5 LNF-BOB Bottom Panel with four anti sliding rubber feet

4. Using the LNF-BOB

The LNF-BOB is designed to be used both as bench top instrument and as 10" 1U sub rack.

4.1. Placing the LNF-BOB

When it is used as bench top instrument it needs to be put on flat surface to ensure that it stands stably. In the case when it is used as 10" sub-rack, the mounting flanges shall be attached to the enclosure (see Figure 6). One pair of mounting flanges and four M4x12 screws are included.



Figure 6 Attaching mounting flanges to LNF-BOB

4.2 Connecting the LNF-BOB

The following is good practice when connecting the LNF-BOB:

- the binding post connectors have holes through their shafts (see Figure 7) – it is preferable to use those holes when connecting bare wires. One good way is to use a spade tongue terminal around the shaft of the binding post connectors. Be sure that you have tightened wires/spade tongue terminals with the binding posts in both cases before you use LNF-BOB. Using the binding post connectors as ordinary banana connectors is not recommended especially when PE must be used – there is a risk of unintentional pulling out the banana connectors.



Figure 7 LNF-BOB Rear Plane - Binding Post Connectors

- once the incoming power is connected, turn on the power supply and then switch on the LNF-BOB. If everything is connected correctly, the lamp (Outputs On/Off) on the front panel is lit indicating that both

+ and – rails are connected correctly. If it is not lit, please read the explanation of the function for the Outputs On/Off lamp in section 0. to solve the problem.

Note: The Outputs ON/OFF indicator does not signal issues with Common (GND) or Earth (PE) wiring, so care must be taken to avoid mistakes when making these connections.

- After confirming the incoming power is properly connected, turn off the LNF-BOB and connect your LNF PSs using the provided cables.
- switch on/off the LNF-BOB as needed.

In some situations, it can be necessary to have Common (GND) connected to Earth (PE), or in other words to not have your system floating. The jumper plug shown in Figure 4 is used for that purpose.



Figure 8 LNF-BOB –Plugging the Common (GND) to Earth (PE)

5. LNF-BOB Accessories

- 2 pcs Mounting Flanges
- 4 pcs M4x12mm flat head screws
- 1 pc Banana Jumper KURZ 19-4 IG MB NI / SW