## 144MHz 1KW HAM RADIO FULL RF POWER AMPLIFIER

### Low Pass Filter (LPF) & Directional Coupler on board

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**MAIN CHARACTERISTICS**

| | | NOTE |
|---|---|---|
| Modulation | **FM – SSB – CW – " JT 65 "** | |
| Operating Frequency Range | **48 ÷ 52 MHz** | |
| Output Power (@ 144 MHz ) | **≥ 1000 W** | |
| Input Power | **4 W ÷ 1 dB** | **Optional (30 - 35 W)** |
| Input V.S.W.R. (@ 144 MHz ) | **≤ 1, 1:5** | |
| Harmonic product ( internal Low Pass Filter ) | **≤ - 65 dBc** | |
| Impedance | **50 Ω (in/out)** | |
| Heat Sink Operating Working Temperature | **0 ÷ 70℃** | |
| Input RF connector | **SMA (F)** | |
| Output RF connector | **N (F)** | |
| Output RF testing connector (- 60 dBc ÷ 3 dB ) | **SMA (F)** | **Optional** |
| Output Test Temperature | **NTC 10KΩ** | **Optional** |
| Supply voltage | **1 x 46.5V** | |
| Supply Current | **32 A Max** | |
| Dimension | **220 X 120 X 84 mm** | |
| Weight | **1.5Kgs** | |
| RF Power LDMOS | **1 X MRFE6VP61K25H (1.25KW )** | |

ITALAB reserves the right to effectuate changes to the product or information contained herein without any notice. Exceeding any one or combination of these limits may cause permanent damage to the PA.

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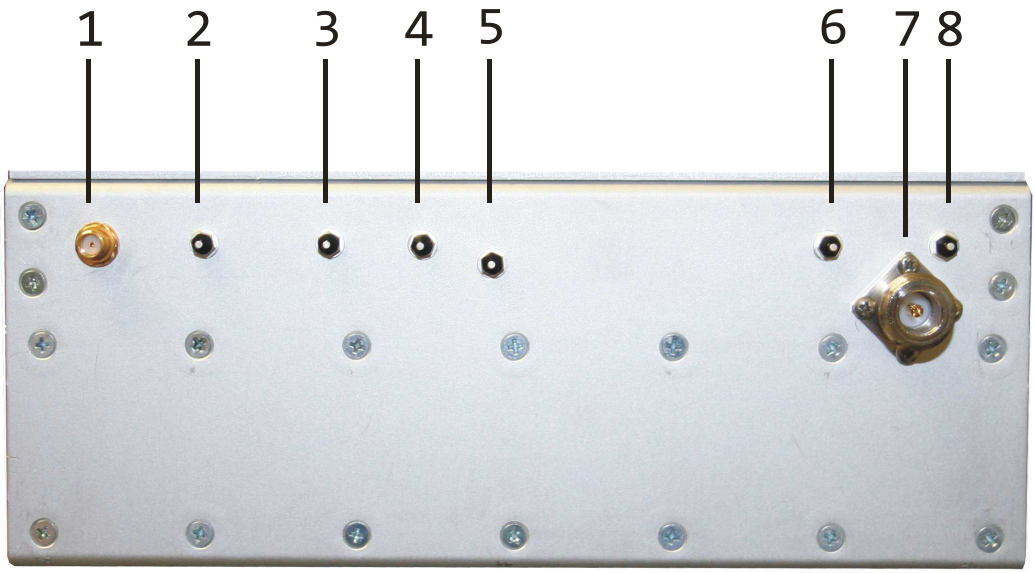
# Layout and connections (top view)




1 RF INPUT
2 INHIBIT INPUT ( MAX – 5 Vdc )
3 INPUT DC POWER
4 INPUT DC POWER
5 TESTING LDMOS TEMPERATURE
6 OUTPUT PWR TEST
7 RF OUTPUT
8 OUTPUT PWR TEST

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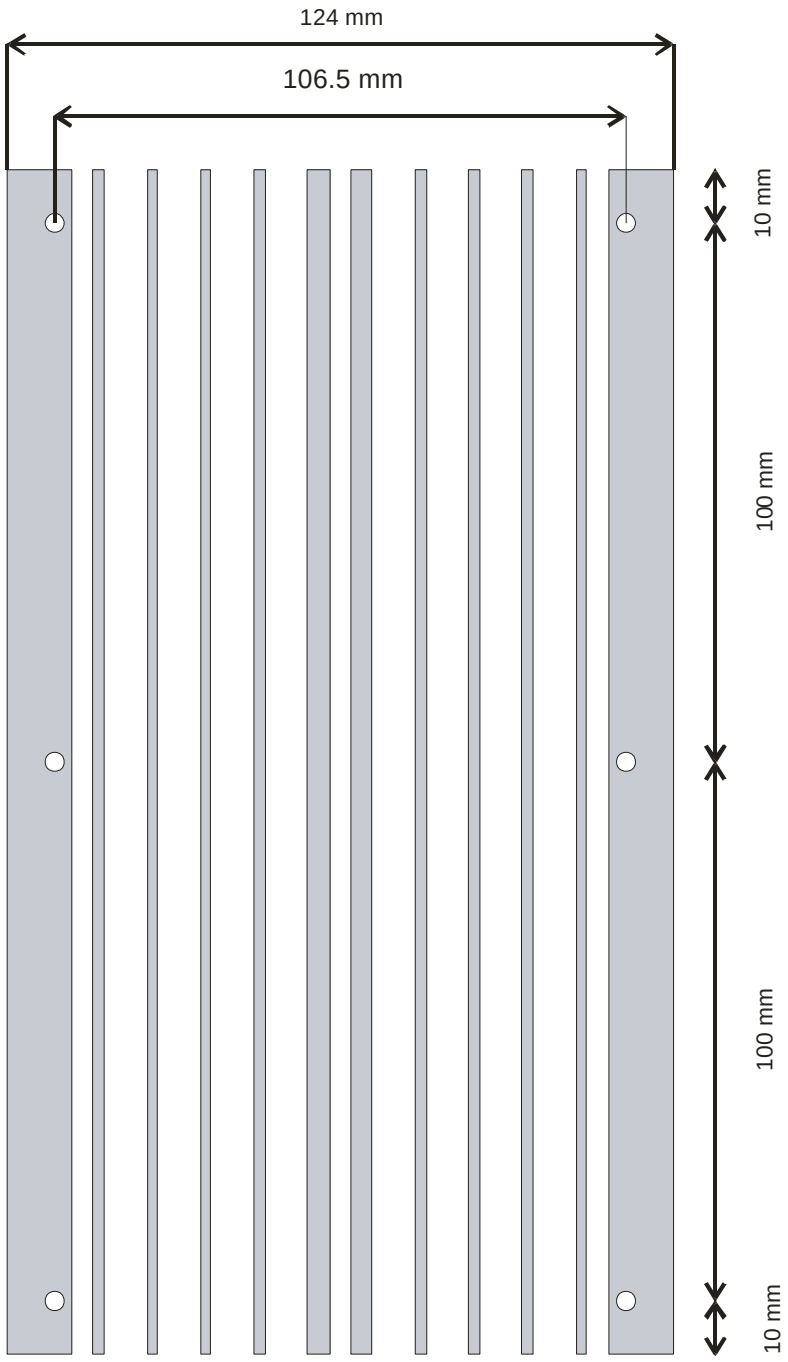
# RACK MOUNTING

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# VENTILATION SYSTEM


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# Assembling and testing

**PRELIMINARY**

**1)** Fix the complete module adopting 6XM3 screws onto an adequate rack (pag.3).
**2)** Install the fan coils ( DELTA FFB0824EHE or similar) as reported on page 4
**3)** Connect the RF output power in the "point 7" (see pag.2) of the to a feed through attenuator having 1KW-30dB as output power (min)
**4)** Insert the Bolometer probe (1W out of scale) to the output of the feed through attenuator.
**5)** Insert the transmitter cable by a 50 Ω SMA connector to the RF input of the rack (box) (see note 1 on pag.2).
**6)** Apply positive voltages ( as reported on the label present externally of the rack) to the feed through filters 3-4 (see pag.2)
**7)** Set the current limiter of the power supplier to 30A (@ 45.5-46.5V)

**TURNING ON**

1) Turn ON the transmitter at ZERO Watt output power level
2) Setup the DC voltage at 46,5 V **: you will notice an Idq approx. of 200mA**
3) Turn on the air flow ventilation

At this moment, please increase the output power of the transmitter until you will be able to reach 100W as output power from the exit of the box.
We strongly recommend you to execute this operation with caution since the gain amplifier is high and you can risk to damage the device.
For this reason, we suggest to adopt a 100W 10dB attenuator.
Following, please increase the driving level ***up to and not beyond 1000W*** (as reported in this datasheet)
Please verify that the bolometer (for the RF signal measuring) and the power supplier's amperometer show the relative power in RF and the relative current (step by step).
If the bolometer will not display anything, please verify the output RF cable (it could be connected not in the right way)

**INHIBIT ( Optional )**

This input (note 2 pag.2) allows to setup the output power.
It will be enough to apply only a negative voltage from 0 to -5V max.
Of course, the operating class will be varied!

This functioning is normally used interfacing it (by an opportune circuit) both the maximum output power (the one of 1000W) and the one regarding the VSWR.
We suggest to tune this protection max to 100W.
If the output power is beyond this value, please turn OFF immediately the Vdd!!

We also recommend to not exceed the 80℃ temperatur e of the system (in the case you will use small fan coils).
The temperature can be measured on the clamp of the transistor.
If it is available the temperature control option (on board –please see note 5), you can measure it with the relatives value variation of the **NTC 10 KΩ** variable resistor.
We only recommend to use coaxial cable in Teflon for the RF output (note 7).

The relative SWR-PWR must be tuned by a proper circuit: they belong to the forward and reflected power.

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