Silent One

Manual for Systems and Procedures

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1 INTRODUCTION

Thanks you for purchasing out **Italab Silent One** solid state amplifier. The display and setting of alla parameters via a large 7" color touch screen, makes it a state-of-the-art product and gives it a unique ease of use. This compact and lightweight amplifier uses the new generation of NXP ™ LDMOS transistors powered at 50 V and characterized by high robustness and efficiency. The amplifier delivers a power of more than 1000 W covering all amateur radio bands from 160 to 6 meters (50Mhz 700 watts), including WARC bands.

1.1 Important

Please read this manual carefully before starting to operate. This manual contains important notes on safety and operating procedures; in case of non-observance of these notes the guarantee will be invalidated. This manual may be subject to changes and / or updates.

1.2 Precautions

Before starting to operate, for your safety and to reduce the emission of RF disturbances, the amplifier must be grounded

Before connecting the amplifier to the mains, check that your power line is able to supply abundantly the power required by the amplifier.

Do not replace the power supply cable supplied with another type, otherwise there is a risk of fire and / or electric shock.

Connect the antenna before turning on the amplifier as, without the antenna connected, there may be a dangerous RF voltage on the antenna connector.

When transmitting, do not disconnect the antenna as there is a risk of fire and / or electric shock.

Do not expose the amplifier to rain, snow or other liquids as there is a risk of fire and / or electric shock.

Do not touch the amplifier with damp or wet hands as there is a risk of electric shock.

The amplifier can cause interference and disturbances to other electrical equipment. In these cases, the user must take all necessary actions in order to reduce the problem.

Do not place the amplifier in a poorly ventilated place as poor ventilation could damage the amplifier.

Do not obstruct the cooling grids in the amplifier cover as the poor dissipation of the heat generated in this condition could damage the amplifier.

Do not place the amplifier near walls or other obstacles as the poor dissipation of the heat generated in this condition could damage the amplifier.

Do not use the amplifier in rooms with ambient temperatures below 0 ° C or above 35 ° C.

Do not put the amplifier in places exposed to direct sunlight, humid and dusty.

Keep all its original packaging; any shipment to the factory must be made using only the original packaging.

This symbol on the product, documentation or other means that, in case of disposal, it cannot be assimilated to municipal waste but rather to electronic waste (European Directive 2002/96 / EC). Follow the local regulations on the matter.

2 TECHNICAL FEATURES

-Operational frequency:	1.8 - 54 MHz (only radioham bands, WARC)
-Automatic band change :	Yes (CAT connection)
-**Input Circuit:**	Broadband, with ROS not more than 1.2:1
-Output ROS Protection Value:	2.0 : 1
-Output RF Power:	>1 kW PEP (700W 50Mhz)
-IMD 3 (IMD3):	Better than -30 dB @ 1000 W PEP
-Harmonic suppression:	HF = better than -50dB VHF = better than -60dB
- **RF Output Filter:**	Low pass filter 7th order
- **Antenna Output:**	3 output selectable by band (3 x SO-239) (1 x N optional)
-Impedance IN/OUT:	50 ohm unbalanced
- RF Power transistor:	1x 1800 W MRFX1K80 NXP™ LDMOS MOSFETs
-Cooling:	Forced air
-Acoustic noise level:	**≤ 55 dB (A) max**.
-Protections:	High antenna ROS, High output power, Overtemperature, High current absorption
-Power supply voltage	From 180 Vca to 264 Vca 50/60 Hz 1800W
-Dimensions:	340x400x165 mm (width x depth x height)
-Weight:	12,5 kg approx

3 SECURITY INSTRUCTIONS

Before installing the amplifier, it is recommended that you read this manual carefully. Carefully remove the amplifier from its packaging and check that there has been no damage due to transport. In case of damage, contact your supplier immediately. Keep the original packaging; any shipment to the factory must be made using the original packaging only.

3.1 Arrangement of the amplifier

The amplifier must be placed in a dry and ventilated place keeping ample space around the amplifier in order to ensure good ventilation. Do not obstruct the cooling grids in the amplifier cover and do not place it near walls or other obstacles as the poor dissipation of the heat generated in this condition could damage the amplifier.

3.2 Connection to the power line

The amplifier is internally equipped with a switching power supply. It automatically accepts any line voltage between 180 Vca and 264 Vca 50/60 Hz. Before connecting the amplifier, check that the power line is able to deliver the power required by the amplifier (1800W). The amplifier must be connected to the mains using the supplied power cable, without the use of adapters or other accessories.

3.3 Grounding

Connect the ground terminal of the amplifier to the ground system of the station. Proper grounding reduces noise and eliminates dangerous high voltage contact points that could be generated by touching the amplifier.

3.4 Antenna

The amplifier is designed to work with antennas that have an impedance of 50 ohms at the working frequency. Using a PL-259 connector, connect the coaxial cable from the amplifier output to the desired antenna. We recommend using a good coaxial cable and using antennas with the lowest possible ROS value.

4 FRONT PANEL DESCRIPTION

Touch Screen

Switch

Switch

Operational switch for switching the amplifier on / off.

Touch screen

Intelligent TFT-LCD 7.0 ”color touch screen module 800x480 pixel resolution

5 REAR PANEL DESCRIPTION

CAT
9 pin female connector RS232 D-SUB for use with ICOM ™ - YAESU ™ - ELECRAFT ™ KENWOOD ™ transceiver.

GROUND
Ground terminal.

LINE IN
IEC block C14 General power socket of the amplifier from the power line. It is equipped with a 10A protection fuse (5x20 fast type). For connection to the mains, refer to the information in the "Security Instructions" section.

PTT
Female RCA connector to be used to activate the amplifier. The center pin must be grounded through the transceiver control circuit;

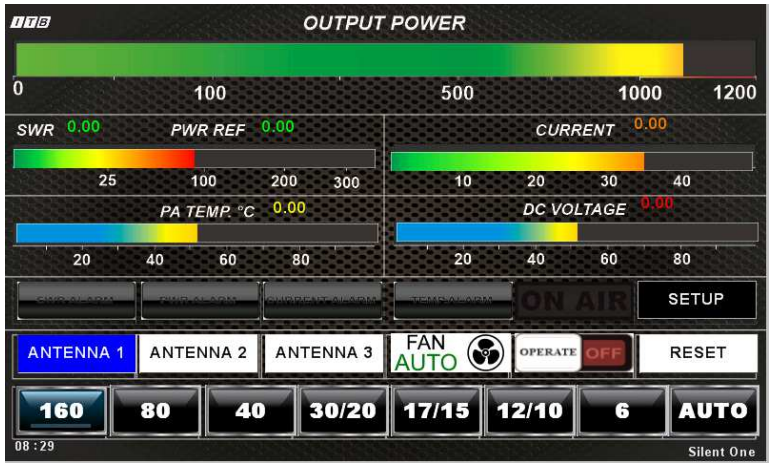
RTX
RF SO-239 input connector for connection to the transceiver antenna socket.

ANTENNA (1-2-3)
RF output connectors (3x SO-239) for connecting the antenna.

6 System Startup

When switched on, the touch screen will appear as in the image below for 2 seconds;

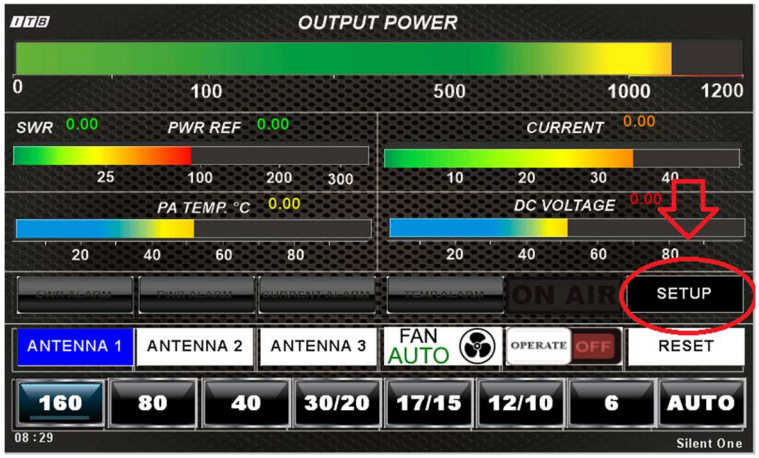
To automatically go to the next screen (image below) which is the Home (MAIN) of the amplifier;



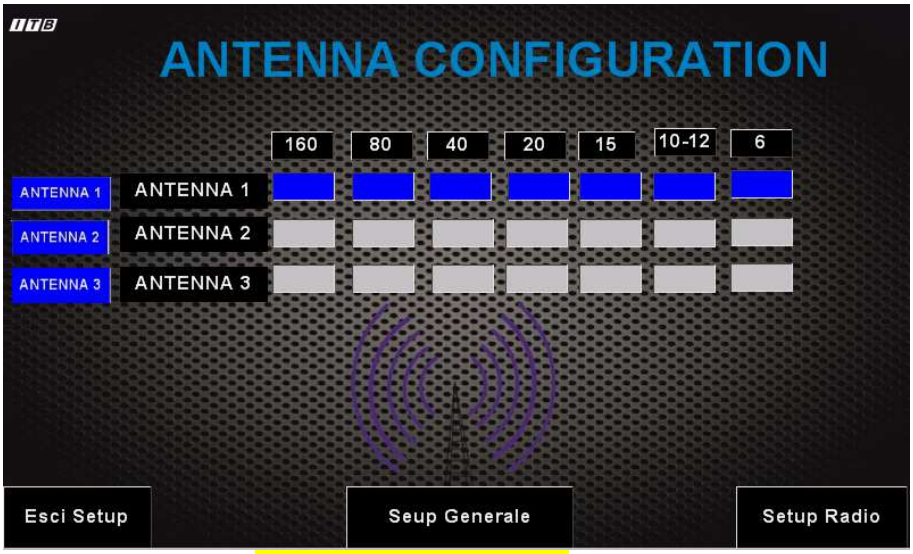
When switched on, the amplifier will automatically position itself in Band 160M and Antenna 1, (if the Cat Radio is selected, it will start in AUTO) the Fans in Automatic (FAN AUTO), and Operate Enabled (ready for PTT) (1st Ignition).

- **ANTENNA SETUP**

The first operation to perform will be that of choosing the desired Antenna according to the band, to enter this screen press the SETUP KEY



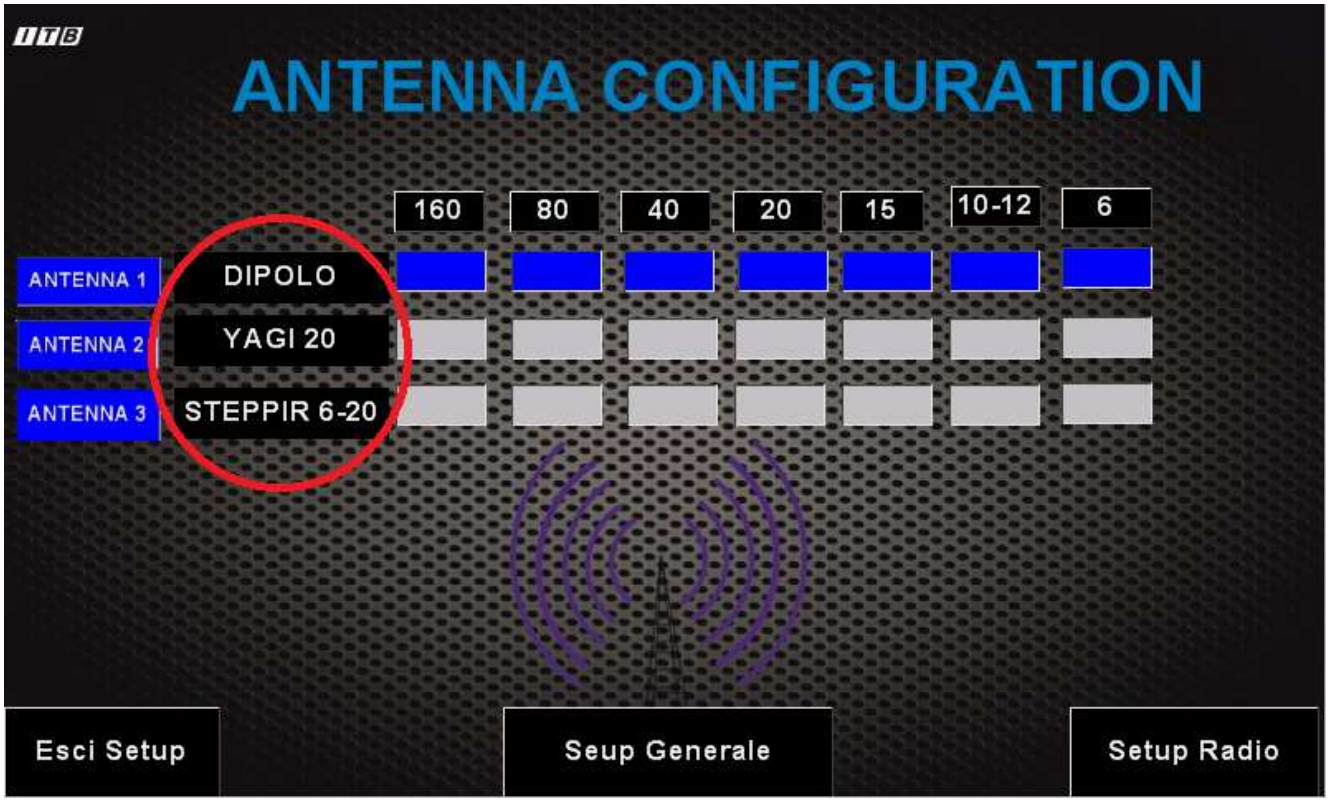
The following image will appear:



(DEFAULT ANTENNA 1)

In this menu, select the antenna (1-2-3) for the desired band.
Once chosen, we can either go back to the Home screen or continue with the RADIO SETUP or GENERAL SETUP.

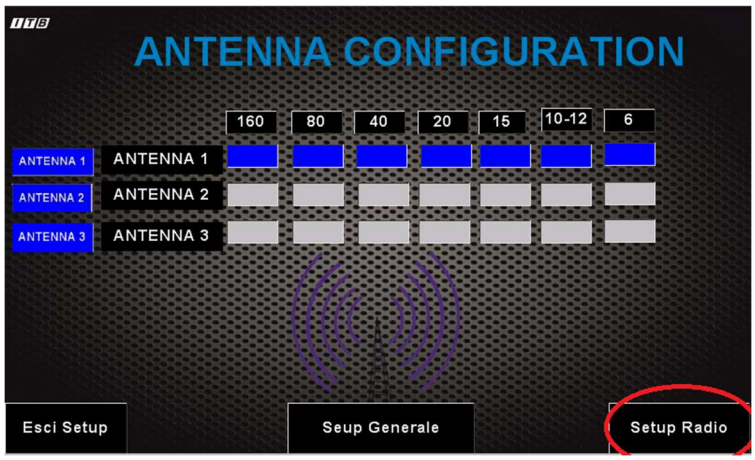
It will be possible to edit the name of the antenna 1/2/3. (see image below), go to the antenna to be modified and edit with the desired name (max. 12 characters)



Note - wait a few seconds while the controller will save your chosen antennas.

- **RADIO SETUP**

After configuring the desired Antennas, let's move on to choosing the Radio by clicking the Radio Setup button as shown in the figure below:



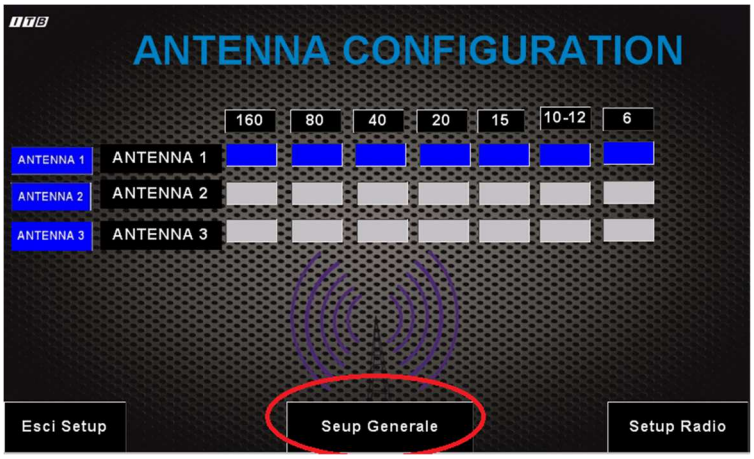
The following image will appear:

Select the desired Radio, (after connecting the Cat cable) the choice made will appear green, if we do not have a Cat connection, select the NO CAT button, **pay maximum attention to the NO CAT mode, the filter must always be selected and however manually for the corresponding Band, the AUTO key cannot be selected.**

From this Menu we can return to the Antennas Setup or EXIT and return to the Home Screen.

- **GENERAL SETUP**

From the RADIO SETUP screen, by clicking the central General Setup button as shown in the photo below



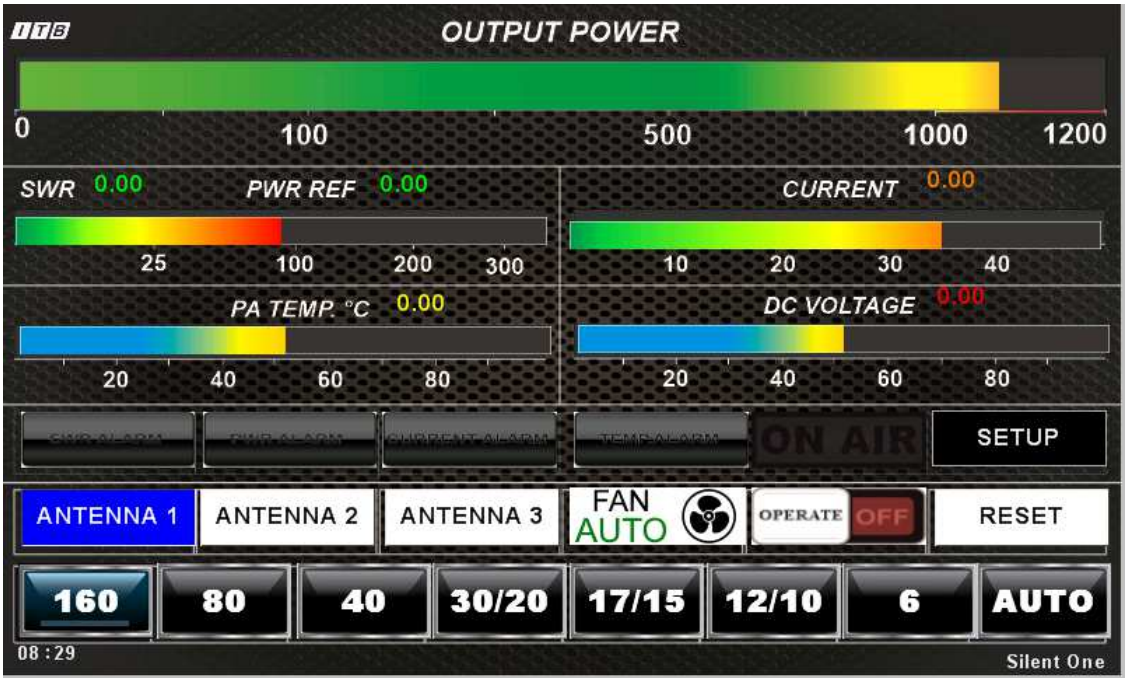
The following image will appear:

- Choose enabling / disabling the sound indicator;
- Indicate the radio name (it will appear on the Home screen in the upper right corner)
- Adjust Screen Brightness.
- Date and time setting

With the central CONTACT US button the following page will open with the contact information of ITALAB, go back with the BACK button

Save and exit with the SAVE and EXIT key.

- HOME SCREEN (MAIN)



CHECK PARAMETERS

- OUTPUT POWER will indicate the output power (+ or - 5%);

- SWR the reflected power;

- CURRENT Current absorbed by the amplifier (A)

- PA TEMP Temperature Amplifier;

- DC VOLTAGE Amplifier voltage;

WARNING LIGHTS

SWR ALARM –SWR alarm;

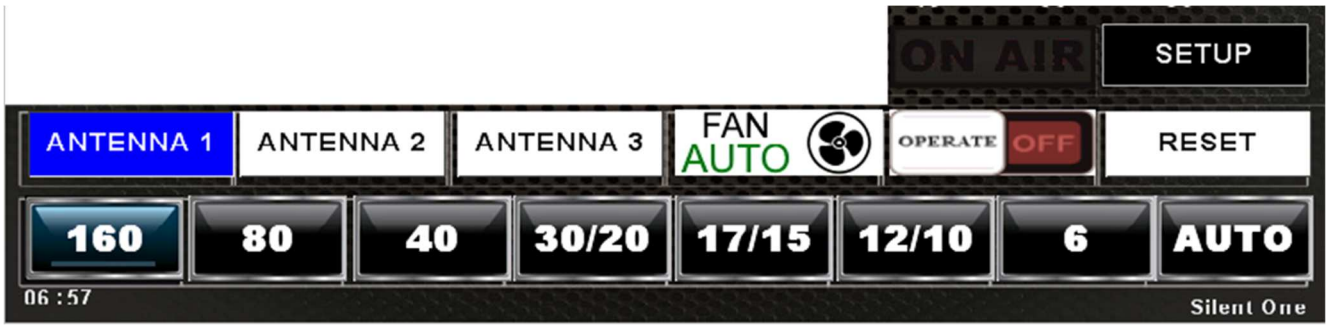
PWR ALARM – Output power higher than the default;

CURRENT ALARM –excessive current draw;

TEMP ALARM – Temperature alarm

N.B. THERE ARE 2 TEMPERATURE ALARM LEVELS THE FIRST ONLY AUDIBLE AND VISUAL (2 BEEPS + "TEMP ALARM" LAMP ON) WARNINGS THE APPROACH TO THE TEMPERATURE LIMIT THRESHOLD, THE LIMIT THRESHOLD IS REACHED BEYOND SOUND AND VISUAL ALARMS (3 BEEPS + LAMP) THE PTT WILL BE DISABLED UNTIL IT IS RETURNED TO THE PERMITTED TEMPERATURE RANGE.

COMMAND BUTTONS + ON AIR LIGHT



ON AIR has 3 colours to indicate different ways of PTT, BLACK colour ON AIR indicates that PTT is disabled (see Operate Off-On key command), GREEN colour ON AIR indicates that PTT is enabled (Operate ON), RED colour ON AIR indicates you're on air.

SETUP – button, amplifier settings menu;

ANTENNA 1- ANTENNA 2 - ANTENNA 3 Indicates the selected output antenna (NB IT WILL AUTOMATICALLY SELECT ANTENNA SET IN THE ANTENNA CONFIGURATIONS MENU, but we can at any time manually select the desired antenna, by pressing the ANTENNA1, ANTENNA 2 or ANTENNA 3 button if in NO CAT mode, or if AUTO is activated, it must first be deactivated).

- **FAN AUTO** automatic selection FAN AUTO or maximum speed fan FAN MAX , in the button there is a dynamic fan that will visually indicate the departure of the same and their intensity; (they increase and decrease the revolutions according to the PWM of the same)

- **OPERATE** ON/OFF switches the stand-by and the operation of the amplifier, in Stand-by the PTT will be disabled.

- **RESET** Press twice in a row to reset the alarms.

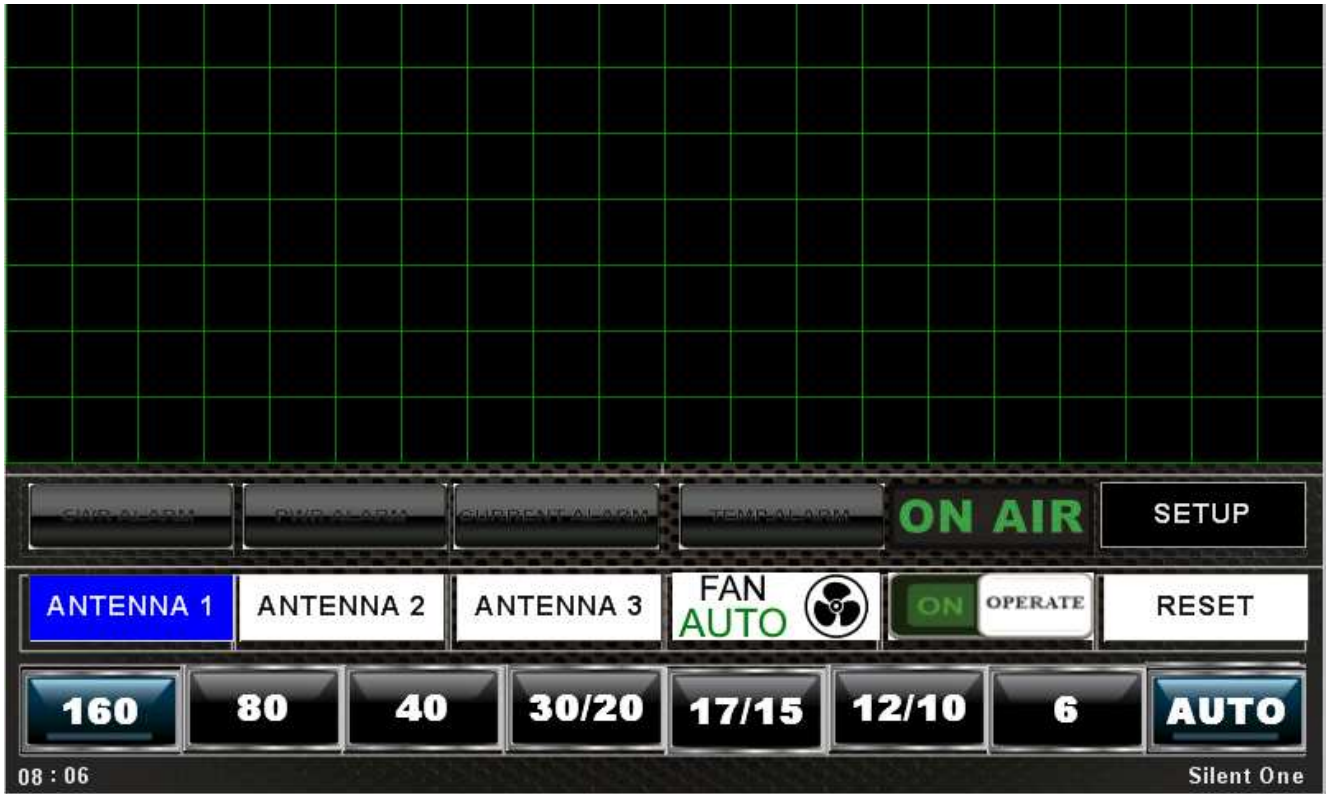
N.B. TEMPERATURE ALARM IS NOT POSSIBLE TO RESET IN ANY WAY

- A series of indicators / keys (160 - 80 - 40 - 30/20 - 17/15 - 12/10 -6) designed to indicate the selected operating band;

the AUTO key will enable the filter change automatically by reading the correct Frequency from the CAT of the radio (make sure you have inserted the cable and made the required connections)

(N.B. in the case of selection NO CAT 

in the CAT SETUP it will not be possible to select the AUTO mode, the filter selection must be done manually paying close attention to choose, by pressing the corresponding key, the band chosen for transmission, also in the
NO CAT mode when switching on the PTT will be disabled and all the FILTER selection buttons will flash until the correct Filter Bank is pressed for the band selected for the transmission on RTX)



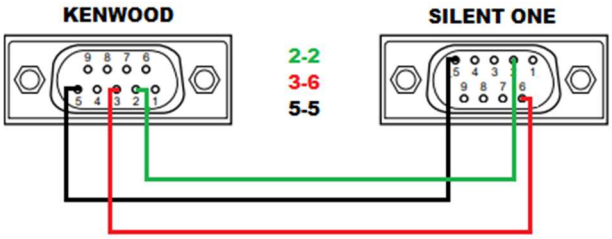
By clicking on the power bar (OUTPUT POWER), the power history with division screen is enabled (about 200W per division) which will indicate the history of the output power, to return to the power bar click again on the screen at the top.

7 CAT connections and use with KENWOOD transceivers ™

7.1 Connect the amplifier to the power line and the coaxial antenna cable as indicated on page 8. Connect a good shielded control cable between the remote terminal of the transceiver normally enabled to drive an amplifier, and the female RCA connector of the amplifier marked "PTT". The amplifier enters transmission when the central pin of the female RCA connector (PTT) is short-circuited to ground; the required current does not exceed 2 mA. **If this connection is not made, the amplifier cannot work**

7.2 Use a good 50 ohm coaxial cable to connect the antenna socket of the transceiver to the socket marked "RTX" of the amplifier

7.3 Connect an optimally shielded DSUB9 MALE-FEMALE straight serial cable from the RS-232 serial port of the transceiver to the DSUB9 FEMALE serial socket called "CAT" of the amplifier.



7.4 Set the serial communication speed of the transceiver to 9600 baud.

7.5 With the amplifier on, from the CAT RADIO menu (page 11) of the amplifier, set "KENWOOD", once back in the MAIN screen, press the AUTO button and make sure that the amplifier has selected the BAND corresponding to the frequency displayed on the Transceiver

7.6 Go to transmission and adjust the output power of the transceiver until you get the desired output power from the amplifier.

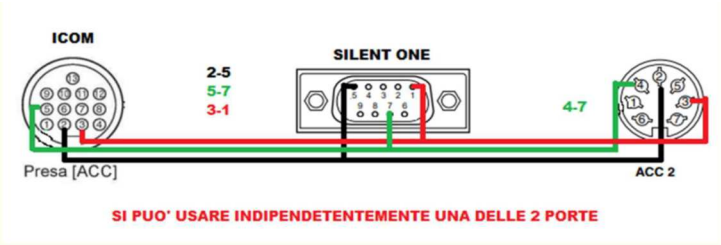
7.7 During the use of the amplifier, protection circuits may intervene. For more details see the PROTECTIONS section.

8 Connections and use with transceiver ICOM™

This paragraph explains the amplifier connections with a transceiver ICOM™ equipped with a "Band Voltage Output" connector.

8.1 Connect the amplifier to the power line and the coaxial antenna cable as described on page 8. Connect a good shielded control cable between the remote terminal of the transceiver normally enabled to drive an amplifier with "Band Voltage Output" pin, and the female connector D-SUB (9 pin) "CAT" of the amplifier.

8.2



8.3 The connections between pin 3 and pin 1 is the command SEND-HSEND of ICOM radio, with this connection there's no need of TXGND connection on the (RCA female) PTT input of the amplifier.

8.4 Use a good 50 ohm coaxial cable to connect the antenna socket of the transceiver to the socket marked "RF IN" of the amplifier

8.5 With the amplifier on, from the CAT RADIO menu (page 11) of the amplifier, set "ICOM", once back in the MAIN screen, press the AUTO button and make sure that the amplifier has selected the BAND corresponding to the frequency displayed on the Transceiver

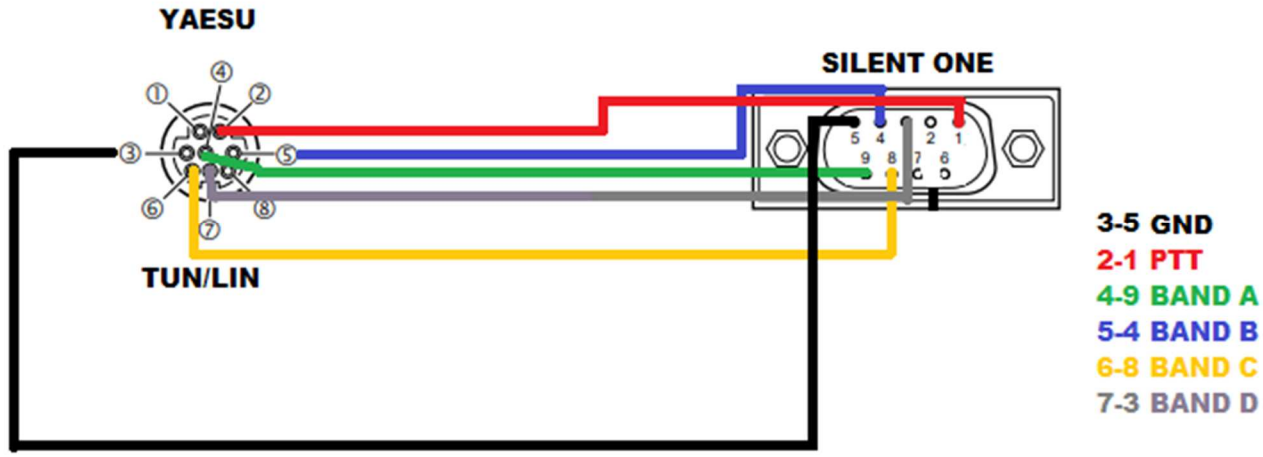
8.6 Go to transmission and adjust the output power of the transceiver until you get the desired output power from the amplifier.

8.7 During the use of the amplifier, protection circuits may intervene. For more details see the PROTECTIONS section.

9 Connections and use with transceiver YAESU™

This paragraph explains the amplifier connections with a transceiver YAESU™ equipped with "Band Data" connector.

9.1 Connect the amplifier to the power line and the antenna coaxial cable as described on page 8. Connect a good shielded control cable between the remote terminal of the transceiver normally enabled to drive an amplifier with "Band Data" pin, and the female D-SUB connector (9-pin) marked "CAT" of the amplifier.



9.2 Use a good 50 ohm coaxial cable to connect the antenna socket of the transceiver to the socket marked "RTX" of the amplifier.

9.3 With the amplifier on, from the CAT RADIO menu (page 11) of the amplifier, set "ICOM", once back in the MAIN screen, press the AUTO button and make sure that the amplifier has selected the BAND corresponding to the frequency displayed on the Transceiver

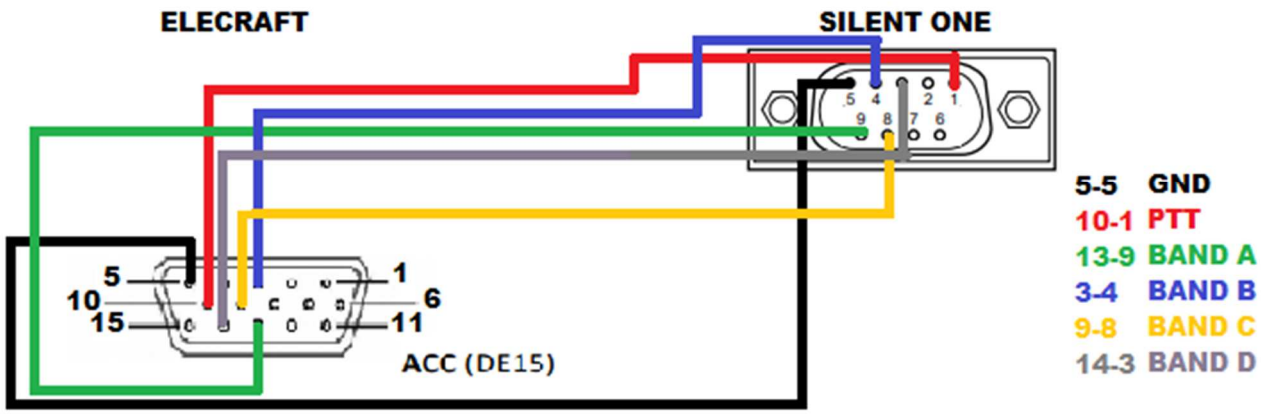
9.4 Go to transmission and adjust the output power of the transceiver until you get the desired output power from the amplifier

9.5 During the use of the amplifier, protection circuits may intervene. For more details see the PROTECTIONS section.

10 Connections and use with transceiver K3 – K4 ELECRAFT™

This paragraph explains the connections of the amplifier with a transceiver K3 – K4 ELECRAFT™ equipped with a D-SUBHD (15 pin) connector marked "ACC".

10.1 Connect the amplifier to the power line and the antenna coaxial cable as described on page 8. Connect a good shielded control cable between the D-SUBHD (15 pin) connector marked "ACC" of the transceiver and the female D-SUB (9 pin) connector marked "CAT" of the amplifier.



10.2 Use a good 50 ohm coaxial cable to connect the antenna socket of the transceiver to the socket marked "RF IN" of the amplifier.

10.3 With the amplifier on, from the CAT RADIO menu (page 11) of the amplifier, set "ICOM", once back in the MAIN screen, press the AUTO button and make sure that the amplifier has selected the BAND corresponding to the frequency displayed on the Transceiver

10.4 Go to transmission and adjust the output power of the transceiver until you get the desired output power from the amplifier

10.5 During the use of the amplifier, protection circuits may intervene. For more details see the PROTECTIONS section.

RECOMMENDATIONS: FOR ALL "CAT" CONNECTIONS, USE A BEST QUALITY SHIELDED CABLE, CONNECTO ONLY THE REQUESTED PINS AS SHOWED IN THE PICTURE AND USE A CABLE OR EACH TRANSCEIVER

11 Connections and manual use with any transceiver

11.1 Connect the amplifier to the power line and the antenna coaxial cable as showed on page 8. Connect a good control shielded cable between remote terminal of the transceiver normally enabled to drive an amplifier with (usually called "REMOTE" "TXGND") and the RCA female connector of the amplifier marked "PTT". The amplifier go to transmission when shortcircuit to ground the central pin of the RCA female connector (PTT); the required current does not exceed 3 mA.
If this connections is not made, the amplifier can't work

11.2 Use a good 50 ohm coaxial cable to connect the antenna socket of the transceiver to the socket marked "RTX" of the amplifier

11.3 In CAT RADIO menu, select NO CAT;

11.4 Into MAIN MENU set the desired working band by using the correspondent button;

11.5 Go to transmission and adjust the output power of the transceiver until you get the desired output power from the amplifier

11.6 During the use of the amplifier, protection circuits may intervene. For more details see the PROTECTIONS section.

12 PROTECTIONS

In this amplifier there are different protections; when one of these protections intervene, this is immediately alarmed and put the amplifier in STAND BY. One the problemi s solved, the amplifier can come back to work by pressing the RESET button (double click).

The power module is equipped with a system that, rising the module temperature, automatically adjusts the Bias (- 0.5 dB) until its working temperature balance, that can be compensated by rising some input Watts to reach the same Output power.

GUARANTEE CERTIFICATION

Silent One Amplifier

Model - Silent One

Registration number - _____

Delivery Date

Buyer Name Surname

Address _____

GUARANTEE DECLARATION

This guarantee card certifies that the product contained in this package, branded Italab, is made by our society, and the responsibility of good tecnical working is helded by Italab.

GUARANTEE TIME

The conventional guarantee time offered by the seller is:

¤ 24 months from the date of the purchase of the amplifier and its accessories contained in the package.

GUARANTEE CONDITIONS

Dear customer, thank you for trusting Italab products, please be advised that the product you bought is guaranteed for the abovementioned time.

1. In order to have the right of repair under guarantee, the product has to be delivered with the above certification,

fulfilled, to ITALAB, Via della Vittoria 14 – 20046 Cisliano (MI) info@italab.it

2. The repairing consists of the fixing or substitution of damaged parts, and includes labor.

3. The warranty does not apply to all damages resulting from negligence (such as, by way of example but not limited to, oxidation, fall, or violent impact, ...), use of the device that does not comply with what is reported in the user manual and interventions repairs not carried out by Italab.

4. Tampering with the Warranty Stamp immediately invalidates its validity.

5. The LDMOS Mosfet is not covered by warranty.

6. The warranty is in no way extended or renewed due to the suspension of the use of the device due to repair / replacement.

7. *In case of lack of the guarantee certificate, ITALAB will not be able to accept the amplifier under guarantee.*

ATTENTION

The conditions contained in this document are valid within the territory of the Italian Republic and for products in a version intended for the Italian market.

1. Checks to be carried out by the customer before requesting repair

a. Check all the installation procedures, as indicated in the Installation and Use Manual, attached to the product, under penalty of forfeiture of the right to repair

b. Check the delivery date of the product, to ascertain the validity of the guarantee (12 months from the date of delivery).

c. Please DO NOT attempt to open and / or repair the amplifier, any sign of forcing will result in the loss of the warranty.

2. Procedure for Repair Request

a. Fill in the form in a legible way in its entirety

b. Indicate exactly the problem encountered.

c. Send the form duly completed in all its parts and signed for acceptance attached to the Amplifier

3. Procedure for delivery of the material

a. DO NOT attach the amplifier accessories unless expressly requested (connectors, cables, etc).
b. Send the products in Free Port by your courier to ITALAB Via Della Vittoria 14 20046 CISLIANO (MI)
c. If you do not have a reference courier, please notify us to organize the collection through our. Courier agreement with charge at your expense.

4. Return of repaired items under Warranty only

The return of the good will be f.o.b. our laboratory

5. Out of warranty equipment

a. A quote will be prepared for the equipment to be repaired, which we will send you by e-mail indicating the cause of the fault and the cost of the repair;
b. Following acceptance of the quote, we will repair and send the amplifier;

REPAIR REQUEST FORM

Date	
Customer	
Place	
Phone	
Fax	
E-mail	

Customer signature for acceptance

RIF.	Product/Model	Serial/registration number*	Date of purchase
1			

Problem encountered

TO BE ATTACHED INSIDE THE PACKAGE TOGETHER WITH THE AMPLIFIER AND THE WARRANTY CERTIFICATION CARD

- Serial/registration number: the one shown on the warranty seal (SO00…..)