# 3 FUNCTIONAL DESCRIPTION

## 3.1 Front Panel Controls

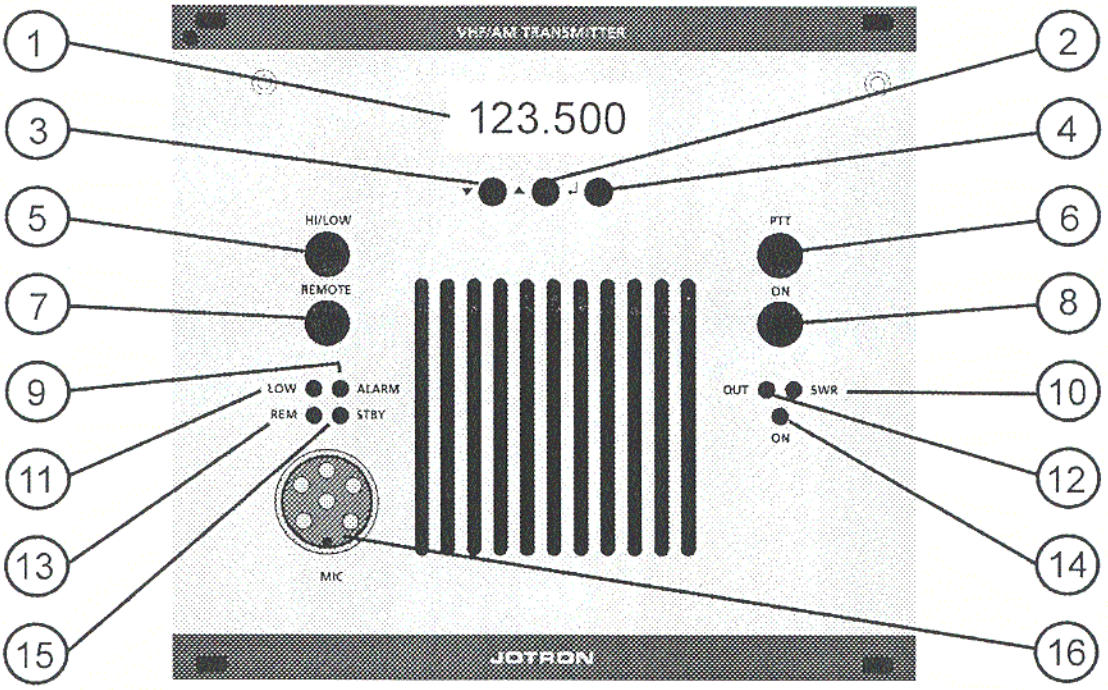


**Figure A, Front view, TA-7450 / 7425 / 7410**

**1** **Display**
Shows operating frequency bite information or various menu settings.

**2** **«^» button**
For moving through menus and adjusting selected value up.

**3** **«v» button**
For moving through menus and adjusting selected value down.

**4** **«↵» button**
The Enter button is used to select the various menus/values.

**5** **HI/LOW switch**
Selects the power output for the transmitter.
HI is full power (50W - TA-7450).
LOW is 20% of full power, i.e. 10 W for a 50W transmitter.

**6** **PTT button**
Press to test the transmitter.

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FCC ID: I32TA-7450
IOB #: 162U0
EXHIBIT #: 10a

7 **REMOTE SWITCH**
The switch decides whether the audio and keying signals should be taken from the microphone socket or from the remote connector.
In local position, both audio for the transmitter and the key signal (PTT) is taken from the microphone input.
In remote, audio and key signals are taken from the 600Ω remote line input/output. Pressing the remote switch disables the local frequency control and enables the remote commands.
The switch must also be pressed in order to enable the remote commands of the radio.

8 **MAIN ON/OFF**
Turns the transmitter on and off.

9 **ALARM LED**
Indicator to show that the BITE in the transmitter has detected an error condition. The cause of the fault will be shown in the display.

10 **SWR LED**
Shows that the SWR on the antenna is above the threshold (app. 2:1). The transmitter will reduce the output power to low power.

11 **LOW POWER LED**
Indicator to show that the transmitter is operating in low power. Either because the low power switch has been pressed or because the BITE has put the transmitter in low power due to SWR, Low voltage or high temperature..

12 **«OUT» LED**
Shows that the transmitter is keyed.

13 **REMOTE LED**
Indicator to show remote operation (remote switch is pressed).

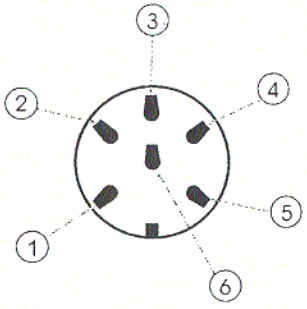
14 **ON LED**
Shows that the transmitter is switched on.

15 **STANDBY LED**
The transmitter is kept in standby by an external signal.

16

## MICROPHONE connector

The microphone should have 600Ω impedance with a sensitivity of 5 mV..




Microphone socket.

The microphone socket has the following pin assignment:

| | |
|---|---|
| 1 | Microphone input. |
| 2 | Microphone supply (+12V via 2k2 resistor) |
| 3 | P.T.T. (Local key) input |
| 4 | Microphone ground. |
| 5 | N.C. |
| 6 | N.C. |

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FCC ID: I32TA-7450
JOB #: 162U0
EXHIBIT #: 10 C

## 3.2 Power Supply Unit, Front view.

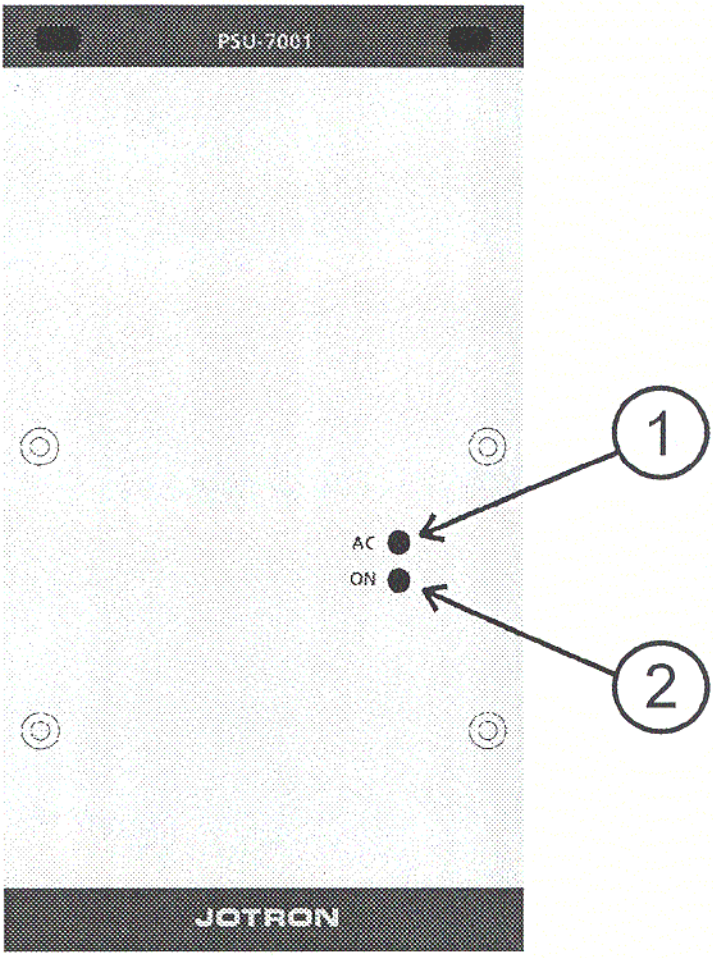


**Figure B, Power supply unit - front view**

1 **«AC» LED**
Shows that the PSU is operating on AC mains power.

2 **«ON» LED**
Indicates that the PSU is switched on.

## 3.3 Transmitter Rear Connections.

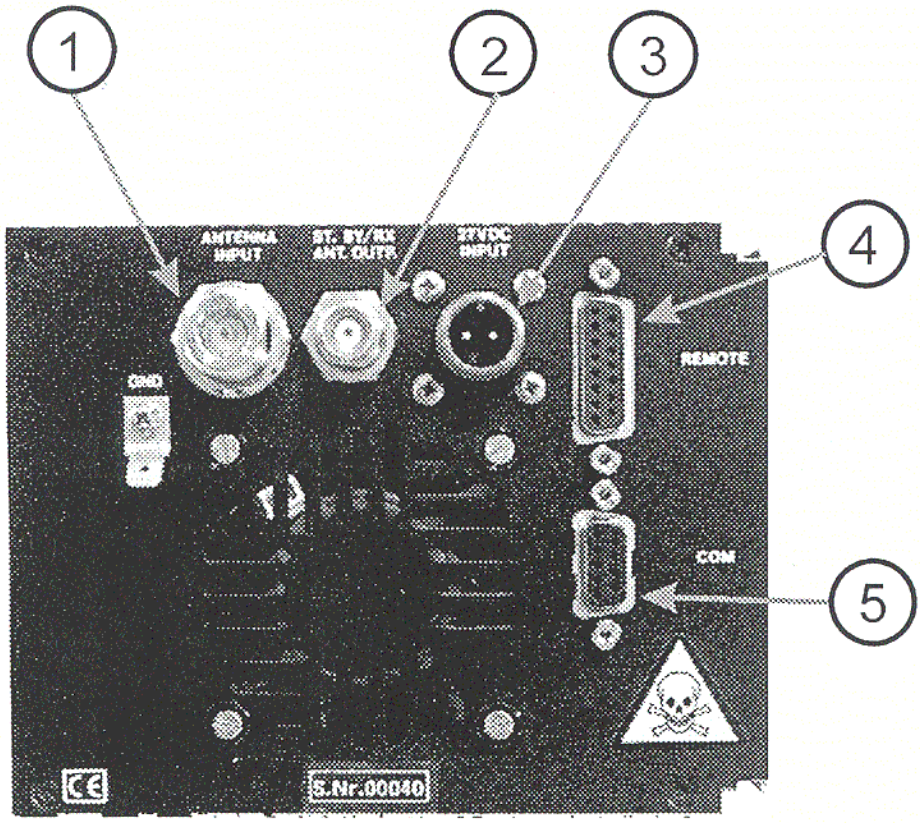


Figure C, Rear view, TA-7450

1 **ANTENNA CONNECTOR**

N-type antenna input.
Connected directly to an external antenna or to a multicoupler if more than one transmitter is sharing the same antenna.
Alternatively the transmitter antenna can be connected to the standby input of a main transmitter in a main/standby configuration.

2 **ANTENNA STANDBY / RX ANTENNA OUTPUT CONNECTOR**

BNC-type antenna input/output.
This connector is connected to the internal keying relay in the transmitter. It can be used either as a receiver output. Or it can be connected to the transmitter output of a second (Standby) transmitter, which shares the same antenna as the main transmitter.

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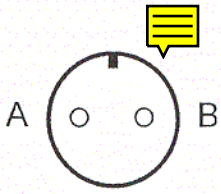
FCC ID: I32TA-7450
JOB #: 162U0
EXHIBIT #: 10 e

## 3 DC Input Connector




This connector is connected to a DC supply (21.6 - 31.2 VDC), Either the PSU-7001 or an external (battery) supply
A is the positive connection and B is the negative.

## 4 Remote Facility Connector (15 pin D-SUB)

This connector contains various signals for remote control of the radio.

| PIN NO | DESCRIPTION |
|---|---|
| 1 | Inhibit input. A positive voltage of 12 V applied to this pin will prevent transmitting. This can be useful when using a external power amplifier. This input can then be used to prevent RF output before the Rx/Tx relay in the power amplifier has switched over. |
| 2 | Microphone input.<br>Connected in parallel with the microphone input on the front panel. |
| 3,4 | Monitor output.<br>Symmetrical 600Ω monitor output line.<br>Can be used as the input to a tape recorder, or as a test of the transmitter performance. It contains the transmitted audio demodulated after the final stage of the transmitter RF amplifier. Level is adjustable from the front panel. When the transmitter is not keyed, the line will carry receiver audio if a receiver is connected. |
| 5,6 | Line input.<br>600 Ohm balanced line input.<br>This is the main input, which is used when the transmitter is controlled from a remote position.<br>The input is fed with the TX audio in transmit position.<br>Input level is from -30 to + 10 dBm (typical 0 or -10 dBm), and is adjustable on the front panel.<br><br>The line transformer has a centre tap where +12V can be fed to one of the lines. This can be used to key the transmitter by making a DC path to the other line in the remote control. |

It is also possible to key the transmitter with +/-48V on the line relative to ground level.
The different keying options can be set from the front panel.

7 External key input.
A positive voltage (referenced to GND pin 15) between 5 and 48 V or negative between –15 and –48 V applied to this pin will key the transmitter in REMOTE position.

8 RS-485 communication (+) or
RS-232[1] , serial communication, RX.

9,10 Key relay.
Dry contact, which closes when the transmitter is keyed.
May be used to control external equipment or to mute an associated receiver by connecting one line to the MUTE input of the receiver (pin 12) and the other to the GND pin of the receiver (pin 15).

11 RS-485 communication (-) or
RS-232[1] , serial communication, TX.

12 KEY input.
A low level on this pin will key the transmitter in both local and remote operation.
The pin can be connected in parallel with the MUTE input of a receiver (pin 12) to simultaneously mute the receiver while transmitting.

13 Select input.
If the select input is kept low (0V) or open the transmitter is operating normally. If the select input is high (+5V) the transmitter will not be «selected», i.e. the transmitter will be in STANDBY mode (indicated by the front panel LED) and will not be keyed by any key signals.

14 ALARM output.
TTL level.
High (5V) = Transmitter is operating normally.
Low (0V) = Transmitter is OFF or the BITE has detected an internal error.

15 GND. Common Ground.

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FCC ID: I32TA-7450
JOB #: 162U0
EXHIBIT #: 10 g

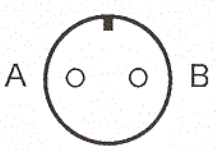
### 5 Remote Serial Data Connector (9-PIN D-SUB)

This connector contains the RS-485 serial bus, and a 12 V output .

| PIN NO | DESCRIPTION |
|---|---|
| 1 | RS-485 communication (-) or RS-232[1] , serial communication, TX. |
| 2 | RS-485 communication (+) or RS-232[1] , serial communication, RX. |
| 3 | Low power. Grounding this pin forces the transmitter to low output power. |
| 4 | Not connected |
| 5 | 12V DC output for remote equipment (max. 100 mA). Connected to the internal 12V through a diode for reverse protection. |
| 6 | Common ground. |
| 7,8,9 | Not connected. |

## 3.4 Power Supply Unit Rear Connections.

### 1 DC Input Connector




This connector is connected to the external DC backup supply (21.6 - 31.2 VDC).
A is the positive connection and B is the negative.

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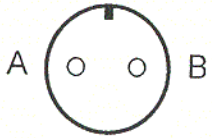
FCC ID: I32TA-7450
JOB #: 162U0
EXHIBIT #: 10 h

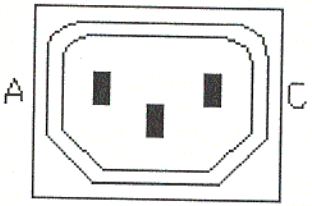
[1] The transmitter can be operated either from the RS-232 bus or the RS-485 bus

## 2 DC Output Connector




This connector is connected to the transmitter.
A is the positive connection and B is the negative.

## 3 AC Input Connector




Input for external AC.

AC is input between A and C, B is chassis ground.
The voltage should be 230VAC ± 10% or optionally 115 ± 10%.
To use 115VAC an internal switch in the power supply unit must be set in the correct position.
Refer to chapter 4.2.1 to change the setting.