



## **ACOM eBox**

Ethernet Remote Control  
for ACOM power amplifiers

User's Manual

Installation, Operation  
and Maintenance

**OUTSTANDING HF POWER PRODUCTS**

October 2021

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**Title of Documentation** ACOM eBox Ethernet Remote Control  
User's Manual  
Installation, Operation and Maintenance

**Type of Documentation** User's Manual

**Purpose of Documentation** This manual explains Installation, Operation and Maintenance of the ACOM eBox Ethernet Remote Control

Record of Revisions	Description	Release Date	Notes
	ACOM eBox User's Manual	22.10.2021	First edition, R01

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**Published by** ACOM Ltd.  
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GPS coordinates: 42.748616° | 23.209801°  
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## 1. GENERAL INFORMATION

Congratulations on purchasing of our exclusive eBox Ethernet Remote Control device.

ACOM is pleased that you have chosen one of our products, and we will endeavor to provide you with the information and support you need to enjoy your purchase for many years.

We urge you to read all of the following materials before you embark on operating your new ACOM eBox Ethernet Remote Control device.

### 1.1. Introduction and Description

This manual explains:

- Installation
- Operation and
- Maintenance

of the ACOM eBox Ethernet Remote Control device.

ACOM eBox is an active Ethernet network device which allows you to access and control remotely the ACOM power amplifiers via your local network or over the Internet. Of course, you have to connect eBox to the amplifier via a special cable, first (**1.3 Equipment Supplied**).

The ACOM eBox is specifically designed and developed for remote control exclusively of the following ACOM power amplifiers:

- ACOM 600S
- ACOM 700S
- ACOM 1200S and
- ACOM 2000A with its own RCU (Remote Control Unit).





## 1.2. Owner Assistance

If assistance is needed, you should contact your local dealer first. If necessary, your dealer will contact ACOM for additional guidance.

If you still have an issue you need to discuss with one of ACOM's specialists, the contact information is as follows:

ACOM Ltd.

E-mail: [support@acom-bg.com](mailto:support@acom-bg.com)

Bulgaria | Bozhurishte 2227

Sofia-Bozhurishte Economic Zone | 6 Valeri Petrov Str.

GPS coordinates: 42.748616° | 23.209801°

## 1.3. Equipment Supplied

The ACOM eBox Ethernet Remote Control device is shipped as package, consisting of:

Nr.	PACKAGE CONTENTS	Pcs.
1	eBox Ethernet Remote Control device (unit only)	1
2	Power supply adapter (12 VDC / 2.0 A)	1
3	Connection cable (eBox - ACOM amplifier connection)*, 1 m	1
4	Self-adhesive pads (set of 4 pieces)	1

Table 1-1 Package contents

The package is shipped in a cardboard carton.

The User's Manual is available as PDF-file only. The latest version of the User's Manual is available at [www.acom-bg.com](http://www.acom-bg.com).

### NOTICE

\* Please, specify your ACOM amplifier model when ordering an eBox device.

The correct information will allow us to ship the right cable for your amplifier model. Using an inappropriate cable may cause a serious damage to the eBox device and your amplifier!

## 1.4. Features

- **Ethernet connectivity**  
eBox is an active Ethernet device which directly integrates ACOM power amplifiers to the Ethernet networks (your local network or Internet). The eBox transfers commands and information forth and back - from the operator to the amplifier and vice versa - via the Ethernet.
- **Easy to operate**  
The administration of the eBox is done via Web-based interface specially developed for ACOM amplifiers. You can use any personal computer running any operating system (OS). You just need to run web browser as Chrome, Opera, Firefox, MS Edge, Safari, etc.
- **Always Up-To-Date**  
Your eBox is always up-to-date due to its integrated function for firmware update. The newest firmware versions are available (usually as \*.bin files) at [www.acom-bg.com](http://www.acom-bg.com). With just a few clicks you can upload a new firmware to the eBox.

## 1.5. Safety Considerations, Explicit Definitions

The ACOM eBox Ethernet Remote Control device is intended for indoor use only.

The ACOM eBox Ethernet Remote Control device (including power supply) is designed to meet international safety standards and complies with CE safety and electromagnetic compatibility requirements.

The ACOM eBox power supply adapter is a device with Europlug input and is designed as low-power (less than 2.5 A) Class II (double-insulated) device that operate at normal room temperature and do not require a protective-earth connection.

This User's Manual contains information, warnings (signal words **Danger**, **Warning**, **Caution** and **Notice**) and instructions, related to hazards, that should be followed by the user in order to ensure safe operation and to keep the eBox in a safe working condition at all times.

The EXPLICIT DEFINITIONS described below apply to this User's Manual:

### **DANGER**

These notes call attention to a procedure or instructions which, if not correctly performed, ***will result in serious personal injuries and even death.***

### **WARNING**

These notes call attention to a procedure or instructions which, if not correctly performed, ***could result in serious personal injuries and even death.***

### **CAUTION**

These notes call attention to a procedure or instructions which, if not correctly performed, ***could result in minor or moderate personal injuries.***

### **NOTICE**

These notes call attention to a procedure or instructions which, if not correctly performed, ***could result in property damage or equipment damage not exclusively to the ACOM eBox device but also to connected equipment.***

Information notes described below apply to this User's Manual:



*These notes highlight operating procedures or practices that may improve equipment reliability and/or personnel performance, or to emphasize a concept.*

### **ORANGE TEXT as LINKS**

*marks all internal links in the document between Sections, Figures, Tables, etc. for your convenience.*



The safety instructions contained in this User's Manual feature specific signal words (**Danger, Warning, Caution** or **Notice**) and, where required, a safety alert symbol, in accordance with actual standards ISO 3864 or ANSI Z535.

## **PRECAUTIONS:**

### **⚠ CAUTION**

Do not undertake on your own repairs or changes in hardware or software of the ACOM eBox device in order not to endanger your or other's health and life and not to damage the device and the equipment connected with it, not covered by warranty. The manufacturer is not liable for another's actions and responsibility shall be assumed by the doer.

### **NOTICE**

To avoid damage (not covered under warranty) read the Section **2 INSTALLATION** of this User's Manual carefully. If you have any doubts about the installation, operation or safety of the ACOM eBox device, please, consult your dealer.

## 2. INSTALLATION

### 2.1. Unpacking and Initial Inspection



Before you install your eBox, thoroughly read this manual.

First, carefully inspect the cardboard carton and its contents for physical damage. ACOM ships eBox in protected container, but it cannot assure that mistreatment by shippers will not occur. If damage is evident, notify your dealer immediately. Delay may void the carrier's warranty.



Figure 2-1 eBox in original packaging

Keep all packing materials for possible future eBox shipment (see Section 8.2.4 Returning to the Service Provider).



Figure 2-2 eBox with stucked pads (bottom view)

## 2.2. Power Supply

### NOTICE

In order to avoid any damage (not covered by the warranty), check carefully to be certain that the voltage for which the eBox power supply adapter is intended corresponds to your mains nominal voltage.

Normally, the eBox is supplied with power supply adapter as follow:

- Input: 100-240 VAC / 1.0 A max.;
- Output: 12 VDC / 2.0 A;
- Output power: 24 W max.;
- Cable length: Approx. 1.5 m;
- Power input plug type: Europlug.



Figure 2-3 Power supply adapter



If you need different power plug or plug-adapter, please, contact your dealer (see Section [1.2 Owner Assistance](#)).

## 2.3. eBox Location Selection

Position the eBox near your ACOM amplifier. You will need an easy access to the front and rear side of the eBox for cabling and monitoring.

## 2.4. Connections

Connections of your eBox must be accomplished in the order described below, before you connect the power supply adapter cable to the eBox **POWER** socket.



Figure 2-4 Front panel - Connection and indicators



Figure 2-5 Rear panel - Connections

- a) eBox to amplifier connection  
Please, see [Figure 2-5 Rear panel - Connections](#).

### NOTICE

Be careful to use the correct connection cable between **AMPLIFIER** connector (on eBox rear panel) and:

- ACOM 600S, 700S or 1200S amplifier **RS-232** connector (on amplifier rear panel), or
- ACOM 2000A amplifier **REMOTE CONTROL** connector (on amplifier rear panel).

The connection cable must correspond to your amplifier model and should be specified when you order the eBox.

Using an inappropriate cable may cause a serious damage to the eBox device and your amplifier!

If you have an ACOM 600S, 700S, or 1200S amplifier, please, see [Figure 2-6 eBox to ACOM 600S, 700S, or 1200S connection](#) and [Table 2-1 eBox to ACOM 600S, 700S, and 1200S connection cable wiring](#) for correct connection cable wiring.

It is necessary to use the original connection cable (delivered with an eBox) and connect the **AMPLIFIER** connector (on eBox rear panel, see Pos. (1) below) to the amplifier **RS-232** connector (on amplifier rear panel, see Pos. (2) below).

In this case, the **RCU** connector (on eBox rear panel, see Pos. (3) below) remains unused.



Figure 2-6 eBox to ACOM 600S, 700S, or 1200S connection

eBox Rear panel		Connecting cable						ACOM 600S, 700S, and 1200S Rear panel	
AMPLIFIER connector								RS-232 connector	
 D-sub connector, 15-pin, 3-row, male	1   GND	 D-sub connector, 15-pin, 3-row, female	1	Not connected	-	 D-sub connector, 9-pin, male	1	Not connected	 D-sub connector, 9-pin, female
	2   Pin2_A		2	Not connected	-		2	TxD	
	3   Pin3_A		3	Not connected	-		3	RxD	
	4   +10AMP		4	Not connected	-		4	Not connected	
	5   CPU_ON_A#		5	Blue	6		5	GND	
	6   RX_485_TX_P		6	Not connected	-		6	DSR	
	7   CPU_RST_A#		7	Not connected	-		7	Not connected	
	8   RCU_CPU_A		8	Not connected	-		8	CTS	
	9   CPU_RCU_A		9	Not connected	-		9	Not connected	
	10   GND		10	Black	5		Housing		
	11   RS_485_TX_N		11	Not connected	-				
	12   RS_485_RX_P		12	Not connected	-				
	13   RS_485_RX_N		13	Not connected	-				
	14   RS_232_TX		14	Red	3				
	15   RS_232_RX		15	Yellow	2				
Housing	Housing	Ext. shield	Housing						

Table 2-1 eBox to ACOM 600S, 700S, and 1200S connection cable wiring



If you have an ACOM 2000A amplifier with RCU, please, see [Figure 2-7 eBox to ACOM 2000A connections](#) and [Table 2-2 eBox to ACOM 2000A connection cable wiring](#).

It is necessary to use the original connection cable (delivered with an eBox) and connect the **AMPLIFIER** connector (on eBox rear panel, see Pos. (1) below) to the amplifier **REMOTE CONTROL** connector (on amplifier rear panel, see Pos. (2) below).

In this case, the ACOM 2000A RCU (**AMPL** connector, see Pos. (3) below) should be connected to the eBox **RCU** connector (on eBox rear panel, see Pos. (4) below) using the RCU original (existing) cable.



Figure 2-7 eBox to ACOM 2000A connections

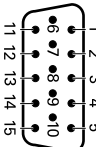
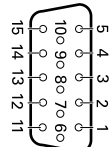
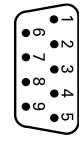
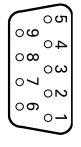
eBox Rear panel		Connecting cable						ACOM 2000A Rear panel	
AMPLIFIER connector								REMOTE CONTROL connector	
 <p>D-sub connector, 15-pin, 3-row, male</p>	1   GND	 <p>D-sub connector, 15-pin, 3-row, female</p>	1	-	1	 <p>D-sub connector, 9-pin, male</p>	1   GND	 <p>D-sub connector, 9-pin, female</p>	
	2   Pin2_A		2	-	2		2   +5LED		
	3   Pin3_A		3	-	3		3   +5BLT		
	4   +10AMP		4	-	4		4   +10RCU		
	5   CPU_ON_A#		5	-	5		5   *CPUON		
	6   RX_485_TX_P		6	Not connected	-		6   *CPURST		
	7   CPU_RST_A#		7	-	6		7   RCU-CPU		
	8   RCU_CPU_A		8	-	7		8   CPU-RCU		
	9   CPU_RCU_A		9	-	8		9   GND		
	10   GND		10	Not connected	-		Housing		
	11   RS_485_TX_N		11	Not connected	-				
	12   RS_485_RX_P		12	Not connected	-				
	13   RS_485_RX_N		13	Not connected	-				
	14   RS_232_TX		14	Not connected	-				
	15   RS_232_RX		15	Not connected	-				
Housing	Housing	Ext. shield	Housing						

Table 2-2 eBox to ACOM 2000A connection cable wiring

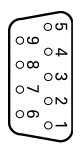
eBox Rear panel	
RCU connector	
 <p>D-sub connector, 9-pin, female</p>	1   GND
	2   +5V LED
	3   +5V BLT
	4   +10V RCU
	5   CPU-ON
	6   CPU-RST
	7   RCU-CPU
	8   CPU-RCU
	9   Not connected

Table 2-3 eBox RCU connector wiring

- b) Ethernet LAN connection  
Please, see **Table 2-4 eBox LAN socket wiring**.

Connect a standard Ethernet plug-terminated cable between eBox **LAN** socket (located on front panel, RJ-45 type, see **Figure 2-8** below) and your Ethernet hub/switch.



Figure 2-8 Front panel with Ethernet cable connected

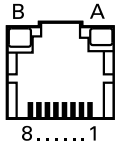
LAN interface	Pin Nr.	Pin name	Description	Colors (T568A pin assignment)
 RJ-45 socket, 8-pin, female (Rear panel view)	1	Rx+	Receive Data	White - Green
	2	Rx-	Receive Data	Green
	3	Tx+	Transmit Data	White - Orange
	4	Unused	-	Blue
	5	Unused	-	White - Blue
	6	Tx-	Transmit Data	Orange
	7	Unused	-	White - Brown
	8	Unused	-	Brown

Table 2-4 eBox LAN socket wiring



You can order standard Ethernet cable with suitable length from your local IT store.

- c) Power supply connection

### NOTICE

In order to avoid any damage (not covered by the warranty), check carefully to be certain that the voltage and power input plug of the eBox corresponds to your mains.

Always connect the power adapter last and disconnect it before all other connectors.

Connect the power supply adapter cable to the eBox **POWER** socket (on eBox rear panel, see **Figure 2-5 Rear panel - Connections**).

### 3. POWER ON AND INDICATORS

**NOTICE**

Do not turn the eBox on for at least 30 minutes after unpacking it in the room where it will be used. Pay particular attention when you move it from a very cold into a warm place - condensation is likely and this could result in damage to the device.

**NOTICE**

In order to avoid any damage (not covered by the warranty), check carefully to be certain that the voltage and power input plug of the eBox corresponds to your mains.

After following all instructions in Section 2 **INSTALLATION** you can insert the power supply adapter's mains plug to the wall outlet prepared for it.

Once the device is powered the LED indicators (located on the eBox front panel) will blink a few times and 5-10 seconds later the **LAN** and **PWR** indicators will remain green lit (see **Figure 3-1 Front panel - Connection and indicators with power on**).



Figure 3-1 Front panel - Connection and indicators with power on

The meanings of six LED indicators (see **Figure 3-1 Front panel - Connection and indicators with power on**, Pos. (1)) on the front panel are as follow:

- **LAN** indicator
  - Lights on: The device is connected to the LAN network;
  - Lights blinking: A user is logged-in (see Section 4.2 **Login and Authentication**);
  - Lights off: The device is NOT connected to the LAN network;
- **PWR** indicator
  - Lights on: The device is powered;
  - Lights off: The device is NOT powered;
- **REMOTE** indicator
  - Lights on: The ACOM amplifier is being controlled via eBox device;
  - Lights off: The ACOM amplifier is NOT controlled via eBox device;

- **LOCAL** indicator
  - Lights on: The ACOM amplifier is being controlled via local RCU;
  - Lights off: The ACOM amplifier is NOT controlled via local RCU;
- **OPER** indicator
  - Lights on: The ACOM amplifier is in OPERATE mode;
  - Lights off: The ACOM amplifier is NOT in OPERATE mode;
- **STDBY** indicator
  - Lights on: The ACOM amplifier is in STANDBY mode;  
The input RF signal passes directly to the RF output of the amplifier, bypassing the amplification stage;
  - Lights off: The ACOM amplifier is NOT in STANDBY mode.

The meanings of two small (rectangular) LED indicators under the LAN socket (see *Figure 3-1 Front panel - Connection and indicators with power on*, Pos. (2)) are as follow:

- **LAN** left indicator
  - Lights on: Ethernet/LAN connection is operating;
  - Lights off: The device is NOT connected to the LAN network;
- **LAN** right indicator
  - Lights blinking: There is activity on this LAN port;
  - Lights off: No datalink is established.

## 4. ON-LINE CONNECTION

### 4.1. Connecting eBox to Your LAN Network

When the eBox is connected to your LAN network as described in Section [2.4 Connections](#), its IP address must be used to access its web-interface in an any web browser, running on a device (PC, smart phone, or tablet) connected to the same LAN network.



Most of the pictures and operating descriptions in this User's Manual are based on the PC with Windows 10, Firefox Internet browser, and ACOM 2000A and 700S amplifiers.



Consult the specific technical glossary [TERMS and ABBREVIATIONS](#) at the end of this manual.

To access the eBox web-interface you need the following default data (factory settings):

- **IP address**            192.168.1.2
- **Subnet mask**        255.255.255.0
- **Gateway**            192.168.1.1
- **DNS**                 192.168.1.1

Start your preferred web-browser and enter in the address bar the IP address of the device (see [Figure 4-1 eBox web-interface access](#), Pos. (1)) and press ENTER. If the IP address was changed in the **Settings**→**Device**→**Network** menu, the new IP address needs to be used.

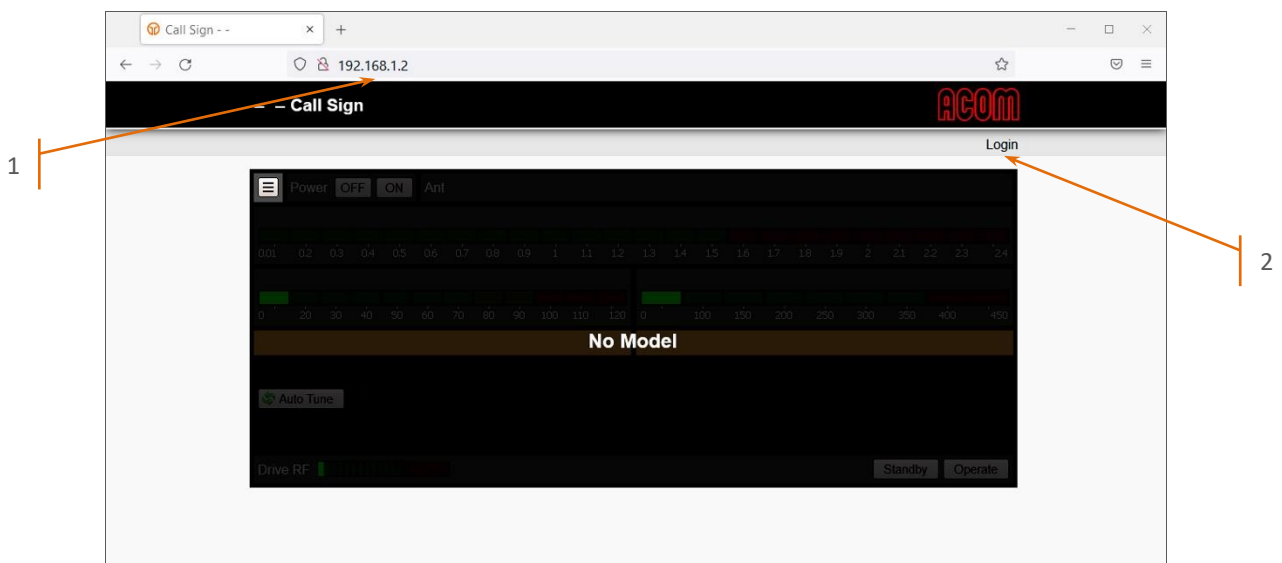


Figure 4-1 eBox web-interface access

Your PC (or smart phone, tablet, etc.) needs to be connected to the same network as your ACOM eBox device in order to be able to establish connection between both devices, i.e., the IP address of your PC should be, for example, 192.168.1.10).

You may need to change temporarily the network settings of your PC during this first connection to eBox. After that you can change the IP address of eBox and integrate it in your local network.

By default, the eBox doesn't use DHCP (Dynamic Host Configuration Protocol) server, even if there is running one in your local network.



For details on NETWORK SETTINGS and how to connect eBox to your LAN network, please, contact a local IT professional or your Internet provider.

Once the eBox is connected for first time to your local network you will see in your Internet browser the window similar to **Figure 4-1 eBox web-interface access**.

Now, you have one more way to see the eBox device in Windows 10:

- Open File Explorer→Network→Other Devices→Call Sign (ACOM eBox)  
(see **Figure 4-2 eBox viewing in Windows 10 network**, Pos. (1 and 2)).

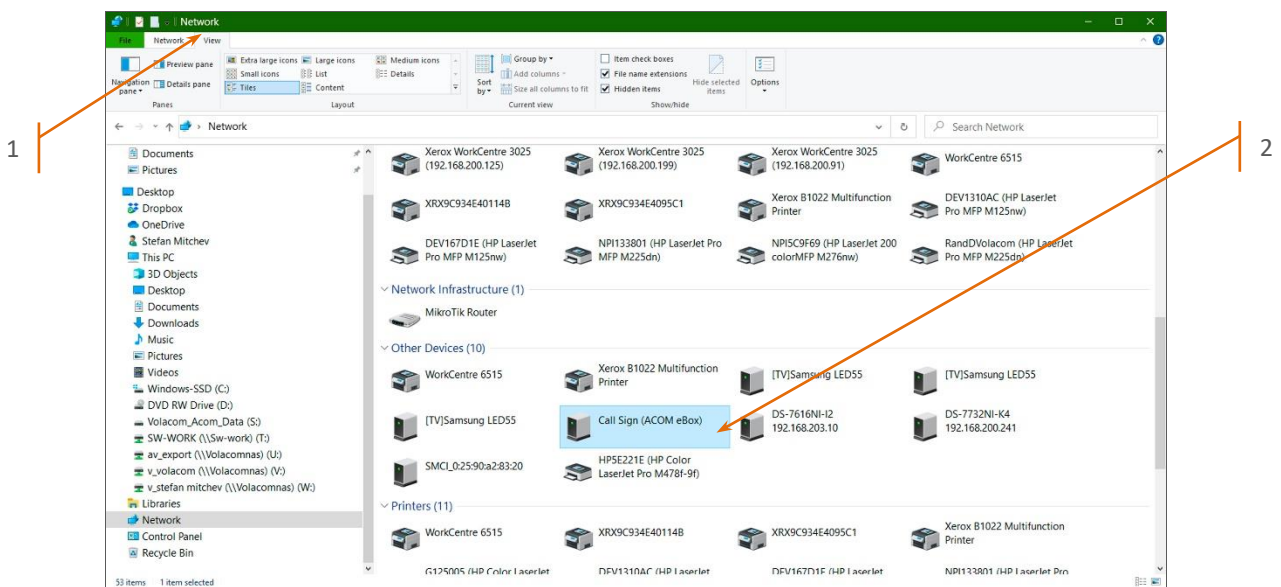


Figure 4-2 eBox viewing in Windows 10 network

Double click on eBox device icon (or right click and choose **View device webpage**) to open the device web interface in your default web browser.

## 4.2. Login and Authentication

Authentication is required for amplifier remote control through the ACOM eBox web interface or to change/set the eBox device settings.

To log-in, please, click on **Login** link (see [Figure 4-1 eBox web-interface access](#), Pos. (2)). The **Login** window will pop-up (see [Figure 4-3 eBox Login page](#)).

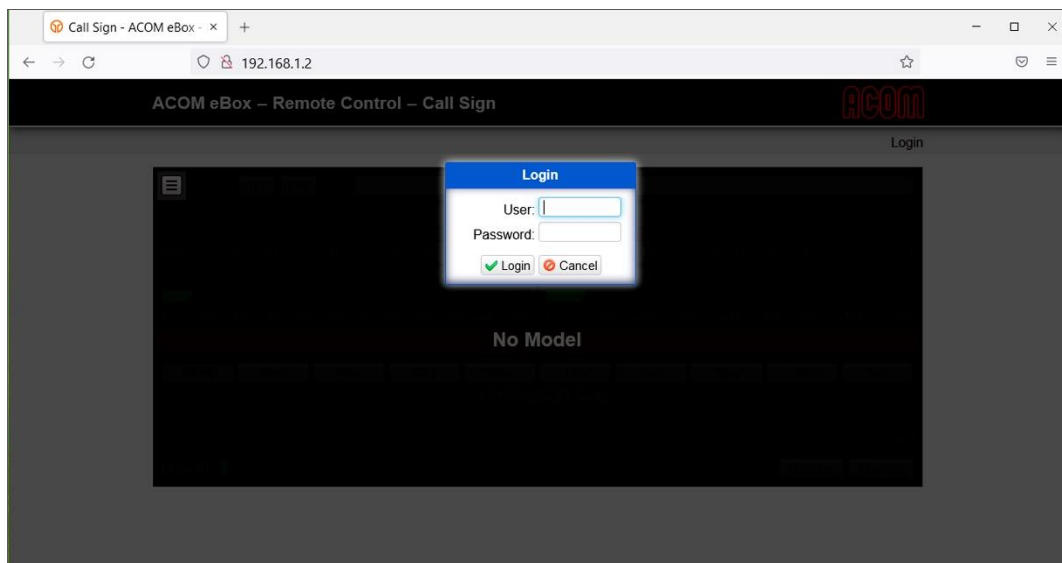


Figure 4-3 eBox Login page

There are two levels of authentication (access levels) - **User** and **Administrator**. For your daily work with the device, it is recommended to use the **User** level.

To access the eBox web-interface you need the following default data (factory settings):

- **User** authentication level
  - User name: user
  - Password: pass
- **Administrator** authentication level
  - User name: admin
  - Password: pass

The **User** authentication level has full access to the **Settings**→**Amplifier** menu (amplifier controls - Power on/off, Changing bands, Selecting visible measurements, etc.), however its rights to the **Settings**→**Device** menu are limited only to reviewing the eBox device and network status, setting up the interface refresh rate and set up the average and peak adjustments.

The **Administrator** authentication level has full access to all settings of the device.





To increase security, it is recommended to change the factory user names and passwords for both levels of authentication.

Enter the user name and the password for the desired user authentication level and click the **Login** button.

If there is no activity for a set period of time, you will be logged out automatically. This time interval is set in the menu **Settings**→**Device**→**HTTP Server** (available for Administrator access level only).

## 5. DEVICE AND AMPLIFIER SETTINGS

### 5.1. Device (eBox) Settings

When you use the eBox for a first time, the device is not configured to operate with a specific amplifier model (factory setting). The first screen you will see is shown on [Figure 4-1 eBox web-interface access](#). How to select an amplifier model is described in Section [5.2 Amplifier Settings](#).

Once you are successfully logged-in, the **Home** and **Settings** menus will be shown in the menu bar of the web-page. The ACOM eBox factory default settings (Administrator access level) are shown on [Figure 5-1 eBox Settings→Device menu](#).

The settings screen is divided in panels in which the different parameters are thematically grouped.

#### a) Device Status panel

This panel (see [Figure 5-1 eBox Settings→Device menu](#), Pos. (a)) displays the current firmware and library versions, the serial number of the specific device, its physical network address (MAC address), the current date and time as well as the total device uptime.

The panel is visible for both **User** and **Administrator** authentication levels.



If the eBox device does not have access to an Internet time-server (NTP server) the date and time shown in **Device Status→Device Time** section may be incorrect, but this does not affect the proper operation of the device.

#### b) Network Status panel

This panel (see [Figure 5-1 eBox Settings→Device menu](#), Pos. (b)) displays the current settings for the IP address, type of IP address (manually entered static address or DHCP assigned dynamic address), network mask as well as primary and secondary DNS.

The panel is visible for both **User** and **Administrator** authentication levels.

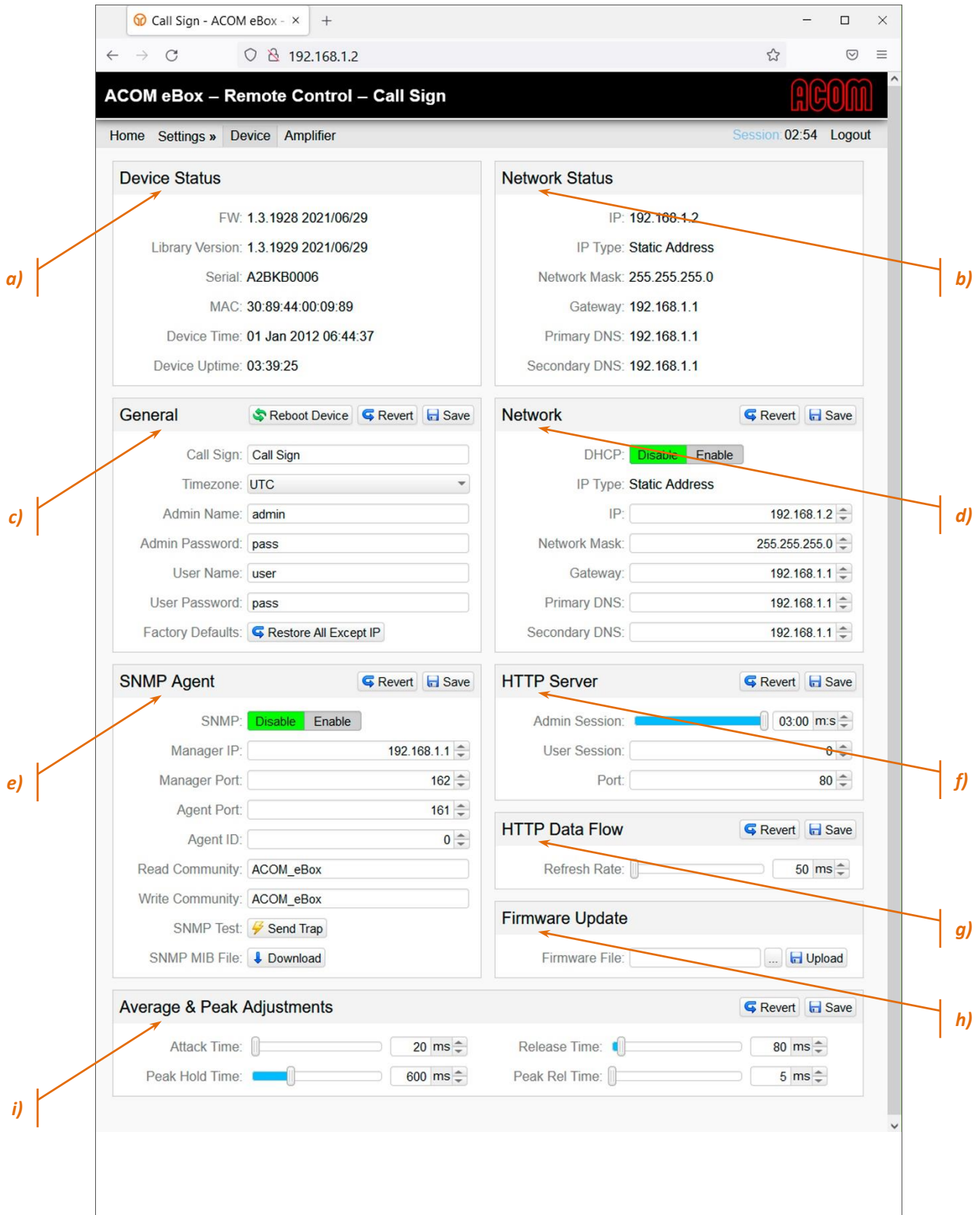


Figure 5-1 eBox Settings→Device menu

c) **General panel**

This panel (see [Figure 5-1 eBox Settings→Device menu](#), Pos. (c)) contains the general settings of the eBox. You can change all available fields: Call Sign, Time Zone, Admin Name, Admin Password, User Name, and User Password.

The panel is visible for **Administrator** authentication level only.

Panel functional buttons:

- **Reboot Device**  
When it is pressed a confirmation window pops-up. If you confirm reboot, the information screen will be shown (see [Figure 5-2 eBox Reboot page](#)) while the device reboots. When reboot is done, you will need to log-in again;
- **Revert**  
When it is pressed all the changes in the panel will go back to the last saved values;
- **Save**  
When it is pressed all the changes in a panel are saved;
- **Restore All Except IP**  
This button is used to restore all device settings to factory defaults, except the IP address (in this way, the connection to the device will be kept). When the button is pressed, a confirmation window pops-up. If you confirm restore, the information screen will be shown while the device restores. When restore is done, you will need to log-in again.

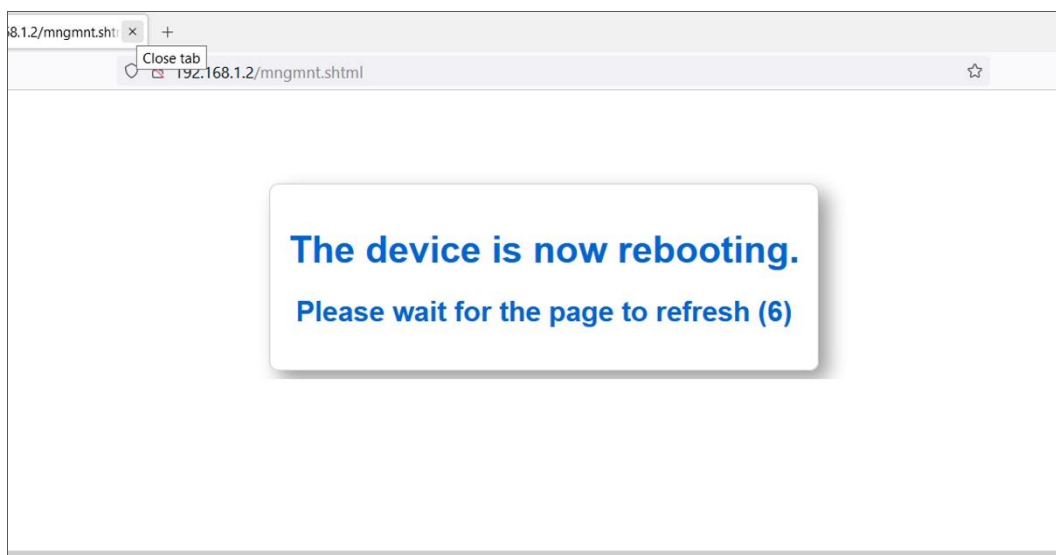


Figure 5-2 eBox Reboot page

#### d) Network panel

This panel (see [Figure 5-1 eBox Settings→Device menu](#), Pos. (d)) contains the network settings of the eBox. You can change all available fields: DHCP, IP address, Network Mask, Gateway, Primary DNS address, and Secondary DNS address.

The panel is visible for **Administrator** authentication level only.

Panel functional buttons:

- **Revert**  
When it is pressed all the changes in the panel will go back to the last saved values;
- **Save**  
When it is pressed all the changes in a panel are saved;
- **DHCP: Disable / Enable**  
When **Disable** is selected, the device will NOT receive automatically network settings from a DHCP (Dynamic Host Configuration Protocol) server. In this case, you have to define all network settings (IP address, Network Mask, Gateway, Primary DNS address, and Secondary DNS address) manually;  
When **Enable** is selected, the device will receive automatically network settings from a DHCP (Dynamic Host Configuration Protocol) server.



Be careful when selecting DHCP **Enable**. If you don't know the new assigned IP address of eBox, the device will be inaccessible.

In such a case you have to reset the device via the **RESET** button located on rear panel (see Section [7.3 Reset to Factory Default Settings](#)).



For details on NETWORK SETTINGS and how to connect eBox to your LAN network, please, contact a local IT professional or your Internet provider.

#### e) SNMP Agent panel

This panel (see [Figure 5-1 eBox Settings→Device menu](#), Pos. (e)) contains the settings for the SNMP (Simple Network Management Protocol) communication. For details, please, see Section [6.4 Operating with ACOM amplifiers through Simple Network Management Protocol \(SNMP\)](#).

The panel is visible for **Administrator** authentication level only.

#### f) HTTP Server panel

This panel (see [Figure 5-1 eBox Settings→Device menu](#), Pos. (f)) contains the settings about login session lengths and connection port.

The panel is visible for **Administrator** authentication level only.

Panel functional buttons:

- **Revert**  
When it is pressed all the changes in the panel will go back to the last saved values;
- **Save**  
When it is pressed all the changes in the panel are saved.

Panel functional fields:

- **Admin Session**  
This control is used to set a time period after which the administrator will be automatically logged out in case of no activity. Maximum time period is 3 minutes;
- **User Session**  
This control is used to set a time period after which the user will be automatically logged out in case of no activity. The field is in seconds and the maximum allowed interval is 600 seconds. It is possible to set no time limit for the session with value set to "0" (zero);
- **Port**  
The HTTP port used to establish connection with the eBox web-interface. Default port number is 80.

g) **HTTP Data Flow** panel

This panel (see [Figure 5-1 eBox Settings→Device menu](#), Pos. (g)) contains the setting that controls how often the web-interface receives data regarding the state of the connected ACOM amplifier.

The panel is visible for both **User** and **Administrator** authentication levels.

Panel functional buttons:

- **Revert**  
When it is pressed the change in the panel will go back to the last saved value;
- **Save**  
When it is pressed the change in a panel is saved.

Panel functional field:

- **Refresh Rate**  
This control is used to set a time period (in milliseconds) between the data packets receiving from the amplifier. These data packets contain an information for current status of the amplifier. Higher value (longer time period) means more lag in displaying changes of the amplifier status, but might be beneficial for slower IT networks.

h) **Firmware Update** panel

This panel (see [Figure 5-1 eBox Settings→Device menu](#), Pos. (h)) allows firmware updates of ACOM eBox. For details, please, see Section [7.4 Firmware Updates](#).

The panel is visible for **Administrator** authentication level only.

i) **Average & Peak Adjustments** panel

This panel (see [Figure 5-1 eBox Settings→Device menu](#), Pos. (i)) contains settings for the bargraph visual elements and their behavior.

The panel is visible for both **User** and **Administrator** authentication levels.

Panel functional buttons:

- **Revert**  
When it is pressed the change in the panel will go back to the last saved value;
- **Save**  
When it is pressed the change in a panel is saved.

Panel functional fields:

- **Attack Time**  
This control is a setting for the **Forward Power** bargraph that sets the time between the actual moment of power going up and the reaction of the bargraph;
- **Peak Hold Time**  
This control is used to set how long the segment of the bargraph element that corresponds to the highest achieved value will remain lit after the actual value has dropped. Possible values are between 5 ms and 2000 ms;
- **Release Time**  
This control sets the time between the actual moment forward power starts going down and the reaction of the bargraph element;
- **Peak Rel Time**  
This control sets the time between the actual moment a power peak is detected and the peak point is released.

## 5.2. Amplifier Settings

The **Settings→Amplifier** menu contains parameters regarding the ACOM amplifier, connected to the eBox device.

When you use the eBox for a first time, the device is not configured to operate with a specific amplifier model (factory setting). Once you are successfully logged-in, the **Home** and **Settings** menus will be shown in the menu bar of the web-page. Click on **Settings→Amplifier** to see selection page as shown on **Figure 5-3 eBox Amplifier model selection**, select your ACOM amplifier model and click on **Save** button to confirm your choice.



Figure 5-3 eBox Amplifier model selection

The amplifier's settings screen is divided in panels in which the different parameters are thematically grouped. Depending on the used ACOM amplifier model, the panels include different information.



All panels are visible for both **User** and **Administrator** authentication levels.



### 5.2.1. ACOM 2000A Amplifier Settings

#### a) Amplifier panel

Please, see [Figure 5-5 eBox with ACOM 2000A connected](#), Pos. (a).



Changes to this panel can be made only while the amplifier is switched OFF.

Panel functional buttons:

- **OFF** and **ON**  
Switch the amplifier OFF or ON;
- **Save**  
When it is pressed the amplifier model change in a panel is saved;

Panel functional fields:

- **Model**  
Allows selection of connected amplifier model. The supported models are ACOM 2000A, 600S, 700S, and 1200S;
- **State**  
Displays the current state of the amplifier: Starting, Warm-up, Initializing, Standby, Powered OFF, Powered OFF (Local Mode), or Operate;
- **Front/Rear tube**  
Displays the tubes serial numbers;
- **Serial**  
Displays amplifier serial number;
- **Warm-up time**  
You can see this counter only during the **Warm-up** process (see [Figure 5-4 eBox Warm-up time counter](#)). This is a counter for the seconds until the warm-up end.

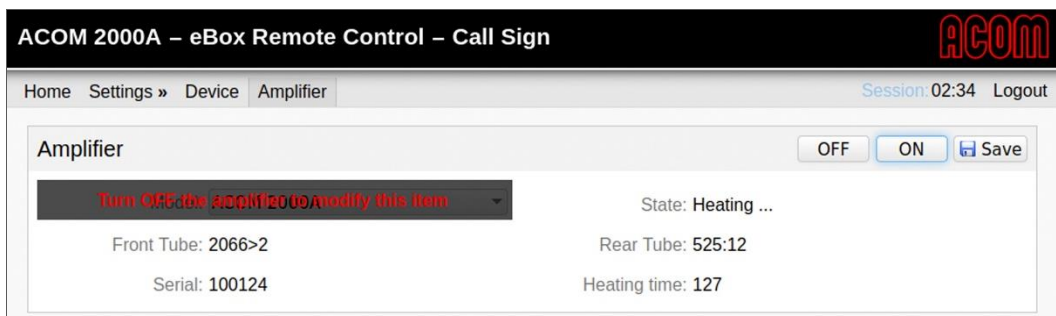


Figure 5-4 eBox Warm-up time counter

**ACOM 2000A – eBox Remote Control – LZ1A** ACOM

Home Settings » Device Amplifier Session: 02:08 Logout

**Amplifier** OFF ON Save

Model: **ACOM 2000A** State: **Standby**  
 Front Tube: **011062** Rear Tube: **010873**  
 Serial: **130174**

**PA Settings** Clear User Tunings Revert Save

Auto Operate: **Disable** Enable Auto Ant. Change: **Disable**  
 RCU Local Control: **Disable** Enable Self Address:

**Antenna Alias** Revert Save

Antenna 1:  Antenna 2:   
 Antenna 3:  Antenna 4:   
 Antenna 5:  Antenna 6:   
 Antenna 7:  Antenna 8:   
 Antenna 9:  Antenna 10:

**Antenna Assignment** Revert Save

ITU band 160m:  ITU band 80m:   
 ITU band 60m:  ITU band 40m:   
 ITU band 30m:  ITU band 20m:   
 ITU band 17m:  ITU band 15m:   
 ITU band 12m:  ITU band 10m:

**Measurements** Standby Operate

Forward Power: <b>0.00 kW</b>	Reflected Power: <b>0 W</b>
High Voltage: <b>2.96 kV</b>	Plate Current: <b>0 mA</b>
Screen Voltage: <b>8 V</b>	Screen Current: <b>0 mA</b>
Grid Bias Voltage: <b>-124 V</b>	Grid Current: <b>0.0 mA</b>
Mains Voltage: <b>228 V</b>	Filament Voltage: <b>13.2 V</b>
Front Tube Fil Current: <b>3.7 A</b>	Rear Tube Fil Current: <b>3.7 A</b>
Front Tube Temperature: <b>30 °C</b>	Rear Tube Temperature: <b>30 °C</b>
Plate RF Voltage: <b>0 V</b>	DC Power Input: <b>0 W</b>
Drive RF Power: <b>0 W</b>	Power Gain: <b>0.0 dB</b>
Last Used Frequency: <b>0 kHz</b>	Load (Antenna) VSWR: <b>1.0 :1</b>

Figure 5-5 eBox with ACOM 2000A connected

b) **PA Settings** panel

Please, see *Figure 5-5 eBox with ACOM 2000A connected*, Pos. (b).



Changes to this panel can be made only while the amplifier is switched OFF.

Panel functional buttons:

- **Clear User Tunings**  
Clears the tunings done by the user;
- **Revert**  
When it is pressed the change in the panel will go back to the last saved value;
- **Save**  
When it is pressed the changes in a panel are saved.

Panel functional fields:

- **Auto Operate**  
Enable/Disable Auto Operate feature. When Auto Operate is enabled the amplifier will automatically revert to OPERATE mode after a soft-fault protection trip;
- **RCU Local Control**  
Enable/Disable local control of the amplifier from its own RCU;
- **Auto Ant. Change**  
Automatically select an antenna, corresponding to the measured frequency of the drive signal. Requires an antenna to be set for the corresponding band (see Section *5.2.1.d) Antenna Assignment panel*);
- **Self Address**  
When ACOM 2000A amplifier is part of serial network chain, you can assign amplifiers self-address here. When the amplifier is not used in serial network chain, this address is meaningless.

c) **Antenna Alias** panel

Please, see *Figure 5-5 eBox with ACOM 2000A connected*, Pos. (c).

Panel functional buttons:

- **Revert**  
When it is pressed the change in the panel will go back to the last saved value;
- **Save**  
When it is pressed the changes in a panel are saved.

Panel functional fields:

- **Antenna 1, 2, ... 10**  
Assign names of the used antennas (max. 10 antennas). This feature is used when working together with an automatic antenna selector ACOM 2000S and remote antenna switch ACOM 2000SW.

d) **Antenna Assignment** panel

Please, see *Figure 5-5 eBox with ACOM 2000A connected*, Pos. (d).

Panel functional buttons:

- **Revert**  
When it is pressed the change in the panel will go back to the last saved value;
- **Save**  
When it is pressed the changes in a panel are saved.

Panel functional fields:

- **ITU band 160 m - 10 m**  
Select the corresponding antenna for each of the ham radio HF - Short Wave (SW) bands (from 160 to 10 m.). This feature is used when working together with an automatic antenna selector ACOM 2000S and remote antenna switch ACOM 2000SW.

e) **Measurements** panel

Please, see *Figure 5-5 eBox with ACOM 2000A connected*, Pos. (e).

Panel functional buttons:

- **Standby**  
Set the amplifier mode to Standby;
- **Operate**  
Set the amplifier mode to Operate.

The panel shows values of 20 parameters that indicate the tubes regime, input signal, tubes exhaust air temperature, and others. It appears when the amplifier is in ON state and after the tubes warm-up procedure has been completed.

### 5.2.2. ACOM 600S, 700S, and 1200S Amplifier Settings



Amplifiers ACOM 600S, 700S, and 1200S can be used with ACOM eBox with firmware version 1.3 or later.

The screenshot displays the 'ACOM 700S - eBox Remote Control - LZ1A' web interface. The top navigation bar includes 'Home', 'Settings', 'Device', and 'Amplifier'. The 'Amplifier' section is active, showing a dropdown menu for 'Model' set to 'ACOM 700 S', 'State: Operate RX', and various hardware and software details. The 'User preferences' section below it contains several settings, including 'Antenna Tuner' (Off), 'CAT Interface' (Off), 'CAT Baud rate' (9600 bps), 'CAT Commands' (set 5), 'CAT Byte spacing' (0 µs), 'CAT Polling time' (300 ms), 'Operate Access' (Enable), and 'Auto Operate' (Enable). The 'Measurements' section at the bottom provides real-time data for DC Consumption, Drive RF Power, Forward Power, Load (Antenna) VSWR, Bias Left, DC Voltage, 5V Supply, Temperature, Fan Speed, Dissipation, Output Power, Reflected Power, Power Gain, Bias Right, DC Current, 26V Supply, Last Used Frequency, and Amplifier State.

Section	Parameter	Value
Amplifier	Model	ACOM 700 S
	Serial	200149
	HW	1.2
	Interface A	1.2
	ATU Modem	0.0
	State	Operate RX
	FW	1.3
	Bootloader	1.2
	Interface B	1.1
	Hard faults	0
User preferences	Antenna Tuner	Off
	CAT Interface	Off
	CAT Baud rate	9600 bps
	CAT Commands	set 5
	CAT Byte spacing	0 µs
	CAT Polling time	300 ms
	Operate Access	Enable
	Auto Operate	Enable
Measurements	DC Consumption	0 W
	Drive RF Power	0.0 W
	Forward Power	0 W
	Load (Antenna) VSWR	0.00 :1
	Bias Left	0.00 V
	DC Voltage	43.4 V
	5V Supply	5.07 V
	Temperature	28 °C
	Fan Speed	0
	Dissipation	0 W
	Output Power	0 W
	Reflected Power	0 W
	Power Gain	0.0 dB
	Bias Right	0.00 V
DC Current	0.00 A	

Figure 5-6 eBox with ACOM 700S connected

a) **Amplifier panel**

Please, see *Figure 5-6 eBox with ACOM 700S connected*, Pos. (a).

Panel functional buttons:

- **OFF and ON**  
Switch the amplifier OFF or ON;
- **Save**  
When it is pressed the amplifier model change in a panel is saved;

Panel functional fields:

- **Model**  
Allows selection of connected amplifier model. The supported models are ACOM 2000A, 600S, 700S, and 1200S;
- **State**  
Displays the current state of the amplifier: Starting, Initializing, Standby, Powered OFF, or Operate;
- **Serial**  
Displays the amplifier serial number;
- **FW, HW, Bootloader, Interface A, Interface B, and ATU Modem**  
Displays the versions of firmware, hardware, bootloader, Interface A and B, and ATU modem;
- **Hard faults**  
Displays the number of stored hard faults in an amplifier memory.

b) **User preferences panel**

Please, see *Figure 5-6 eBox with ACOM 700S connected*, Pos. (b).

The panel contains different user settings for the amplifier.



For details about your ACOM amplifier, please, read corresponding User's Manual (Sections Menu CAT/AUX SETTINGS, and Menu USER PREFERENCES).

The latest versions of our User's Manuals are available at [www.acom-bg.com](http://www.acom-bg.com).

Panel functional buttons:

- **Revert**  
When it is pressed the change in the panel will go back to the last saved value;
- **Save**  
When it is pressed the changes in a panel are saved.

Panel functional fields:

- **Antenna Tuner**  
Select on when a Remote Automatic Antenna Tuner and Switch ACOM 04AT is installed. If there is no such device connected to the amplifier, error message will occur:

**(113) ATU/ASEL unassigned automatically and out of service;**

- **CAT Interface**  
Switch CAT interface between RS-232, TTL, BCD, Voltage or OFF;
- **CAT Baud rate**  
Set CAT Baud rate, possible values are between 1200 and 57600 bps;
- **CAT Commands**  
Select one of 5 possible CAT command sets (Set1, Set2, ..., Set5);
- **CAT Byte spacing**  
Set CAT Byte spacing between 0 and 1500 ms;
- **CAT Polling time**  
Set CAT Polling time between 200 and 1800 ms or OFF;
- **Operate Access**  
Disable/Enable Operate Access restriction;
- **Auto Operate**  
Disable/Enable Auto Operate feature.

c) **Measurements panel**

Please, see *Figure 5-6 eBox with ACOM 700S connected*, Pos. (c).

The panel shows the values of 18 amplifier parameters that indicate power transistors regime, input signal, temperature, and others.

Panel functional buttons:

- **Standby**  
Set the amplifier mode to Standby;
- **Operate**  
Set the amplifier mode to Operate.

## 6. OPERATION

**i** When you finish the installation and setup of your eBox, we highly recommend to log-out and log-in in the device again, with **User** access level.

To operate with eBox and your amplifier, you must have in mind that ACOM 2000A is a tube-based amplifier, but ACOM 600S, 700S, and 1200S are transistor-based (solid-state type) amplifiers. Due to the technical differences between these amplifiers, the operation with them will be considered separately for both types amplifiers.

**i** The amplifier's visualization through eBox web-interface is almost identical to amplifier's "standard" user interface when operated locally.

### 6.1. Operating with ACOM 2000A amplifier

After successful log-in (as **User**, see Section 4.2 *Login and Authentication*), the first step is to turn on the power supply of the amplifier using **Power ON** button (see *Figure 6-1 Power On the ACOM 2000A*, Pos. (1)).

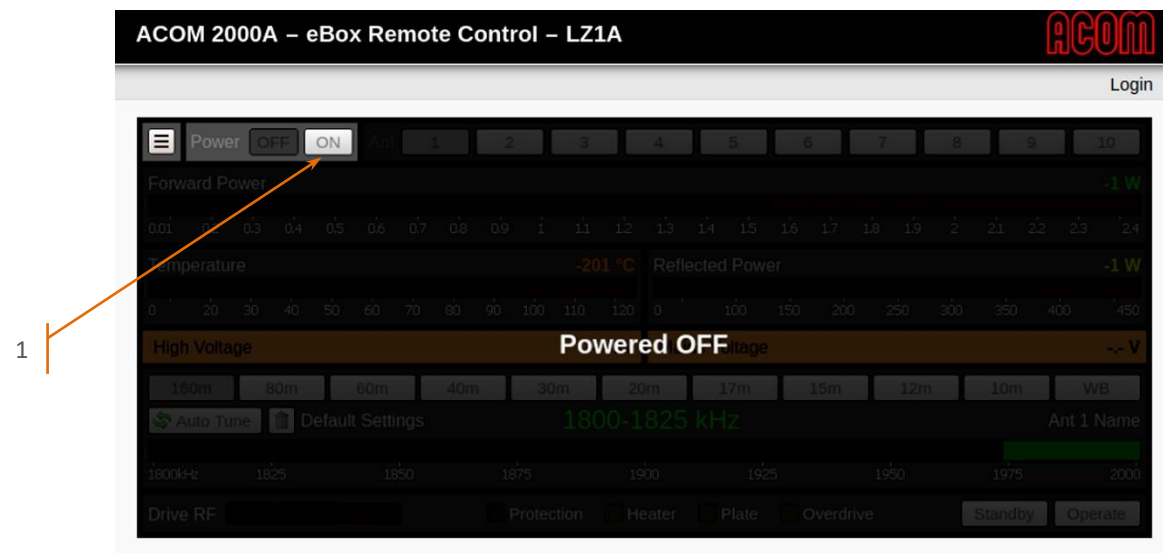


Figure 6-1 Power On the ACOM 2000A

A screen will appear, counting the warm-up sequence of the tubes. The warm-up period lasts 150 seconds, followed by the amplifier initialization and starting procedures. The initialization and starting lasts a few seconds and after that a main screen will appear (see *Figure 6-2 Operating of eBox with ACOM 2000A*).



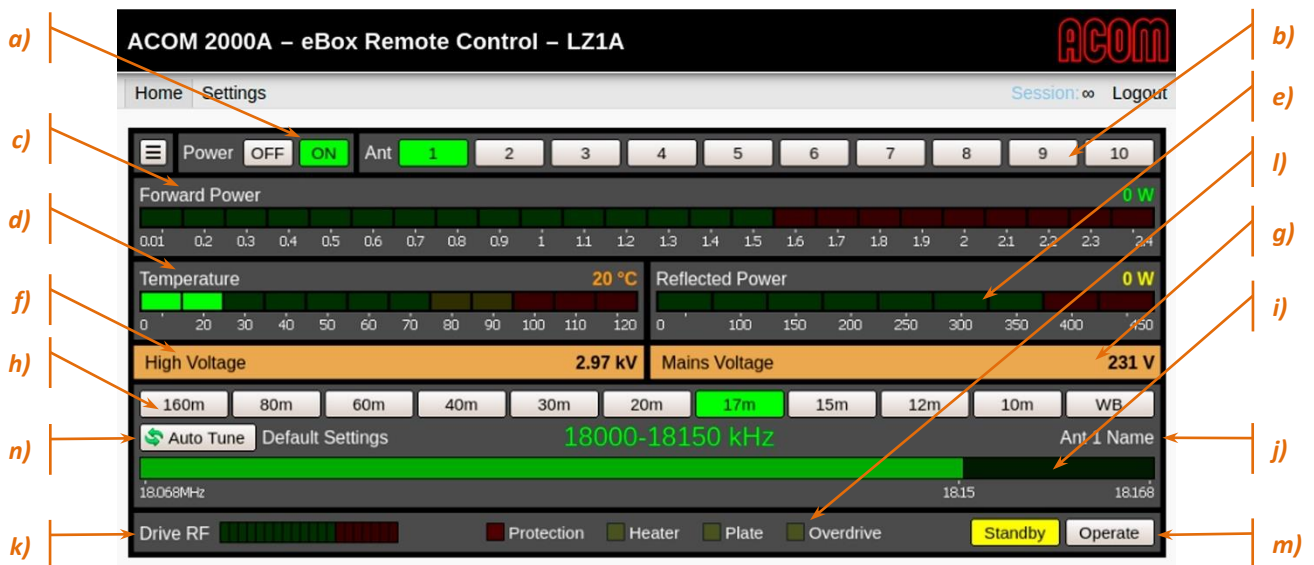


Figure 6-2 Operating of eBox with ACOM 2000A

The control and monitoring features of the ACOM 2000A amplifier include the following functions:

a) **Power OFF and ON**

Please, see *Figure 6-2 Operating of eBox with ACOM 2000A*, Pos. (a).

b) **Ant 1 ... 10**

Please, see *Figure 6-2 Operating of eBox with ACOM 2000A*, Pos. (b).

Buttons from 1 to 10 for direct antenna selection (used together with an automatic antenna selector ACOM 2000S and remote antenna switch ACOM 2000SW).

c) **Forward Power**

Please, see *Figure 6-2 Operating of eBox with ACOM 2000A*, Pos. (c).

Forward Power: Digital value in [W] and bargraph, displayed in [kW].

d) **Temperature**

Please, see *Figure 6-2 Operating of eBox with ACOM 2000A*, Pos. (d).

This is the tubes exhaust air temperature in °C (degrees Celsius).

e) **Reflected Power**

Please, see *Figure 6-2 Operating of eBox with ACOM 2000A*, Pos. (e).

Reflected Power: Digital value and bargraph, displayed in [W].

f) **Parameter 1 of 2**

Please, see *Figure 6-2 Operating of eBox with ACOM 2000A*, Pos. (f).

The panel displays any one of the following parameters on your choice and their value:

- Forward Power
- Reflected Power
- High Voltage
- Plate Current
- Screen Voltage
- Screen Current
- Grid Bias Voltage
- Grid Current
- Mains Voltage
- Filament Voltage
- Front Tube Fil Current
- Rear Tube Fil Current
- Front Tube Temperature
- Rear Tube Temperature
- Plate RF Voltage
- DC Power Input
- Drive RF Power
- Power Gain
- Last Frequency used
- Load (Antenna) VSWR.

By default, High Voltage is being displayed. To select another parameter, click over the panel (parameter name) and choose the desired one from the scrollable list (see *Figure 6-3 eBox with ACOM 2000A - Parameter 1 selection*).



Figure 6-3 eBox with ACOM 2000A - Parameter 1 selection

**g) Parameter 2 of 2**

Please, see *Figure 6-2 Operating of eBox with ACOM 2000A*, Pos. (g).  
It is used analogously to Parameter 1, by default displays Mains Voltage.

**h) Band**

Please, see *Figure 6-2 Operating of eBox with ACOM 2000A*, Pos. (h).  
A set of ten buttons for direct selection of a frequency band 160 m - 10 m.

i) **Segment**

Please, see **Figure 6-2 Operating of eBox with ACOM 2000A**, Pos. (i).

Choose a frequency segment. Digital and graphical segment reading within the selected band.

j) **Ant Name**

Please, see **Figure 6-2 Operating of eBox with ACOM 2000A**, Pos. (j).

Displays selected antenna name.

k) **Drive RF**

Please, see **Figure 6-2 Operating of eBox with ACOM 2000A**, Pos. (k).

Displays the input power.

l) **Warning LED indicators**

Please, see **Figure 6-2 Operating of eBox with ACOM 2000A**, Pos. (l).

These four LED-like indicators might warn you about the following:

- Protection indicator: Means too high VSWR to the load/antenna;
- Heater indicator:
  - Constantly lighted: The heater voltage is too low;
  - Dark: The heater voltage is normal;
  - Blinking: The heater voltage is too high;
- Plate indicator: The plate current is too high;
- Overdrive indicator: The Drive Power is too high;

m) **Mode**

Please, see **Figure 6-2 Operating of eBox with ACOM 2000A**, Pos. (m).

Amplifier mode of operation, selection buttons:

- OPERATE mode;
- STANDBY mode;

n) **Auto Tune**

Please, see **Figure 6-2 Operating of eBox with ACOM 2000A**, Pos. (n).

The Auto Tune button starts a procedure for preparation of user (USR) tunings for an antenna and frequency segment to replace the default (DEF) tunings. This is a fully automatic procedure of matching the antenna complex impedance to the optimum tubes load resistance. The result is stored in the amplifier's nonvolatile memory automatically.

## 6.2. Operating with ACOM 600S, 700S, or 1200S amplifier

After successful log-in (as User, see Section 4.2 *Login and Authentication*), the first step is to turn on the power supply of the amplifier using Power ON button (see *Figure 6-4 Power On of the ACOM 700S*, Pos. (1)).

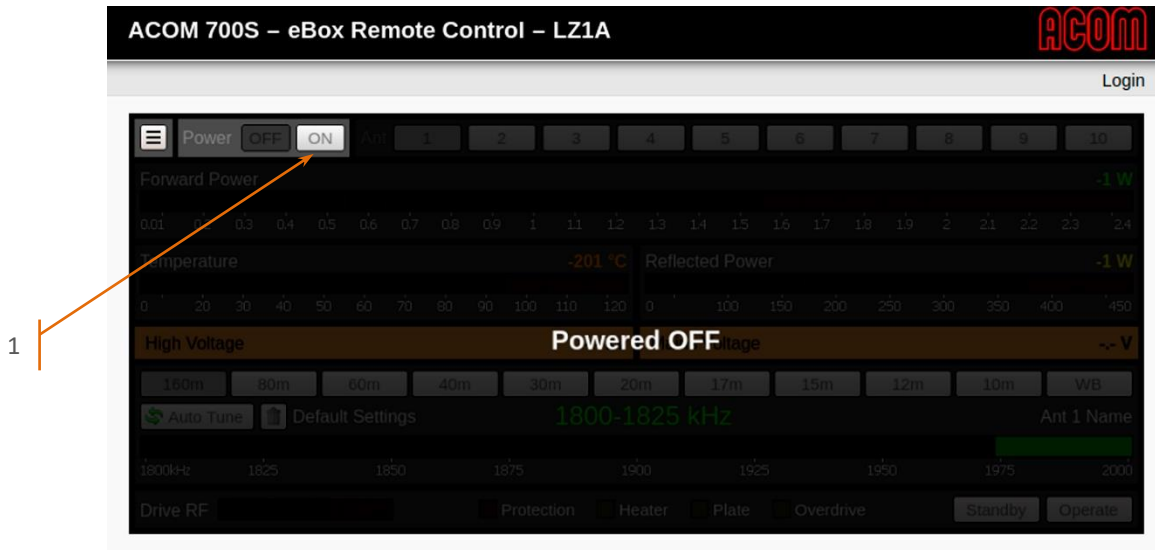


Figure 6-4 Power On of the ACOM 700S

The amplifier initialization and starting procedures are executed. The initialization and starting lasts a few seconds and after that a main screen will appear (see *Figure 6-5 Operating of eBox with ACOM 700S*).

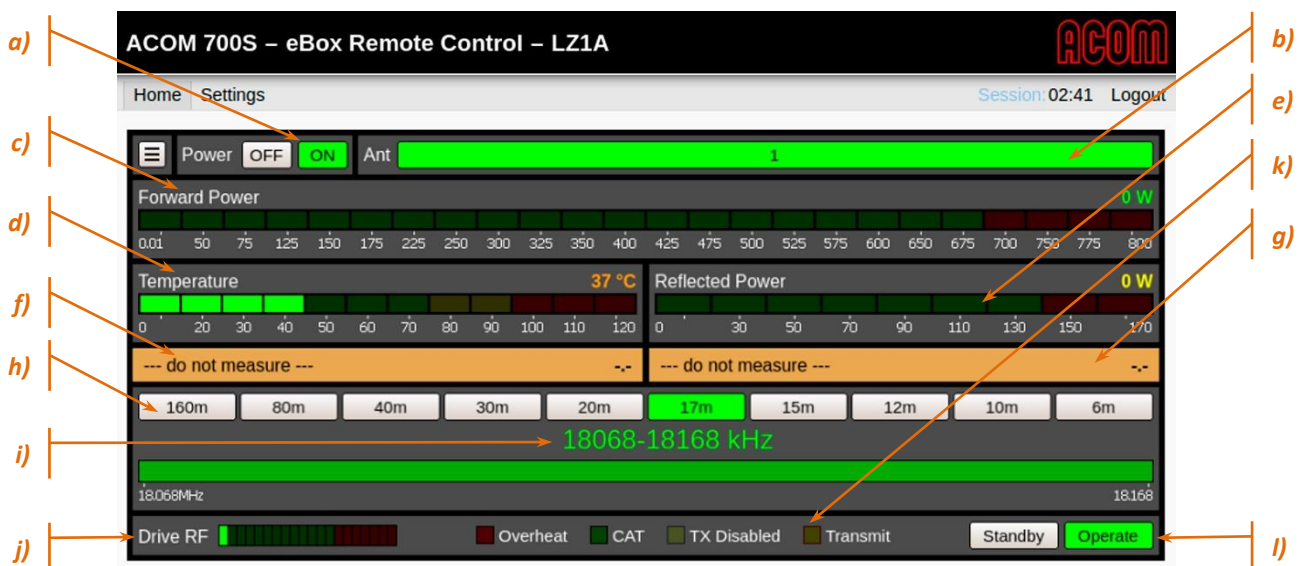


Figure 6-5 Operating of eBox with ACOM 700S

The control and monitoring features of the ACOM 600S, 700S, or 1200S amplifier include the following functions:

a) **Power OFF and ON**

Please, see *Figure 6-5 Operating of eBox with ACOM 700S*, Pos. (a).

b) **Ant**

Please, see *Figure 6-5 Operating of eBox with ACOM 700S*, Pos. (b).

Used only when a Remote Automatic Antenna Tuner and Switch ACOM 04AT is installed.

Displayed is the name and number of the actual selected antenna.

c) **Forward Power**

Please, see *Figure 6-5 Operating of eBox with ACOM 700S*, Pos. (c).

Forward Power into the antenna: Digital value and bargraph, displayed in [W].

d) **Temperature**

Please, see *Figure 6-5 Operating of eBox with ACOM 700S*, Pos. (d).

PA transistor temperature bar graph and readout. Entering the red zone is not allowed.

Displayed temperature in °C (degrees Celsius).

e) **Reflected Power**

Please, see *Figure 6-5 Operating of eBox with ACOM 700S*, Pos. (e).

Reflected Power from the antenna. Entering in red zone is not allowed.

Digital value and bargraph, displayed in [W].

f) **Parameter 1 of 2**

Please, see *Figure 6-5 Operating of eBox with ACOM 700S*, Pos. (f).

The panel displays any one of the following parameters on your choice and their value:

- Drive RF Power
- Output Power
- Forward Power
- Reflected Power
- Load (Antenna) VSWR
- Power Gain
- Bias Left
- Bias Right
- DC Current
- DC Voltage
- Temperature.

By default, --- **do not measure** --- is being displayed. To select a parameter, click over the panel (parameter name) and choose the desired one from the scrollable list (see [Figure 6-6 eBox with ACOM 600S, 700S, or 1200S - Parameter 1 selection](#)).



Figure 6-6 eBox with ACOM 600S, 700S, or 1200S - Parameter 1 selection

#### g) **Parameter 2 of 2**

Please, see [Figure 6-5 Operating of eBox with ACOM 700S](#), Pos. (g).

It is used analogously to Parameter 1.

#### h) **Band**

Please, see [Figure 6-5 Operating of eBox with ACOM 700S](#), Pos. (h).

A set of ten buttons for direct selection of a frequency band 160 m - 10 m.

#### i) **Segment**

Please, see [Figure 6-5 Operating of eBox with ACOM 700S](#), Pos. (i).

Choose a frequency segment. Digital and graphical segment reading within the selected band. Used only when a Remote Automatic Antenna Tuner and Switch ACOM 04AT is installed.

#### j) **Drive RF**

Please, see [Figure 6-5 Operating of eBox with ACOM 700S](#), Pos. (j).

This bargraph displays the input (driving) power.

#### k) **LED indicators**

Please, see [Figure 6-5 Operating of eBox with ACOM 700S](#), Pos. (l).

These four LED-like indicators might warn you about the following:

- Overheat indicator: Amplifier is overheated and is disabled until it cools down;
- CAT indicator: There is an active CAT interface;
- TX Disable indicator: Transmission is disabled due to critical fault;
- Transmit indicator: Ongoing transmission (ON AIR); The indicator illuminates whenever KEY-IN amplifier input is keyed, i.e., the transceiver goes into transmit mode. Flashing indicates that the transmission request cannot be executed for some technical reason.

#### l) **Mode**

Please, see [Figure 6-5 Operating of eBox with ACOM 700S](#), Pos. (l).

Amplifier mode of operation, selection buttons:

- OPERATE mode;
- STANDBY mode.

### 6.3. Amplifier monitoring

With eBox web-interface it is possible to not only control your amplifier (as described in Sections [6.1 Operating with ACOM 2000A amplifier](#) and [6.2 Operating with ACOM 600S, 700S, or 1200S amplifier](#)) but also to monitor it.

After successful finishing of the installation and setup of your eBox (see Sections [2 INSTALLATION](#) and [4 ON-LINE CONNECTION](#)) the monitoring is always possible without Log-in to eBox.

When monitoring the amplifier, the operational control functions are "grayed/disabled" for the user (for example, see [Figure 6-7 Amplifier monitoring](#), Pos. (1) and (2)).

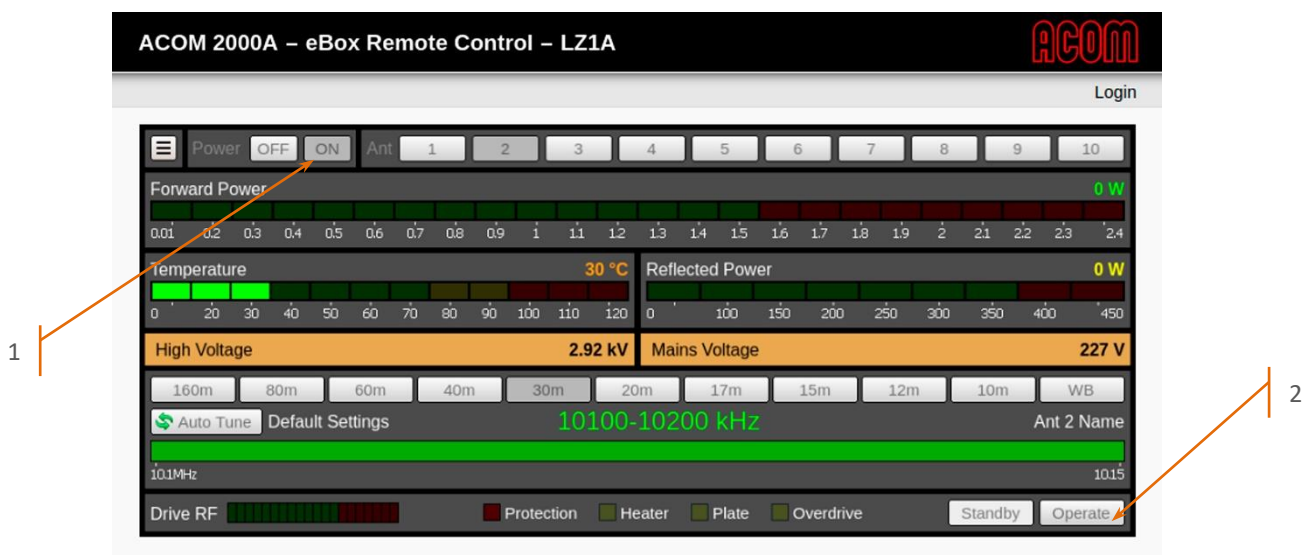


Figure 6-7 Amplifier monitoring

### 6.4. Operating with ACOM amplifiers through Simple Network Management Protocol (SNMP)

The Simple Network Management Protocol (SNMP) can be used in addition to control the eBox device and connected amplifier, but this requires advanced IT knowledge. As this is a sophisticated task, it is not a part of this manual.



SNMP functionality is available in eBox firmware versions 1.2.1887 or later.

## 7. MAINTENANCE

### 7.1. Periodic Maintenance

Periodically (but at least once per year) check all connections, contact cleanliness and the tightening of all connectors, in particular Ethernet ones.

Check the integrity of the cables, in particular when they are laid on the floor. Check also if the cables are secured well in the area where they come out of the connector body.

### 7.2. Cleaning

#### CAUTION

Do not use any solvents for cleaning. They may be dangerous to you and damage eBox surfaces, paint and plastic components.

Do not open the eBox. Cleaning of the device outer surface can be done with a piece of soft cotton cloth lightly moistened with clean water.

### 7.3. Reset to Factory Default Settings

If you have any troubles with eBox device, first you can try to reset device to clear the problem.

Reset to Factory Default Settings procedure:

- Make sure that the device is powered OFF (**PWR** LED is OFF, the power supply cable is disconnected);
- Press and hold the **RESET** button (see *Figure 2-5 Rear panel - Connections*);
- While still pressing the button, power ON the device (connect power supply cable to eBox); After 5-7 seconds, the LEDs on the front panel of eBox will start blinking simultaneously, indicating that the procedure has completed;
- Release the **RESET** button. The eBox is ready for use.

#### NOTICE

Do not interrupt the Reset to Factory Default Settings procedure. If you interrupt procedure, it may result in inoperative device (not covered under warranty).



## 7.4. Firmware Updates

When ACOM issues a new firmware version, the user can upload it in the eBox device. The new firmware is issued as a file, for example **eBox\_FW V1.3.1928 - 29.06.2021.BIN**.



The latest firmware versions for our products are available at [www.acom-bg.com](http://www.acom-bg.com) free of charge.

Firmware Update procedure:

- Download a new firmware (\*.bin file) from [www.acom-bg.com](http://www.acom-bg.com);
- Log-in to eBox with an administrator authentication level (see Section [4.2 Login and Authentication](#));
- Make sure that the amplifier is switched OFF. If the amplifier is powered ON, send a command to power it OFF before to proceed;
- From a menu **Settings**→**Device**→**Firmware Update** panel select a new firmware file (click on Firmware File field);
- Press **Upload** button located in **Firmware Update** panel (see [Figure 7-1 Firmware update](#));
- Wait to finish the procedure. The eBox is ready for use.

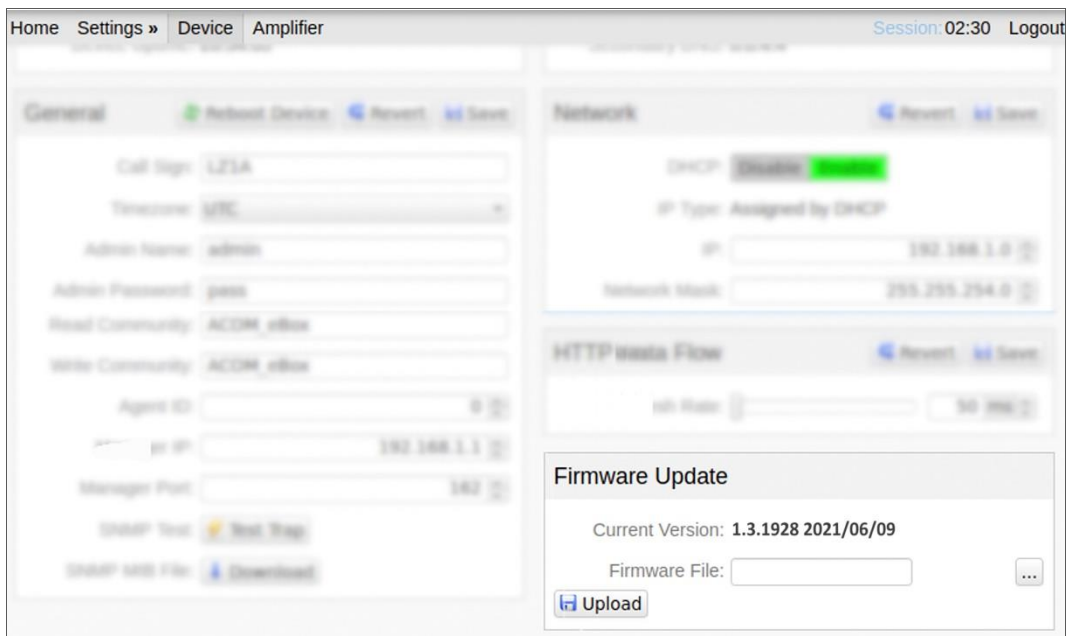


Figure 7-1 Firmware update

### NOTICE

Do not interrupt Firmware Update procedure. If you interrupt procedure, it may result in inoperative device (not covered under warranty).

## 8. SPECIFICATIONS

### 8.1. Characteristics

#### a) Compatibility

Designed for remote access and control via a local network or over the Internet of the following ACOM power amplifier models:

- ACOM 600S
- ACOM 700S
- ACOM 1200S and
- ACOM 2000A with its own RCU (Remote Control Unit);

#### b) Power supply adapter

- Input: 100-240 VAC / 1.0 A max.;
- Output: 12 VDC / 2.0 A;
- Output power: 24 W max.;
- Cable length: Approx. 1.5 m;
- Power input plug type: Europlug;

#### c) Connection cable (eBox - ACOM amplifier connection)

- Cable length: 1 m;

### NOTICE

Be careful to use the correct connection cable between **AMPLIFIER** connector (on eBox rear panel) and:

- ACOM 600S, 700S or 1200S amplifier **RS-232** connector (on amplifier rear panel), or
- ACOM 2000A amplifier **REMOTE CONTROL** connector (on amplifier rear panel).

The connection cable must correspond to your amplifier model and should be specified when you order the eBox.

Using an inappropriate cable may cause a serious damage to the eBox device and your amplifier!

#### d) Connectors

- LAN - standard RJ-45 socket for Ethernet connection;
- AMPLIFIER - D-sub, 15-pin, male connector for connection to ACOM amplifier;
- RCU - D-sub, 9-pin, female connector for connection to RCU (Remote Control Unit));
- POWER - input power socket, 12 VDC / 2.0 A.

#### e) Size & Weight (operating, excluding cables and power supply adapter):

- WxDxH: 105x131x34 mm, 0.3 kg (4.2x5.2x1.4 inches, 0.7 lbs.);

f) Operating Environments

- Temperature range: -10 to +40 degrees Celsius (14 °F to 104 °F);
- Relative air humidity: up to 95% @ +35 degrees Celsius (95 °F);
- Height: up to 3050 m (10000 ft) above sea level.

## 8.2. Storage and Shipment

### 8.2.1. Storage Environment

The device may be kept packed in a dry, ventilated and unheated location (with no chemically active substances such as acids or alkalis) within the following environment ranges:

- Temperature range: -40 to +70 degrees Celsius (-40 °F to 158 °F);
- Humidity: up to 75% @ +35 degrees Celsius (95 °F).

### 8.2.2. Shipping Size and Weight

- WxDxH: Approx. 270x225x50 mm, 0.7 kg (10.7x8.9x2.0 inches, 1.5 lbs.);



Figure 8-1 Packaging cardboard box

### 8.2.3. Transportation

All types of transportation may be used, including storage in an aircraft baggage compartment at up to 12000 meters (40000 ft) above sea level.

### 8.2.4. Returning to the Service Provider

#### **NOTICE**

Should it be necessary to ship eBox, use the original packing as described below.

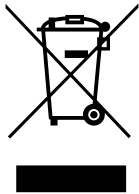
Switch off the eBox, i.e., pull the power supply adapter out of the outlet, disconnect all cables from the eBox, and then pack the device in its original carton (see Section [2.1 Unpacking and Initial Inspection](#)).

### 8.3. Information on Disposing and Recycling of Old Electrical and Electronic Equipment



The information in this section is applicable for countries that have adopted separate waste collection systems.

ACOM products cannot be disposed as household waste.



Waste electricals

This symbol (crossed-out wheeled bin) explains that you should not place the electrical item in the general waste.



Waste electricals

This symbol (three green arrows going in a triangle with electrical plug in the center) means that according to local laws and regulations this product should be sent for recycling.

Old electrical and electronic equipment and batteries should be recycled at a facility capable of handling these items and their waste byproducts.

Contact your local authority for details in locating a recycle facility nearest to you.

Proper recycling and waste disposal will help conserve resources whilst preventing detrimental effects on our health and the environment.

## TERMS and ABBREVIATIONS



For details on IT terms and abbreviations, please, contact a local IT professional or your Internet provider.

<b>ASEL</b>	Antenna Switch .....	38
<b>ATU</b>	Automatic Antenna Tuner.....	38
<b>BCD</b>	In computing and electronic systems, binary-coded decimal (BCD) is a class of binary encodings of decimal numbers where each digit is represented by a fixed number of bits, usually four or eight. ....	39
<b>bps</b>	In computer science, the rate at which data is transferred - bits per second (bps) or Bytes per second (Bps).....	39
<b>CAT</b>	Computer Aided Transceiver.....	38
<b>DHCP</b>	In computer science, the Dynamic Host Configuration Protocol (DHCP) is a network management protocol used on Internet Protocol (IP) networks for automatically assigning IP addresses and other communication parameters to devices connected to the network using a client-server architecture.....	23
<b>DNS</b>	In computer science, the Domain Name System (DNS) is a hierarchical and decentralized naming system for computers, services, or other resources connected to the Internet or a private network. It associates various information with domain names assigned to each of the participating entities. Most prominently, it translates more readily memorized domain names to the numerical IP addresses needed for locating and identifying computer services and devices with the underlying network protocols. By providing a worldwide, distributed directory service, the Domain Name System is an essential component of the functionality of the Internet. ....	22
<b>FW</b>	In computing, firmware (FW) is a specific class of computer software that provides the low-level control for a device's specific hardware. Firmware, such as the BIOS of a personal computer, may contain basic functions of a device, and may provide hardware abstraction services to higher-level software such as operating systems. For less complex devices, firmware may act as the device's complete operating system, performing all control, monitoring and data manipulation functions.....	38

**Gateway**

In computer science, the gateway (GW) is a network node that serves as an access point to another network, often involving not only a change of addressing, but also a different networking technology. More narrowly defined, a router merely forwards packets between networks with different network prefixes. In a home or small office environment, the default gateway is a device, such as a router, that connects the local network to the Internet. It serves as the default gateway for all network devices. ....22

**HF**

High Frequency, the International Telecommunication Union (ITU) designation for the range of radio frequency electromagnetic waves (radio waves) between 3 and 30 MHz. ....36

**HTTP**

In computer science, the Hypertext Transfer Protocol (HTTP) is an application layer protocol in the Internet protocol (IP) suite model for distributed, collaborative, hypermedia information systems. HTTP is the foundation of data communication for the World Wide Web, where hypertext documents include hyperlinks to other resources that the user can easily access, for example by a mouse click or by tapping the screen in a web browser.....29

**HW**

Electronic hardware (HW) consists of interconnected electronic components which perform analog or logic operations on received and locally stored information to produce as output or store resulting new information or to provide control for output actuator mechanisms. Well-designed electronic hardware is composed of hierarchies of functional modules which inter-communicate via precisely defined interfaces.....38

**IP address**

In computer science, the Internet Protocol address (IP address) is a numerical label such as 192.0.2.1 that is connected to a computer network that uses the Internet Protocol for communication. An IP address serves two main functions - host or network interface identification and location addressing. IP addresses are written and displayed in human-readable notations, such as 192.0.2.1 in IPv4, and 2001.....22

**IT**

Information Technologies .....23

**LAN**

In computer science, the local area network (LAN) is a computer network that interconnects computers within a limited area such as a residence, school, laboratory, university campus or office building. Ethernet (cable) and Wi-Fi (wireless) are the two most common technologies in use for local area networks. ....19

**MAC address**

In computer science, the media access control address (MAC address) is a unique identifier assigned to a network interface controller (NIC) for use as a network address in communications within a network segment. As typically represented, MAC addresses are recognizable as six groups of two hexadecimal digits, separated by hyphens, colons, or without a separator. MAC addresses are primarily assigned by device manufacturers, and are therefore often referred to as the burned-in address, or as an Ethernet hardware address, hardware address, or physical address. .... 26

**NTP**

In computing and electronic systems, the Network Time Protocol (NTP) is a protocol used to synchronize computer clock times in a network. It belongs to and is one of the oldest parts of the TCP/IP protocol suite. The term NTP applies to both the protocol and the client-server programs that run on computers. NTP uses Coordinated Universal Time (UTC) to synchronize computer clock times with extreme precision, offering greater accuracy on smaller networks - down to a single millisecond in a local area network and within tens of milliseconds over the internet. NTP does not account for time zones, instead relying on the host to perform such computations. .... 26

**OS**

In computer science, the operating system (OS) is system software that manages computer hardware, software resources, and provides common services for computer programs. For hardware functions such as input and output and memory allocation, the operating system acts as an intermediary between programs and the computer hardware, although the application code is usually executed directly by the hardware and frequently makes system calls to an OS function or is interrupted by it. Operating systems are found on many devices that contain a computer - from cellular phones and video game consoles to web servers and supercomputers. .... 10

**PC**

A personal computer (PC) is a multi-purpose computer whose size, capabilities, and price make it feasible for individual use. Personal computers are intended to be operated directly by an end user, rather than by a computer expert or technician. .... 22

**RJ-45**

In telecommunications and computers, the RJ-45 (standardized Registered Jack) is a type of cable connector which is mainly used in the computer networks. Ethernet cables with RJ-45 connectors are also called RJ-45 cables. These RJ-45 cables feature a small plastic plug on each end, and the plugs are inserted into RJ-45 sockets of the Ethernet devices. RJ-45 is the most known and popular connector type in the IT world. .... 19

**RS-232**

In telecommunications and computers, the RS-232 (Recommended Standard 232) is a standard for serial communication transmission of data. The standard defines the electrical characteristics and timing of signals, the meaning of signals, and the physical size and pinout of connectors. The RS-232 standard had been commonly used in computer serial ports and is still widely used in industrial communication devices. ....15, 50

**SNMP**

In computer science, the Simple Network Management Protocol (SNMP) is an Internet Standard protocol for collecting and organizing information about managed devices on IP networks and for modifying that information to change device behavior. SNMP is widely used in network management for network monitoring.....29

**Subnet mask**

The subnet mask is used by the TCP/IP protocol to determine whether a host is on the local subnet or on a remote network. ....22





## NOTES

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ACOM eBox User's Manual | First Edition, Revision 01 | October 2021.