



SERVO WORDCLOCK

User Manual

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1. Introduction

The *Servo Wordclock* was designed to be connected to your local WiFi and can be controlled via a web-based user interface. With internet access, the clock will also automatically keep time by synchronizing to an NTP server.

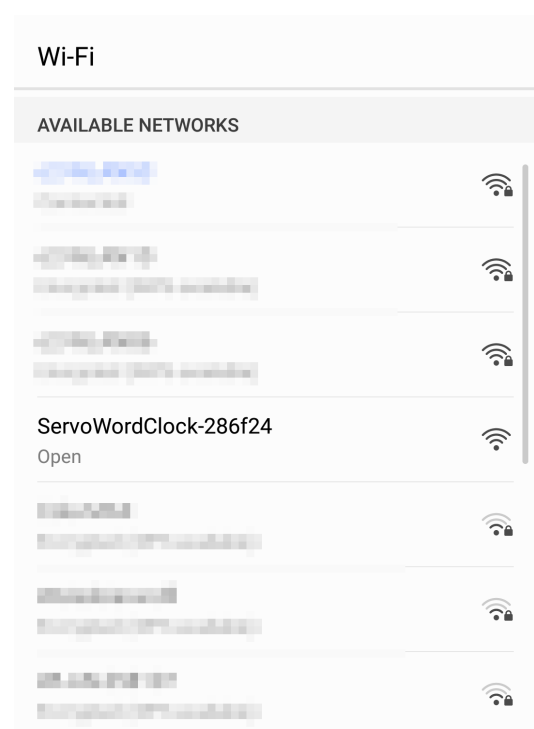
If there is no WiFi network available the clock will create a WiFi access point to which other devices can connect.

The user interface can be used to control all clock functions like WiFi configuration, time setting, display brightness, color, and animations.

All settings will be permanently stored in the clock's non-volatile memory.

2. Setting up the Clock

- Connect the clock to the included power supply
- To turn on the clock use the switch located on the lower left side. The clock will need about 30 seconds to initialize all servo motors
- When the clock was switched on for the first time it will create a WiFi access point. When the access point is active the clock will show a **yellow WiFi symbol** on the screen
- Search for new networks on your PC or mobile device, you should see a network named **ServoWordClock-xxxxxx** to which you can connect without a password



- Once you are connected to the clock's access point open a web browser. In the address bar type in the IP address **192.168.4.1**. this will open the clock's login screen
- The default password to access the clock is **114servos**. Type in this password and click **LOGIN**.
- You can now access all clock functions. If available, you should first connect the clock to your local WiFi network.
- Click on the **WIFI** button this will bring you to the WIFI settings page

The image shows two screenshots of the Servo Wordclock web interface. The top screenshot is the 'Login' page, which has a dark blue header with a hamburger menu icon and the text 'Servo Wordclock'. Below the header, the word 'Login' is displayed in a large, bold font. Underneath, there is a label 'Password' followed by a text input field. At the bottom right of the form is a 'LOGIN' button. The bottom screenshot shows the settings menu, also with the same dark blue header. It contains three main sections: 'Wifi' with a Wi-Fi icon and the text 'Select your local WiFi network' and an 'OK' button; 'Time Settings' with a clock icon and the text 'Enter your local timezone or set the time manually, if your clock is not connected to the internet or cannot synchronize' and an 'OK' button; and 'Display Effects' with a grid icon and the text 'Change several options on how the clock displays time' and an 'OK' button. At the very bottom of the page is a dark grey bar with three white navigation icons: a back arrow, a circle, and a square.

Servo Wordclock

Login

Password

LOGIN

Servo Wordclock

Wifi

Select your local WiFi network

OK

Time Settings

Enter your local timezone or set the time manually, if your clock is not connected to the internet or cannot synchronize

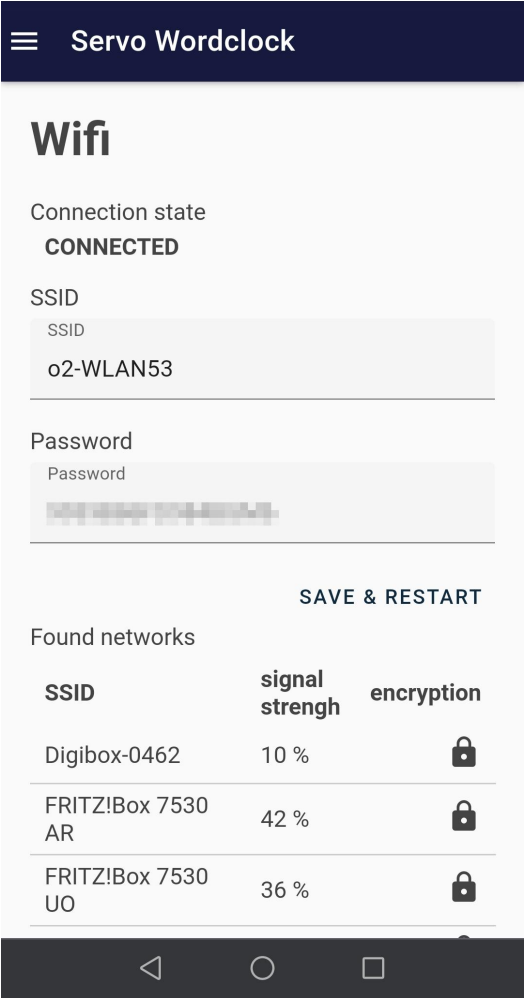
OK

Display Effects

Change several options on how the clock displays time

OK

- After the network search has finished select your local WiFi network from the list and enter the password. After that click **SAVE & RESTART** to save the settings to the clock's memory and reboot

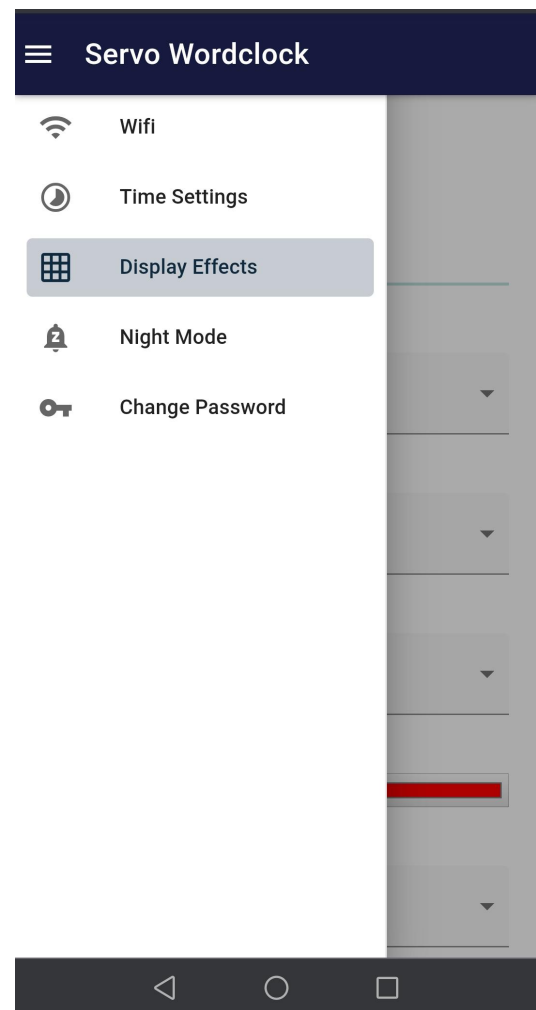


- After the clock has restarted it will try to connect to your local WiFi. When the connection was successful a **green clock symbol** will be shown on the screen until the time has been synchronized with the NTP server
- If the clock cannot connect to your WiFi network it will revert to opening an access point



3. User Interface

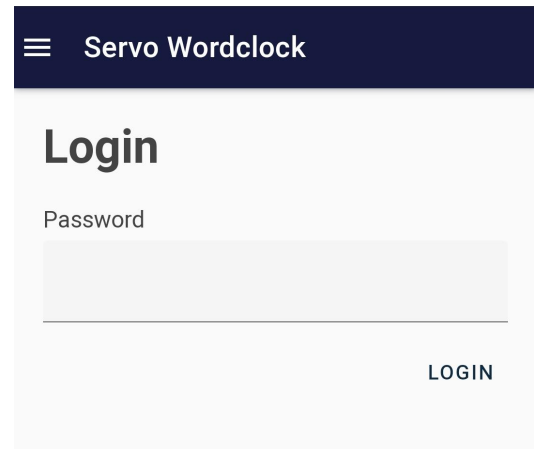
- If the clock is connected to your local WiFi you can access the user interface from any PC or mobile device within that network via your web browser. On **Windows, OSX, Linux and iOS** type **servowordclock.local** in your address bar. On **Android** systems you need to enter the clock's IP address instead¹
- A convenient method to access the clock's user interface on mobile devices is to add it to your home screen. Once you have opened the clock's user interface in your browser, e.g., Chrome tap the menu icon (3 dots symbol) and then tap "Add to home screen"
- If the clock has no WiFi connection you can access the user interface by connecting to the clock's own access point and entering the IP address **192.168.4.1** (see Chapter [2](#))
- If the clock loses its WiFi connection during operation it will automatically try to reconnect. When the connection still fails the clock will restart and open an access point



¹ The clock does not use a fixed IP but one automatically assigned by your router. Please see the documentation of your router on how to find out the IP address of connected devices or follow [this tutorial](#).

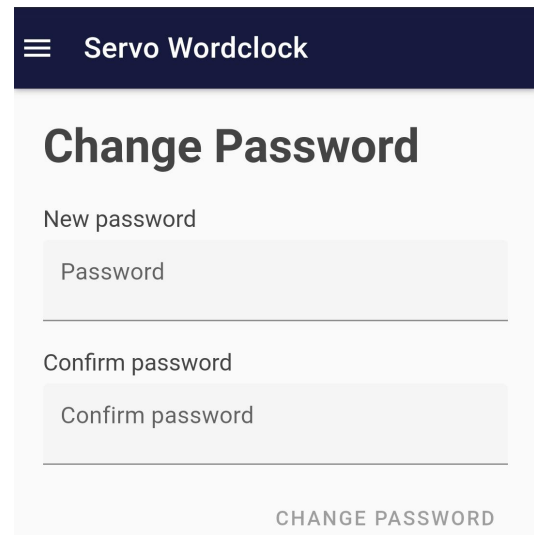
3.1. Login Screen

- When accessing the clock from your web browser you will always be prompted to enter a password. The default password is **114servos**.

A screenshot of the Servo Wordclock login interface. At the top is a dark blue header with a hamburger menu icon and the text "Servo Wordclock". Below the header, the word "Login" is displayed in a large, bold, dark font. Underneath "Login" is the label "Password" followed by a light gray rectangular input field. At the bottom right of the form area is a button labeled "LOGIN" in all caps.

3.2. Change Password

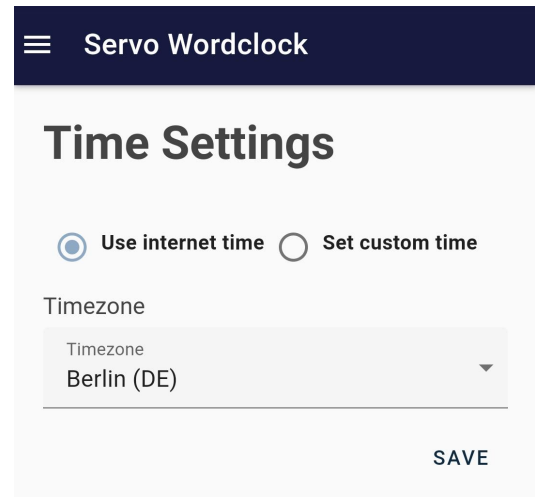
- To change the password enter the **Change Password** tab. Type in the new password and confirm it by typing it again in the field below then tap **CHANGE PASSWORD**

A screenshot of the Servo Wordclock change password interface. At the top is a dark blue header with a hamburger menu icon and the text "Servo Wordclock". Below the header, the text "Change Password" is displayed in a large, bold, dark font. Underneath are two sections: the first is labeled "New password" and contains a light gray input field with the placeholder text "Password"; the second is labeled "Confirm password" and contains a light gray input field with the placeholder text "Confirm password". At the bottom right of the form area is a button labeled "CHANGE PASSWORD" in all caps.

3.3. Time Settings

3.3.1. Automatic Time Setting

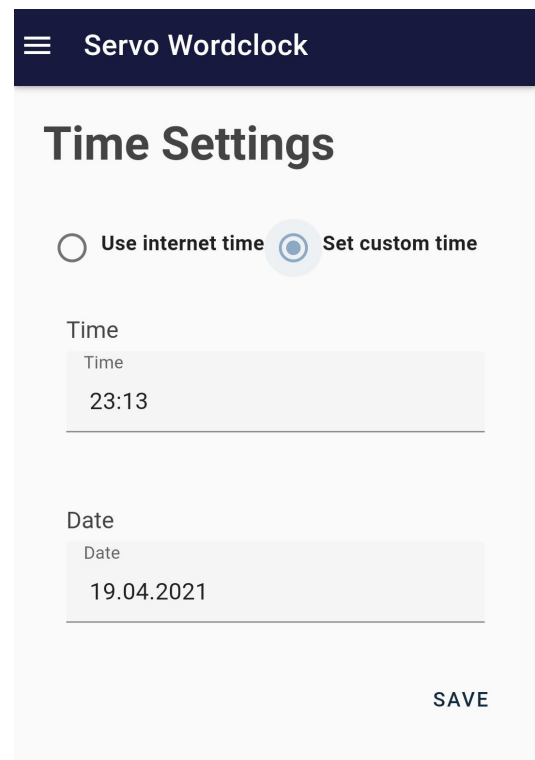
- If your clock is connected to the internet it will automatically receive the current time according to your configured timezone.
- To configure your local timezone enter the **Time Settings** menu. Select **Use internet time** and then choose your timezone in the field below. Clicking **SAVE** will update the timezone and store it in the clock's memory



The screenshot shows the 'Servo Wordclock' header with a menu icon. Below it is the 'Time Settings' title. There are two radio buttons: 'Use internet time' (selected) and 'Set custom time'. Below the radio buttons is a 'Timezone' label and a dropdown menu showing 'Berlin (DE)'. At the bottom right is a 'SAVE' button.

3.3.2. Manual Time Setting

- If your clock is not connected to the internet or cannot synchronize to the NTP server you can set the time manually².
- Go to the **Time Settings** menu and select **Set custom time**. Enter the current time and date in the fields below. The time will be updated after clicking **SAVE**

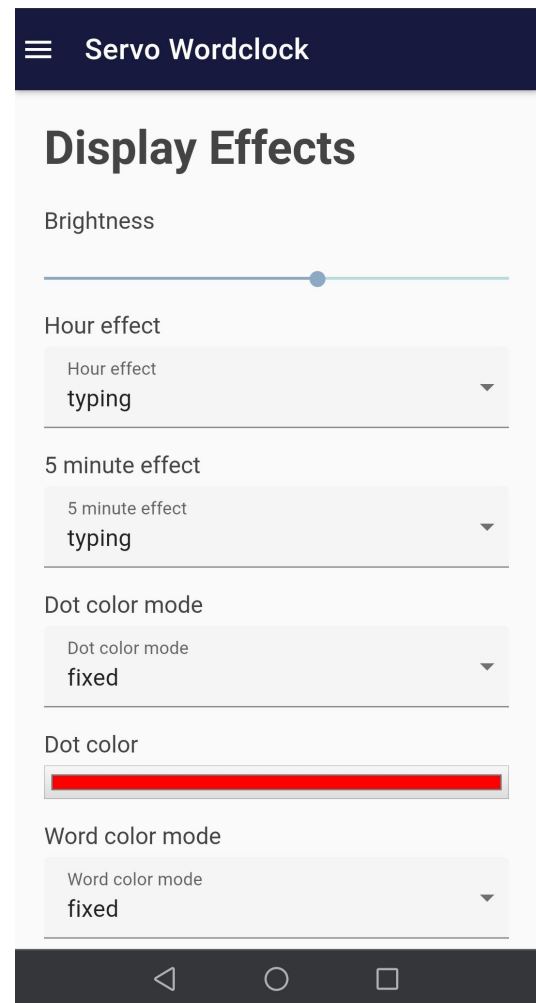


The screenshot shows the 'Servo Wordclock' header with a menu icon. Below it is the 'Time Settings' title. There are two radio buttons: 'Use internet time' and 'Set custom time' (selected). Below the radio buttons are two input fields: 'Time' with the value '23:13' and 'Date' with the value '19.04.2021'. At the bottom right is a 'SAVE' button.

² When the time is not regularly updated via NTP timekeeping may not be accurate

3.4. Display Settings

- The **Display Effects** tab can be used to change several options on how the clock displays time
 - **Brightness**: adjusts the brightness of all LEDs
 - **Hour effect**: selects the animation that is used to display the time every full hour. Four different effects can be used **typing**, **fade-in**, **fade-out**, **colormix**. When set to **random effect** one of the four effects will be randomly selected
 - **5 minute effect**: selects the display animation that is shown every 5 minutes. Options are similar to **Hour effect**
 - **Dot color mode**: when **fixed** is selected the color of the minute dots can be specified in the field below. Selecting **random** will use a random color each time the clock updates time
 - **Word color mode**: changes how the color of all words that are used to display the time is selected. Options are similar to **Dot color mode**
 - **Background color mode**: changes how the color of all background letters that are *not* used to display the time is selected. Options are **fixed**, **random** and **cycle**. The latter will slowly cycle the color of all background letters
- Clicking **SAVE** will update the display and store all settings in the clock's memory



3.5. Night Mode Settings

- The **Night Mode** tab can be used to either switch off the servos or the entire clock for certain periods, e.g. during the night or work hours. This will increase the lifetime of the servos and may also be used to avoid being disturbed by the noise of the servos during nighttime
 - **disabled**: the clock will always be on
 - **servos off**: switches off the servos for the periods defined below. The LEDs will still light up
 - **everything off**: turns off the entire clock during the periods defined below
 - **Start/End time**: specifies the start and end time when night mode is active. Separate periods for weekdays and weekends can be selected
- Clicking **SAVE** will update the settings and store them in the clock's memory

The screenshot shows the 'Servo Wordclock' app interface. At the top is a dark blue header with a hamburger menu icon and the text 'Servo Wordclock'. Below this is a section titled 'Night Mode'. There are three radio button options: 'disabled' (unselected), 'servos off' (selected, indicated by a blue dot), and 'everything off' (unselected). Below the radio buttons are two sections: 'Weekdays' and 'Weekends'. Each section has two input fields for 'Start time' and 'End time', both currently set to '00:00'. At the bottom right of the settings area is a 'SAVE' button. The bottom of the screen shows a dark navigation bar with three icons: a back arrow, a circle, and a square.

Servo Wordclock

Night Mode

☐ disabled ☒ servos off ☐ everything off

Weekdays

Start time	End time
Start time	End time
00:00	00:00

Weekends

Start time	End time
Start time	End time
00:00	00:00

SAVE