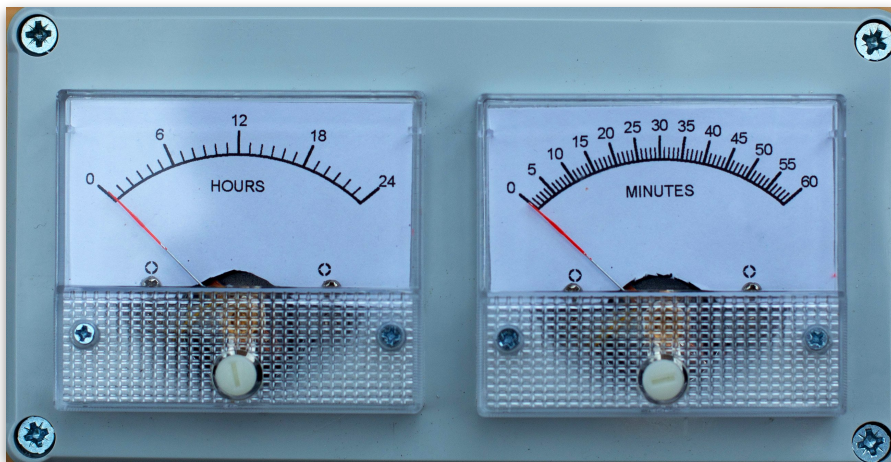


AP089 Meter Clock

User Manual



www.ambientpower.co.uk
info@ambientpower.co.uk

Table of Contents

Introduction	3
The Power Meter Clock	3
Connections	3
USB B	3
Connecting To WiFi	4
Time Adjust (hour) Adjustment	4
Operation	5
Reset WiFi	5
Updating Firmware	5
Care	6
General	6
Cleaning	6
Calibration	6
Zero Adjustment	6
Full Scale Adjustment	6
Support & Feedback	7
Specifications	7
Package Contents	7

Introduction

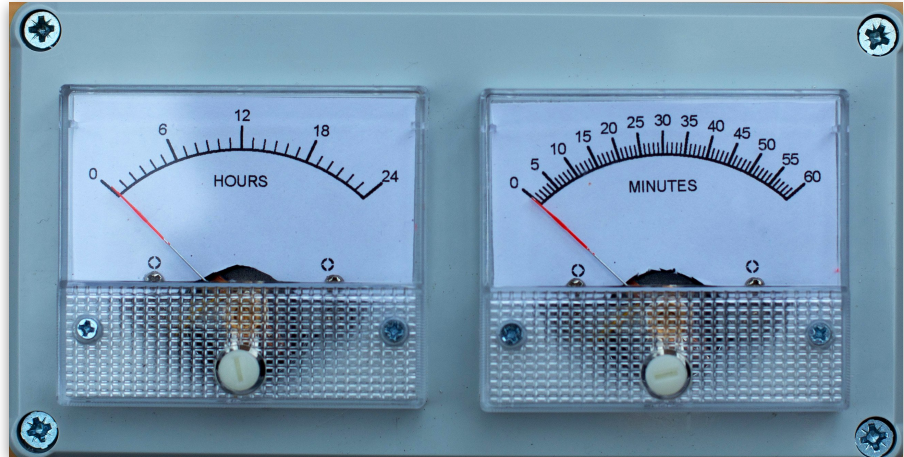
Please read these instructions completely before using or installing your Power Meter Clock.

The Power Meter Clock

The Ambient Power Meter Clock is a novel clock displaying time on two meters similar to those used on audio equipment to display signal levels.

The clock should be placed on a secure, level surface with the meters in a vertical position.

Rubber feet are provided, these can be applied to the bottom of the clock to avoid it sliding from the surface that it is placed upon.



Connections

A USB power supply connection is provided.

USB B

The USB B power connector is a power only input on the left of the unit allowing the clock to be powered from any 5V 500mA standard USB supply. A USB A to USB B cable is provided for this purpose. Note that a power supply is not included, the clock can take power from any USB A socket such as a PC, phone charger etc. Power consumption is minimal and should not affect the host device.

Connecting To WiFi

The unit requires a connection to WiFi to obtain the current time and for periodic updates (about once every hour). Once running, the clock will continue on its own internal timers, but without a WiFi connection, the time will drift after some tens of hours. For initial operation, WiFi is required.

After initial switch on, the clock will create a WiFi network. The meters deflect to 30% of the scale indicating this mode. This network is called "AP089 Meter Clock" and should be connected to using the password "ambientpower". This is a temporary WiFi network to allow you to provide settings to connect the clock to your own WiFi network.

Once you have connected to this WiFi network, you will be presented with the "WiFi Manager" screen. If you are not, then enter <http://192.168.4.1> into your browser and you should see the screen shown here.

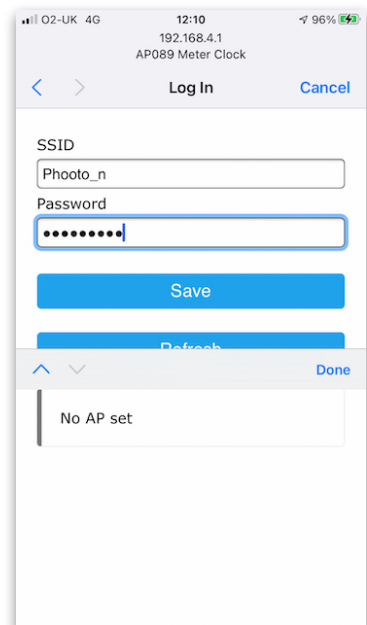
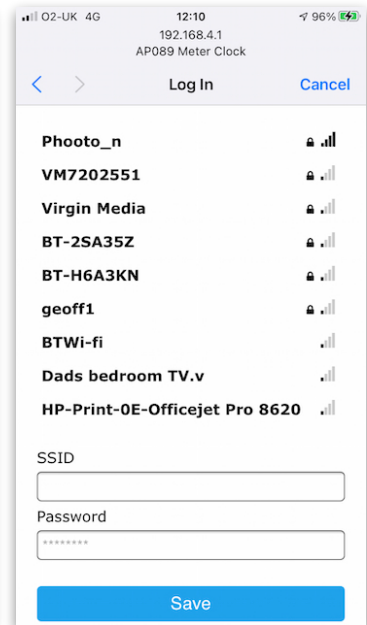
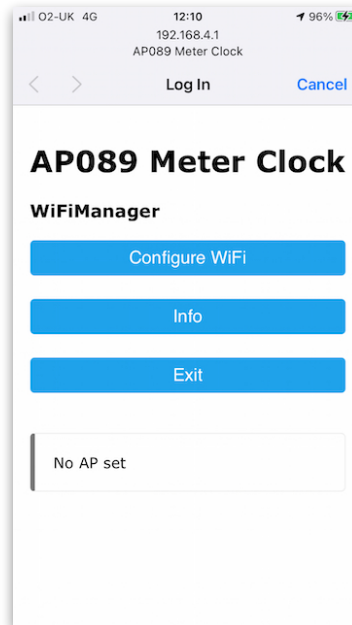
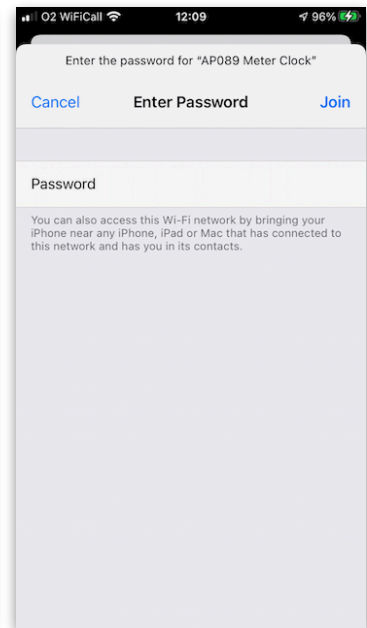
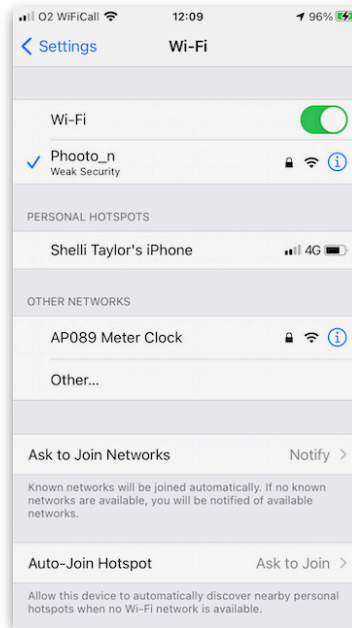
Press the blue "Configure WiFi" button and the clock will search for available networks. Select your own network, where you will then be asked for the password. Enter this and the unit will connect and obtain the current time ready for display and operation.

Once the network has been set, the clock remembers the settings and will reconnect after a power outage, or disconnection from power if moving the clock for example.

Time Adjust (hour) Adjustment

To adjust for different time regions, or a different daylight saving, press the 'Time Adjust' button during operation. This button is found on the left of the unit, close to the power connection. It is slightly recessed to avoid erroneous operation so a pen, cocktail stick or similar implement will be needed to operate it.

The hour meter will increment accordingly. Time Adjust can be pressed as many times as required to reach the correct hour. This time adjustment is also remembered when the clock is switched off.



Operation

After connecting to power, the clock sets the meters to 10% full scale to indicate power is on. Then the clock connects to local WiFi, obtains the current time and displays the hours and minutes on the respective meters. The meters are operated smoothly and will take a few seconds to initially display the time. This is perfectly normal and is intended to minimise violent movement of the meter needles.

The clock will automatically adjust for daylight saving times within Europe. Regions that change daylight saving at other times may need manual adjustment using Time Adjust.

Reset WiFi

To reset the WiFi connection (for example if you have a new network, or re-locate the clock), press and hold the “Time Adjust” button immediately after power up (within one second and not during power-up). This will allow you to re-enter the WiFi connection mode as described in this document. The meters will deflect to 30% full scale showing that the clock is in WiFi connection mode.

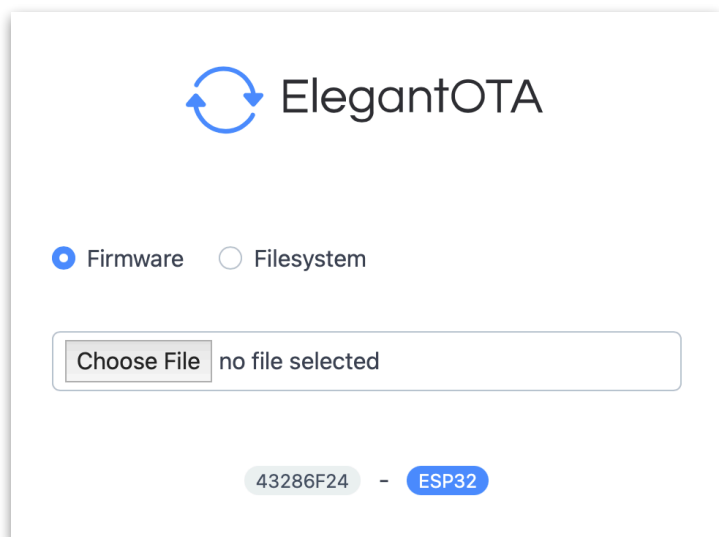
Updating Firmware

In the event of a firmware update being required, firmware can be updated by entering “OTA mode”. This is done by holding the “Time Adjust” button immediately after power up (within one second and not during power-up) and holding the button for six seconds. The meters will deflect to 100% full scale showing that the clock is in OTA mode. (This deflection is also used for meter calibration and adjustment).

Now, the clock creates a WiFi network called “AP089OTA” which you can connect to using the password “AMBIENTPOWER”. Note that this is all caps.

Now, you should open a browser and enter the address <http://192.168.4.1/update>. You will now be presented with the “Elegant OTA” screen. From here, you can select the BIN file that you have been provided using the “Choose File” button. Select the BIN file and it will be uploaded to the clock. **DO NOT** select any other file than the one provided by Ambient Power. **DO NOT** change the upload mode to FileSystem. Uploading the wrong file can cause your clock to be permanently disabled. Upload will take between 40 seconds to two minutes.

Note: To perform the update, it is strongly suggested that you use a PC or Mac computer, updates from tablets or phones are more complicated due to the selection of the firmware file to be uploaded.



Care

General

Do not subject the unit to sharp shocks or excessive vibration. Place on a flat, level surface.

Cleaning

Clean the unit with a damp cloth or using mild spray furniture polish. Avoid excessive liquids.

Calibration

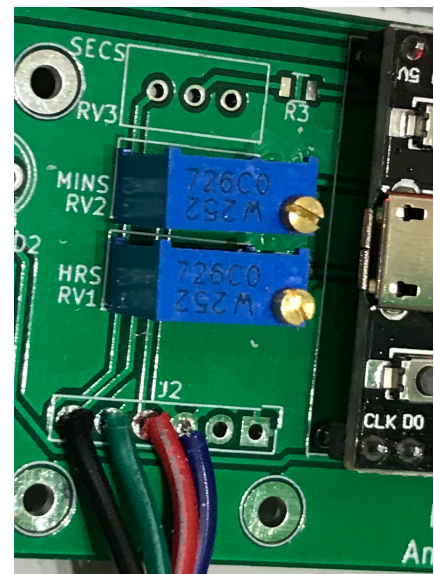
The unit is adjusted and calibrated when manufactured and should not need adjusting. Meters may exhibit some non-linearity, more noticeable on the hours scale. This may be noticeable around the midday points where the pointer may be a few degrees off of the indicated time. However, zero and 23 hours (or 59 minutes) should be accurate. If they are not, then the unit can be calibrated as follows:

Zero Adjustment

With the power off, adjust the flat screw on the front of the meter so that the needle indicates zero.

Full Scale Adjustment

Remove the four screws on the front of the enclosure and GENTLY lift away the panel. It is secured by wires so cannot be completely removed - you need to observe the meters to adjust anyway. Apply power and enter OTA mode - however, do not upload firmware. The unit indicates full scale. Inside the unit are screws on potentiometers marked 'Hrs', 'Mins', 'Secs' (where fitted). Each of these can be carefully adjusted to present a full scale measurement (24/60/60 as appropriate) while the unit is in OTA mode. Make sure that the meters are oriented the same as they are for normal operation (normally vertical). Be careful not to touch any other parts within the unit apart from the adjustment screws.



Support & Feedback

Should you have any questions regarding the clock, please contact info@ambientpower.co.uk. Do not open the unit (except for calibration if required as described above), there are no user serviceable parts inside.

Specifications

Power supply	5V / 500mA max (USB power)
Dimensions	W 158.2mm H 82.2mm D 66.0mm
WiFi	2.4GHz 802.11n - access to WiFi network is required for time updates
Accuracy	+/-1 second between hourly time updates
Weight	310g
Case material	ABS plastic
Operating temperature	0°C to 40°C
Warranty	12 months from purchase

Package Contents

- 1 x Ambient Power Meter Clock
- 1 x Instruction Booklet (this document)
- 1 x USB A to USB B cable
- 4 x anti-vibration feet