

Ensemble colour display USER MANUAL





Welcome to geo's home energy management system. You've taken the first step towards total control of your energy use. Your new **Ensemble** will help you manage, control and visualise your energy – leading you effortlessly towards optimum efficiency.

In this guide you'll find everything you need to quickly and simply set up and start using your display. You'll also find more information about how the monitor works, how it can help you and how you can identify ways to save energy (and money). You should find everything you need in this guide, but if you don't, get in touch and we'll be happy to help.

You will also have access to energy**note**, our online energy service for all your energy data at home or on the move. There is no limit to the amount of data you can upload. See, analyse and explore for years to come, from wherever you are in the world.

Safety information

- ∧ Keep the display away from water
- ▲ Clean with a soft, dry cloth
- ▲ If any of the components appear damaged, contact us
- Fitting the sensor: if the cables look perished (cracked, burned, bare copper), loose or wet – do not install. Contact a qualified electrician or your utility provider
- ∧ Do not fit rechargeable batteries
- To protect the environment, please take your batteries to a recycling centre for safe disposal
- For use in a dry, indoor environment only
- S Please only use the power supply provided
- This product is RoHS compliant and CE approved

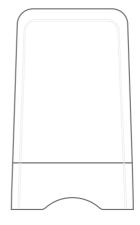




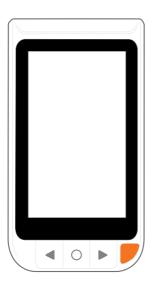
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Display pack contents



Power supply



Transmitter (and batteries)





Ensemble colour display

CT clip sensor or LED sensor

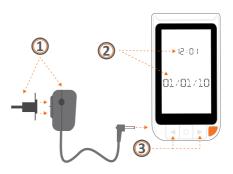
Display pack quick start guide

STEP 1 – DISPLAY

 Insert and twist clockwise to clip the 2 pinned (EU) or 3 pinned (UK) plug to your power supply and connect it to your **display**.

Your **display** will turn on automatically when you plug it into the mains supply.

- Whenever the display is turned on, you will see the 'SET CLOCK' screen.
- Use the and buttons on the front of the display to adjust the time and date. Use the button to confirm and cycle through each step.



STEP 2 – TRANSMITTER

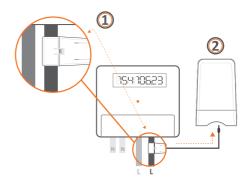
- Open the transmitter by pressing the button, and pulling the outer cover away from the bottom.
- 2. Remove the battery tab from the transmitter.
- **3**. The red light will flash to show that the unit is working.
- 4. On the display, the **f** will light up to show that it is talking to the transmitter. If the **f** on the display is flashing please refer to the FAQ section.

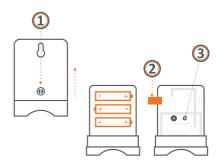
STEP 3 – SENSORS

For a single phase pack (one mains sensor):

- At your electricity meter, clip the sensor around the mains live cable. Locate your mains live cable, this is usually identified by the colour brown, red or the letter "L". You should hear a 'click' to indicate the sensor has been tightly closed.
- Insert the other end of the sensor cable in to one of the sockets in the bottom of the transmitter and ensure it is fully inserted.

The **display** will now start to show the energy you are consuming.





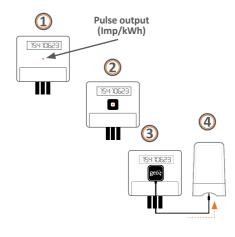
For a three phase pack (three mains sensors):

- At your electricity meter, clip the sensors around the mains live cables (attach one sensor per cable). Locate your mains live cable, this is usually identified by the colour brown, red or the letter "L". You should hear a 'click' to indicate that the sensors have been securely fastened.
- Insert the other end of the cables in to the socket in the bottom of the transmitter and ensure they are fully inserted.

Your **display** will now start to show the energy you are consuming.

For a LED sensor:

- Locate your Imp/kWh pulse output (a flashing red light on the front of your meter).
- 2. Stick the square velcro around the pulse output.
- 3. Place the LED sensor over the square velcro on the meter ensuring that the geo logo is facing you.
- Insert the other end of the LED sensor cable in to the socket in the bottom of the transmitter and ensure it is fully inserted.
- Check the imp/kWh value on your meter and take a note to be able to configure this on your display later on. You can find out how to do this in the settings section on page 9.



Display stand

The **display** comes fitted with a stand. If you would prefer to wall mount your **display**, you can do so by using the two holes on the back (fittings not included).





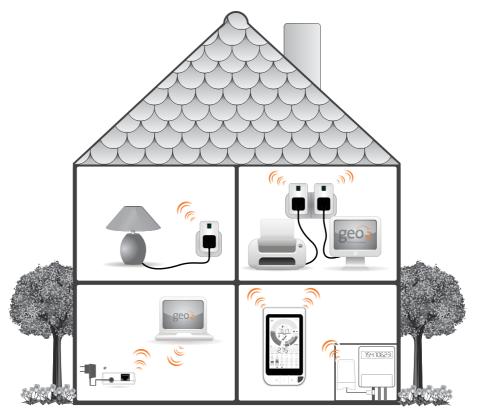
Getting started

The **Ensemble** allows you to see how much electricity your house is consuming. The **sensor** and **transmitter** measure the consumption at your meter and transmit it to the **display** wirelessly. The **Smart Plugs** measure the consumption of individual appliances and also transmit this to the **display** wirelessly. As well as seeing your consumption on your **display**, you can also view your consumption history and control appliances online with an additional **web pack**.

Using your display without the transmitter

If you are not using your **transmitter**, you can unpair it to see data from your **Smart Plugs** only. Hold down the \blacksquare and \blacktriangleright buttons at the same time to enter pair mode. The \checkmark is the first menu item. Hold the \bigcirc button down until the **display** shows 'PAIR?'. This means the **display** can no longer see the **transmitter**. Scroll away from this menu using the \frown button. This takes you back to the home screen.

This means that the dial on the home screen shows consumption on your **Smart Plugs** only and not your household consumption. Please note: this will be the total consumption from all the **Smart Plugs** you have paired to this **display**.



* Web pack not included with the Ensemble display pack

Reading your display

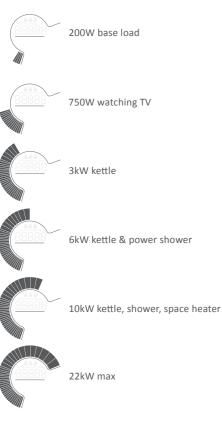
From the main consumption screen on your display, press the button to cycle through to your **Smart Plugs** (if you have any paired). The menu cycles through 'Main Consumption', '**Smart Plug** 1', '**Smart Plug** 2' etc. To scroll between units of measurement, press the O button. To see historical data, at any stage, press the d button.

Speedometer

The speedometer gives an up-to-date graphical view of the amount of electricity you are using in your home. The speedometer shows power up to 22kW and will update every three seconds.

The numbers in the middle of the speedometer tell you the exact value in energy, cost or CO_2 .

Segment index	Step per segment (kW)	Number of segments
1 to 25	0.05	25
26 to 31	0.50	6
32 to 35	1.5	4
36 to 38	4.0	3



Fuel tanks

This function will help you keep track of your expenditure. To do this you need to enter your target as described in **settings** on page 9.



The fuel tank works like the fuel gauge of a car. Every night your fuel tank is filled up with your daily allowance. Over the course of the day your tank will empty.

The outer fuel tank shows how much electricity you have used. The inner fuel tank shows your target consumption.

At first the target fuel tank empties at a steady rate throughout the day. As it learns your pattern of electricity usage, it adjusts this steady rate to one that matches your usage pattern. For example, it will remember that you do not use much electricity overnight and take account of this. It also adapts to the different patterns for each day of the week. You are therefore able to compare your daily consumption with your target.

You can tell at a glance if you are on track to use your target amount.



You will use less than your target amount



You are on track to use your target amount



You will use more than your target amount

Milometer: daily usage

The milometer shows how much electricity you have used in kWh, CO_2 or cost for today, the last seven days or the last four weeks.



Individual appliances

The bottom part of the **display** shows you up-todate information on how much electricity you are using at that point in time. You can switch appliances on and off from the **display** if you wish. When your speedometer is reading high you can glance at the **display** to see if one of these appliances is on. You can also check as you leave your house (or go to bed) to see if you have left anything on.

Settings

To enter settings, press and hold the \bigcirc button. The following subsections explain how to change all the settings on the **Ensemble display**, taking you through them in the order in which they appear in the menu. To skip any of the settings, press the \bigcirc button.

The settings screen shows: Time and date > Currency > Target unit > Target > Tariff 1 > Tariff 2 (If Tariff 2 is selected there will be a Tariff 3) > Display on > Display off > C-Factor (or Pulse for LED **sensor**).

Setting the Time and Date

Set desired time using the \blacksquare and \blacktriangleright buttons. Press \bigcirc to continue as per page 5.

Setting the Currency

Set desired currency using the \blacksquare and \blacktriangleright buttons. Press \bigcirc to continue.

Setting the Units

Set desired unit to set your target against using the and buttons. Press to continue.

Setting your Target Consumption

Set desired target using the and buttons. Press O to continue. If you are not sure what your target should be, see FAQs.

Setting the Tariff

You need to enter the price you pay for your energy. If you have only one tariff, then enter the cost per kWh. This can be found on your electricity bill. If you have a block tariff you can work out an average from your recent bills and enter as one tariff.

What is a block tariff? Your block tariff means that for the first x number of kWh in each billing period you pay a more expensive tariff than normal.

How to calculate it: take the total cost of electricity for the period (e.g. \pm 120) and divide it by the amount of kWh you used.

Example:

If you were billed £120 this quarter and you used 1000kWh, then enter the sum of £120/1000kWh = ± 0.12 /kWh in the display setting [TARIFF 1].

Use the and buttons to set the tariff and then press O to confirm. If you don't have a second tariff, then leave [TARIFF 2] cost as zero.

If you do have a second tariff, for example cheaper electricity overnight, then enter the cost per kWh for that second tariff. If a second tariff is entered then you need to enter the time that tariff starts and ends. Use the \blacksquare and \blacktriangleright buttons to set the second tariff and then press \bigcirc to confirm. Use the \blacksquare and \blacktriangleright buttons to set the time the second tariff switches on and then press \bigcirc to confirm. Use the \blacksquare and \blacktriangleright buttons to set the time the second tariff comes off and then press \bigcirc to confirm.

If you have entered a second tariff then you are prompted to enter a third tariff. If you don't have one then simply leave it as zero.

Sleep mode

(Please note that this option is not available if DISP ON is set to ON). There are two settings, DISP ON (default 06:00) and DISP OFF (default 22:00).

The numbers along the top will display the configured on/off time and the numbers along the bottom show the current status (i.e. DISP ON/OFF). The numbers along the top will flash to show that you can change the times. Using \blacksquare and \blacktriangleright you can set the time you want.

C-Factor (Calibration)

(Please note this only applies when the display is paired via a CT clip.)

The calibration factor is an advanced setting that typically won't need to be adjusted. Calibration adjusts the accuracy with which the load is measured and the default is 1.00. During normal usage this won't need to be changed.

However, if you think the accuracy could be improved and you want to recalibrate your display, more details can be found at www.greenenergyoptions.co.uk/ensemble-colour

Pulse count

(Please note that this only applies when the display is paired with an **LED sensor**). The numbers along the bottom will show PULSE, and the numbers along the top will show the imp/kWh. The setting varies from 50 to 10,000 imp/kWh, adjusted by pressing ■ and ▶ (the default is 1,000 imp/kWh).

Display overview



Left button Move back through list/decrease value

Middle (set) button Change viewing options (kWh, cost, CO₂)



Right button Move forward through list/increase value



Control button ** Turn Smart Plug(s) on/off



Bridge signal * Display is connected to the bridge



Internet signal * Display is connected to the internet



Batterv Replace batteries in the transmitter



Tariff Shows current tariff



Unit of measurement View readings in kW, cost, CO₂



Speedometer Real-time view of energy use



Target Energy use against target



Today arrow Energy used today



Communication Display is connected to the transmitter



Milometer Energy consumption in kWh/cost/CO₂ for the past day/week/month



Timer ** Smart Plug schedule



Smart Plug on/off **



(1)

Smart Plug power **

Smart Plug comms ** Display is connected to a Smart Plug

Group arrow ** Shows if Smart Plug is in a group



Horizontal

If the two fuel tanks are equal, you are meeting your target consumption



Cross

You have used more electricity than your target for today



Tick

You have used less electricity than your target for today

* If you have a web pack

** If you have a Smart Plug pack

If any of these icons are flashing, please see the FAQs section on page 17.

Additional displays

If you would like more than one **display** in your home, you can add up to two more without needing to repair to your meter or use additional transmitters. All you need to do is pair the new **display**(s) to your Ensemble so they share the same data.

You can use your additional display(s) to monitor energy and control your **Smart Plugs** in the same way you do the original display.

Pairing your additional display(s)

On the additional display

- 1. Hold down ┥ and 🕨 at the same time and insert the power supply
- 2. The screen shows 'Y RST N'. Select 'Y'. by pressing
- 3. The screen shows 'Y N/W? N'. Select 'Y' by pressing
- 4. The screen shows 'MST SLV'. Select 'SLV' by pressing
- 5. Hold down < and and at the same time until 'PAIRMODE' is displayed

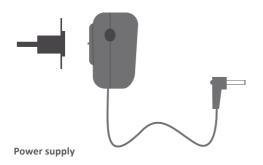
On the main display

- 1. Hold down <a>and at the same time until 'PAIRMODE' is displayed
- 2. Press eight times until you see 'DISP2?'
- 3. After a few seconds, the screen shows 'DISP2' (the question mark will disappear)
- 4. Press b three times to return to the home screen 11

Web pack contents (available separately)



Internet bridge



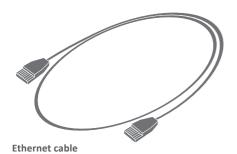
The Ensemble pack does not contain a bridge but this can be purchased separately. The bridge connects wirelessly to your display and to the internet via an Ethernet connection to your broadband router.

Energynote online services

- 1. Open your web browser.
- 2. Go to: www.energynote.co.uk
- Create your personal energynote account and follow the online instructions to set up your internet bridge.
- 4. Once you have logged in, your online dashboard will appear on screen.

Tip: If you would like to see what your inhome display is reading while you are away from your house, you must remember to leave the broadband router and the **internet bridge** turned on.

Note: The dashboard features may vary depending on your supplier.



Online services

www.energynote.co.uk



The online service allows you to:

- Personalise the display on your website you can view your energy use in lots of different ways so you can choose the one that suits you best.
- View your entire consumption history the display holds up to 28 days of information, but your website keeps a complete record.
- Name each of your **Smart Plugs** for easy reference. This way you are less likely to turn off the wrong appliance.

- Switch individual Smart Plugs on/off.
- Schedule **Smart Plugs** to switch on/off at set times.
- Do all of the above from anywhere you can access the internet. You can use your smartphone to do all of this.

Smart Plug pack (available separately)

The **Smart Plug** is an accessory for the Ensemble system. It allows you to:

- synchronise with your Ensemble display
- monitor the energy consumption of the appliance connected to it
- switch appliances on or off at a time of your choosing
- control an appliance directly from the Smart Plug, via your display or online*

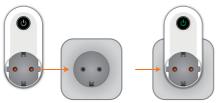
*requires a web pack for online services

Smart Plug quick start guide

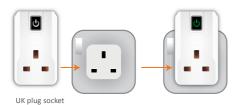
STEP 1 - SET UP

1. Plug the Smart Plug into a mains socket

NOTE: Do not plug anything into the **Smart Plug** until you have finished setting it up.



European plug socket



STEP 2 – ADDING A NEW SMART PLUG TO YOUR SYSTEM

On the Ensemble display, press the and buttons at the same time until 'PAIRMODE' is shown



3. Press the button to move through the screens until you reach the 'PLUGBUG' slots



- 4. Now, using the ▶ button, select an empty slot. For each slot the number flashes at the bottom of the screen. If a slot is already occupied, it will show the word 'PLUGBUG' or show the name of the device in that slot e.g. 'LAMP'. An empty slot will show the question 'PAIR?'
- 5. With the Smart Plug plugged into a mains socket, press and hold the button on top for 10 seconds until the button colour changes to amber. It will join with the display after a few seconds. The display will show 'PLUGBUG'





UK plug socket

- 6. If you would like to pair another Smart Plug, press the ▶ button to find an empty slot and repeat step 5 using another Smart Plug
- When you have finished, press the button until you get back to the main screen

Tip: If you want to change the name 'PLUGBUG' to help you identify it (e.g. 'KETTLE') you can do this using a web pack and the online services.

Smart Plugs track & control appliances

You can have up to six Smart Plugs paired to your Ensemble display. The Smart Plugs send information to the display on specific appliances so you can see their individual consumption. You can also communicate with the Smart Plugs via the display to switch them on or off, which gives you control over any appliance.

The Smart Plugs provided with your Ensemble are already paired (ready to talk) to the **display**; simply plug the provided Smart Plugs into individual sockets and plug in the appliance you want to monitor. Your display can communicate with up to six Smart Plugs. To purchase additional ones, please contact your supplier.

Along the bottom of the display you can see the energy being used by that appliance. To see this in more detail scroll to the specific Smart Plug using the button. The information will then be displayed on the speedometer. On the display, Smart Plugs are shown as 'PLUGBUG'.

The basics

The button on the front of the Smart Plugs will show one of two colours:

Green: power will be provided to the appliance.

Red: the Smart Plug is isolated and no power will be provided to the appliance.









UK plug socket



There are three ways to control your Smart Plug(s):

- 1. Press the switch on the front of the Smart Plug itself.
- 2. Use the button on the **display** to navigate to the Smart Plug that you want to control.

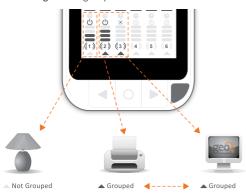
Press the *button* to turn the appliance off. To turn it on again press and hold the 🗲 button for a few seconds.

3. If you have a web pack which contains an internet bridge, you can log in online to switch on/off any Smart Plug paired to your Ensemble. This online facility also allows you to name your Smart Plugs and set automatic timers so they are able to switch on/off automatically at the times you choose.

Grouping Smart Plugs

Smart Plugs can be grouped to allow control of more than one appliance at once:

- 1. Press the button to scroll through each Smart Plug in turn to get to the one you want to group.
- Hold the O button and then press and release the button to include or exclude the Smart Plug from the group.
- A ▲ symbol shows that a Smart Plug is part of a group.
- 4. With the display showing its normal consumption screen, press the button to turn off all of the Smart Plugs in the group. Press and hold the button to turn the Smart Plugs in the group on.



Replacing a Smart Plug

If you want to replace a **Smart Plug**, you will need to unpair the old **Smart Plug** before pairing a new one.

- Go to the Smart Plug you wish to replace using the ▶ button to scroll through the screens.
- 3. When you have the Smart Plug you want to remove, press and hold the centre button until the display changes from 'PLUGBUG' (or the name of the Smart Plug) to 'PAIR?'
- 4. Add the new Smart Plug using the instructions in 'Adding Smart Plugs' above.

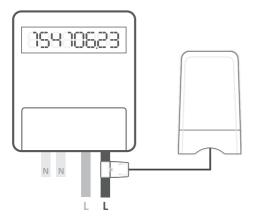
FAQs

Q. How does the Ensemble work?

A. Your Ensemble has a **sensor** which is fitted around the cable connecting your meter to your fuse box. The **sensor** measures the amount of electrical current passing through the cable and the **transmitter** sends this information wirelessly to your **display** in real time.

Q. How far does the device transmit?

A. The Ensemble is designed to operate in a home environment over a range of 30 meters (with two walls in between). This can cover three floors, and is also suitable for properties where meters are outside the main building.



Q. Why aren't my display and transmitter communicating?

A. There are three reasons why the units will have problems communicating:

- Range try moving them closer together (see above).
- Metal objects close to the display or transmitter

 the devices cannot communicate through metal. Try moving the units away from any metal objects.
- Interference some household devices can interfere with the Ensemble devices. Try and locate the source and move the Ensemble away. These can include hair dryers and radios etc.

Q. Why is the **f** symbol flashing?

A. The communication symbol will flash if:

- The **display** and **transmitter** are unable to communicate.
- The display is receiving data from two sources at the same time. This can be solved by pairing the display with the transmitter again.
- 1. On the Ensemble display, press and buttons at the same time until 'PAIRMODE' is shown (the display will then show this **f** symbol) press and hold O button until you see 'PAIR?' on the display.
- 2. Open the **transmitter** by pressing the button, and pulling the outer cover away.
- 3. Press the pairing button on the CT transmitter for five seconds.



Q. Why is the battery symbol flashing?

A. The batteries provided should last for at least one year. Toward the end of their life the battery symbol will flash to let you know to replace them. Make sure you use alkaline AA batteries (LR6). Do not use rechargeable batteries.

Q. Why is the (•) flashing?

A. This symbol will flash if:

• You do not have a **bridge** connected to your system.

If you do have a bridge:

- The outer rings will flash if the **display** cannot talk to your **bridge** (try moving them closer).
- The inner dot will flash if you are not connected to the internet.
- Try checking that the Ethernet cable is connected.



Q. How do I reset the display (clear the data and start again)?

A. There are two options. You can either erase the memory or reset the network.

For either option, first unplug the **display's** power cable. Then press and hold the \blacksquare and \blacktriangleright buttons while reinserting the power cable.

The **display** will first ask if you want to erase the memory, 'RST?'. Select 'Y' (\checkmark) to erase the memory, or 'N' (\blacktriangleright) to keep the data. Next the **display** will ask 'N/W?'. If you want to unpair all connected devices (**Smart Plug, transmitter** and **bridge** if you have a **web pack**) select 'Y', or 'N' to keep them paired. Finally the **display** will ask if it should be a Master (MST) or a Slave (SLV). Select MST using the \checkmark button. The **display** will then ask you to reconfirm the date and time.

If you chose to reset N/W, you will have to pair the **sensor**, **bridge** and **Smart Plugs** again, one by one.



Q. What do the Smart Plug columns show me?

A. The Smart Plug columns on the display light up from the bottom on the following scale:



Q. How much electricity does the Ensemble display use?

A. The **display** uses less than 0.35 watt hours a month to run - that's less than making a single slice of toast.

Q. Why does the display show a different reading to my electricity bill?

A. The Ensemble system is a good indicator of your approximate electricity consumption, but it is only intended as a guide. The **sensor** does not communicate with your meter directly and will not send your readings to your supplier.

If your supplier asks for a reading, or if you are checking your bills, always look at the readings on your meter (NOT your **Ensemble display** or website) as these will continue to be used for billing purposes.

Q. Where do I find my tariff information?

A. You can find tariff information on your electricity bill. If not, you will need to contact your energy supplier.

Q. Why is the (1) Smart Plug icon flashing?

A. The symbol will flash if the corresponding Smart Plug is out of range or turned off at the wall.

Q. How do I set a realistic target?

A. By looking at recent bills you can work out what you spent over the last year. e.g. If you spent £486.70 you could aim to spend 10% less in the coming year. $438/365 = \pm 1.20$ a day. You can also choose to set this in CO₂ or kWh.

Q. Where can I find more information and support for my Ensemble?

A. Please visit our Ensemble support site for regularly updated FAQs and other resources.

www.greenenergyoptions.co.uk/ensemble-colour



Technical specifications

Model	Display	Transmitter	Sensor	Smart Plug
Rated voltage	230Vac 50Hz	3 x AA 1.5V batteries	N/A	230Vac 50Hz
Input power	0.35W	0.2W	N/A	1W
Operation	0 to 40°C	-20 to 50°C	-20 to 50°C	0 to 40°C
Humidity	85% non-condensing	85% non-condensing	85% non-condensing	85% non-condensing
Usage	N/A	N/A	Cat III	Class I

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Conforming standards:

Radio Device RF (UK & Europe)	EN300 220-1	
Emissions EMC (UK & Europe)	EN301 489-3	
Safety Requirements (UK & Europe)	EN61010-1, EN60950	
Europe standards	CE	
Max Voltage 264 Vac	Cat III	
Max Current 75A		

Contact

UK Office

- T: +44 (0)8450 941 508
- E: ensemble.support@greenenergyoptions.co.uk
- W: www.greenenergyoptions.co.uk

The **Ensemble display** is designed and manufactured by Green Energy Options Ltd (geo). For details of further products, accessories or enhancements go to www.greenenergyoptions.co.uk







making energy engaging in-home | mobile | online