

## The Smart Meter Home Area Network (<https://www.smartme.co.uk/home-area-network>)

### Functionality

The Home Area Network or HAN is similar to your home broadband wireless network and is used to communicate between the meters, the In Home Display (IHD) and other items of equipment.

#### In Home Display

The IHD is a small standalone display, which you might typically keep in your kitchen, which shows your current energy consumption for both electricity and gas. It shows that as kWh (kilowatt hours, the unit used to measure energy usage) and in pounds and pence. It also shows your energy usage over various time periods, the current day, week, month and year.

Electricity values are updated every 10 seconds and gas every 30 minutes.

The costs shown on the IHD include the daily standing charges. The standing charge for electricity is added just after midnight and gas seems to be added later in the day.

Note that the IHD uses a simplified gas calculation and so could be about 1p a day out for the average customer.

The costs shown on the IHD may or may not include VAT depending on your supplier.

If you need a guide to using and understanding your IHD, have a look on our [documents page](#) to see if we have a User Guide for your particular supplier and IHD. Just type your supplier's name in the search box to see the different guides available.

*TIP: If the standing charges or rates do not look correct, ask your supplier to send the SMETS command "Update Tariff Configuration" - this should sort it out.*

IHDs have a minimum set of features which are specified in the Smart Metering Equipment Technical Specifications (SMETS).

Normally the Communications Hub that manages the HAN sits on top of your electricity meter and communicates with the electricity meter, gas meter and IHD. The Home Network

The communication protocol used for the Smart Meter HAN is [Zigbee](#) as it is simple, inexpensive, low power and secure. The range of this technology is about 15m, but this is reduced by obstructions such as walls and doors.

Where the meter is a long way from the location of the IHD, or thick walls are in the way, the current technology (Zigbee at 2.4GHz) won't work. This could be the case for up to 30% of properties.

A different communications method (Zigbee 2.4 GHz & 868MHz or Dual Band HAN) available from mid 2020 will improve this for about 26.5% of properties but that still leaves a large number for whom Smart Meters won't work.

For these final properties, for example where meters are in a basement a long way from the customer's IHD, a separate company has been set up to investigate solutions, prepare contracts and procure the equipment. The company is the [Alt HAN Co Ltd](#). They have paired with [Landis & Gyr \(L+G\)](#) as their preferred technology partner and tested Alt HAN devices in January 2023. The first delivery of the solution for mass rollout is expected in July 2023.

### HAN Solutions

1. [Standard HAN 2.4GHz](#)
  - 70% of premises.
  - Normal small and medium houses.

- Nominal range of 15m.
- SMETS 1 and SMETS 2.

## 2. [Dual Band HAN 2.4GHz & 868MHz](#)

- 26.5% of premises.
- Large houses and buildings, thick walls.
- Signal can travel further but is lower bandwidth and therefore slower.
- As name Dual Band implies it includes both 2.4GHz and 868MHz transceivers.
- Tested in August & September 2020, mass roll-out started January 2021.
- More expensive than Standard, additional £24.20 per meter set.
- SMETS 2 only

## 3. Alternative HAN solutions

- Between 2% and 3.5% of premises.
- Long distance between meters and IHD, for flats with meters in a basement.
- Most expensive solution.
- New company [Alt HAN Co Ltd](#) formed to manage this
- Solution being delivered:
  - [Power-line communications signal booster.](#)
- Other solutions considered:
  - [Leaky Feeder](#) Aerials.
  - Larger aerial inside comms hub.
- Procurement started in September 2022.
- Testing started in January 2023.
- First delivery of the solution for mass rollout in July 2023.
- Estimated Total additional cost £290M.
- SMETS 2 only.

## 4. No solution (too costly)

- Between 1.5% and 3% of premises.
- Extreme distances.
- [Faraday cage](#) buildings.

## Single Band HAN 2.4GHz

Single Band Communication Hubs operating at 2.4GHz are used on both SMETS 1 and SMETS 2 meters, providing sufficient coverage in approximately 70% of premises. Coverage fails where there is a long distance between the Comms Hub and the Gas Meter and IHD, and where the walls are thick

## Dual Band HAN 2.4GHz & 868MHz

Dual Band Communication Hubs operating at 2.4GHz and 868MHz are used on SMETS 2 meters and can increase coverage in premises by approximately 26.5% to 96.5%. This is possible because [radio waves](#) with a lower frequency or longer wavelength naturally travel further. Higher frequency radio waves are more easily absorbed by objects in their path.

The addition of the Dual Band Comms Hub still leaves 3.5% of premises requiring coverage; these will be the target of the [Alt HAN Co Ltd](#).

The project to design and introduce Dual Band Comms Hubs was managed by the [Data Communications Company \(DCC\)](#).

### **Alt HAN Devices**

Having considered a number of options the Alt HAN company have developed solutions for customers with a large distance between their electricity meter and IHD or Gas Meter where standard Zigbee coverage is insufficient. The solutions are known as the [Alt HAN devices](#) and are based on power line communication principles. [Landis+Gyr](#) are building the devices and around 2.5% of homes are expected to use them. They are now being installed by suppliers.

The Alt HAN solutions work by extending Zigbee connectivity between SMETS devices using a combination of broadband [powerline communication \(PLC\)](#) bridges and long-range radio connections.

Alt HAN devices must not be installed in multi-way extension sockets or connected to devices designed to filter Radio Frequency Interference (RFI) or suppress mains surges. Doing so may interfere with their performance and connectivity, potentially disrupting the communication between HAN devices and the Communications Hub. For optimal operation, Alt HAN devices should be plugged directly into a standard mains socket without any intermediary filters or surge suppressors.

There are four Alt HAN devices, called Bridges:

- Bridge 1 is installed alongside the electric meter and draws its power directly from the electric meter itself. It connects the HAN and power line communications (PLC).
- Bridge 2 is a plug-in device powered by connecting to any standard electrical socket within the premises. It connects the HAN and power line communications.
- Bridge 3 is another plug-in device that also uses a standard socket for power. It connects the HAN, Long Range Radio (LRR) and power line communications.
- Bridge 4 is battery-powered and is mounted on the gas meter using a bracket. It is designed to synchronise its wake-ups so that it has established a link to the Communications Hub just before the Gas Meter's thirty-minute wake-up ready for the Gas Meter communications. It connects using Long Range Radio.

Each Bridge is designed for specific installation scenarios to extend connectivity between smart metering devices. Alt HAN connects to and extends the 2.4GHz Zigbee HAN using Power Line Communications (PLC), it is not designed to connect to the 868MHz HAN provided by Dual Band Comms Hubs.

The device needs to remain on all the time for the comms hub and devices to communicate, however you can turn it off if you need to and move it to a more convenient position provided it's still near the IHD or gas meter.

You cannot buy these devices. They will be supplied by your supplier free of charge where required.

When you move house you should leave the Alt HAN device(s) and your IHD behind as they will only work with the installed comms hub.

### **Interference with Wi-Fi**

The operation of the HAN should not interfere with your Wi-Fi despite operating in the same 2.4GHz band. Many appliances operate in this unlicensed band and are designed to choose a channel with less traffic and then

share that channel with the other users. There could be some interference at the beginning as devices choose the best channel, but this is unlikely.

Fortunately, the [Zigbee specification](#) has a couple of extra channels above the UK 11 Wi-Fi channels, so in normal operation the Comms Hub will choose a channel between the Wi-Fi bands or above them

If you do have problems, try:

- Moving your Wi-Fi router away from the Comms Hub and IHD
- If your router has a 5GHz option, use that for your devices (faster but shorter range)
- Log into your Wi-Fi Router and choose channels 1, 6 or 11 on the 2.4GHz band. Leave your Wi-Fi router switched on all the time so that the Comms Hub can choose the channel with least interference.

For comparison with the Smart Meter frequencies shown earlier on this page, here are the main Wi-Fi frequencies.

### Main Wi-Fi Frequency Bands

| Frequency Band (GHz) | Description                                                                                                                                                                                                                                                                                                                                  |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.4                  | This band is the most widely used of the bands available for Wi-Fi, being used for 802.11b, g, & n. It can carry a maximum of three non-overlapping channels. This band is widely used by many other non-licensed items including the Smart Meter HAN, microwave ovens, Bluetooth, etc.                                                      |
| 5.8                  | This band provides additional bandwidth and is used by 802.11a & n. It can carry up to 23 non-overlapping channels but gives a shorter range than 2.4 GHz. 5GHz Wi-Fi is preferred by many because of the number of channels and the bandwidth available. There is also less traffic on this band currently, resulting in less interference. |

(Page updated: 2025-08-13)

### Questions & Answers

#### Why do my meter, IHD and account show different values?

Due to the challenges of communicating with the meter and In Home Device (IHD), it's possible for the meter, IHD and your account to show different things.

Only meter readings are important for your bill, whether supplied by smart meter automatically or by you manually. The meter readings are used by your supplier to calculate a bill in their billing system.

Therefore, follow these checks to ensure your billing is accurate:

1. Check your Smart Meter reading (from your Smart Meter and not from the IHD) is on your online account. If it isn't, send it in manually.
2. Once your readings are provided your online account will produce an accurate bill.
3. If your IHD does not match your bill don't worry as many things can affect what the IHD shows. To get your IHD working properly contact your supplier.

(Updated: 2022-11-12)

#### Why is my IHD (smart meter display) showing "waiting for current data"?

This means that the IHD (In Home Display) is no longer talking to the communications hub on the electricity meter. There are various steps to try to correct this:

1. We suggest you wait 24 hours to see if the device reconnects.

2. If not move the IHD close to the electricity meter and wait another 24 hours for reconnection.
3. Try resetting your IHD and wait another 24 hours. There are various methods to reset an IHD depending on the model. Find a guide for your device at [www.smartme.co.uk/documents](http://www.smartme.co.uk/documents).
4. If this does not work then contact your energy supplier who will have to send commands to the devices to re-run the connection process.

(Updated: 2025-04-08)

### **Is my IHD accurate?**

The information shown on an IHD is not fully accurate and may differ from the bill you are presented with. There are many reasons your IHD may be inaccurate:

- Poor communications with comms hub
- Tariff details have not been set
- Gas calorific values in the IHD are less precise than those used in billing. The supplier's billing system uses average of the daily calorific value of the gas in a customer's distribution zone (there are 13 zones). The IHD uses a monthly average value.

The information on an IHD should be treated as a guide only.

(Updated: 2022-09-12)

### **How long does the IHD take to set-up?**

The IHD (In Home Display) provided with your Smart Meters can take up to 6 weeks to be set up properly. In this time your IHD may have out of date firmware and wrong settings such as the wrong tariff, and so could provide misleading information.

However, this will not affect your bills as the IHD is always for information only. Bills are generated by your supplier's billing system using meter readings from the Smart Meters.

(Updated: 2022-09-12)

### **When is the Daily Standing Charge added to my IHD?**

Unfortunately, there is no set rule as to when the Standing Charge will be added to your IHD. Some suppliers add it at the start of the day and some at the end. We believe all suppliers should add it at the start of the day for consistency. (Updated: 2022-09-12)

### **Can a Smart Meter interfere with my WiFi?**

Yes interference can occur for up to an hour while your WiFi and the Smart Meter each find the best channel to avoid each other.

Both your WiFi and the Zigbee network used by Smart Meters operate in the same 2.4GHz radio band and the band is divided into channels. Most modern WiFi routers can scan channels in order to pick the ones with the least interferences from other devices and the Smart Meter Zigbee system can do the same. As some doorbells and remote controls can also use the 2.4Ghz band it may take an hour or two for the best channels to be chosen.

If interference problems continue, you can log onto your WiFi router and select the channel manually to see if that helps. It is not possible to override the automatic channel selection on the Smart Meter. (Updated: 2020-01-20)

### **What is a CAD?**

A CAD is a Consumer Access Device which provides access to your meter data through WiFi. These are relatively new and usually integrated into the IHD (In Home Display) provided by suppliers. One example of such a device is the [Chameleon IHD3](#).

The IHD still needs a link to the meters to retrieve the data first, so CADs do not provide an alternative solution where the meters and IHD are separated by a large distance. (Updated: 2025-04-08)

### **Can I buy an IHD off Amazon or EBay?**

Do not buy a replacement IHD from Amazon or EBay or other general sales outlets as you won't be able to pair the IHD with the Comms Hub. Only a supplier can carry out this process with a normal IHD. Some IHD manufacturers are now making devices which customers can pair themselves, known as Consumer Access Devices (CAD). For an example see the [Ivie Bud](#) on our meter data page. (Updated: 2025-04-08)

### **What is Zigbee?**

[Zigbee](#) is a communication protocol for radio networks. It is designed to be simpler, use less power and be cheaper than other systems and therefore is ideal for mass deployment in Smart Meters.

In Smart Meters the Zigbee protocol is used to communicate between the communications hub, electricity meter, gas meter and IHD (In Home Display). (Updated: 2020-02-09)

### **Does my In Home Display need to be plugged in all the time?**

Most In Home Display units have a very short battery life and will therefore need to be plugged in if you wish to use it. However, your smart meter doesn't require your display unit to be powered on in order to function, so you may prefer to unplug the display. (Updated: 2022-07-30)

### **How often is data pulled from the meter?**

Suppliers will try to contact your Smart Meter once a day to retrieve alarms and alerts. Meter readings will also be collected based on your agreement to have them recorded at daily or 30 minute intervals.

See more at our [Reading my Meter](#) page. (Updated: 2025-04-08)

### **Is the IHD Budget monitoring useful?**

On most IHDs you can set a budget for either day, week or month so that the IHD will let you know if you have gone over this amount. Going over will not stop your supply. The ability to set a budget on the IHD is of limited use as the energy you use will vary over the seasons. You will have to alter your budget setting regularly to make use of this through the year. (Updated: 2024-12-08)

### **What do the indicators mean on a SMETS 2 Comms Hub?**

The comms hub sits on top of the SMETS (Smart Meter Equipment Technical Specifications) electricity meter and has a series of LED indicators showing the functional status of the metering system. Each LED has a legend shown below:

#### **SW**

This shows the status of the hub's software. You should see a green light flashing every five seconds.

#### **WAN**

Shows your communication hub's ability to communicate with your supplier. If your meter is connected, you'll see a green light flashing every five seconds. This light may be off if your meter is using the MESH network to communicate.

#### **MESH**

This light may be on if your meter is connected and communicating through another network (this network has been built to allow more meters to communicate in areas with poor or no signal).

#### **HAN**

This light shows the connection status of your electricity meter, gas meter and/or IHD with your communications hub on the HAN (Home Area Network). If connected, you'll see a green light that flashes every five seconds.

## GAS

This light tells you if a gas meter is connected; you should see a green light flashing every five seconds. If you don't have a gas meter installed, this light will be off.

(Updated: 2020-04-09)

### **How do I top-up my smart meter PAYG if the mobile network is down?**

Normally your PAYG (Pay As You Go) top-up will be sent automatically to the smart meter, however, if the communications link through the mobile network is not available then this cannot happen.

Firstly, you can use the emergency credit that most suppliers offer. If that runs out, you can enter the long authorisation number that you received when you paid for the credit into the meter or IHD (In Home Display) to apply your credit. This is very difficult to do on the meter so use the IHD if you can. (Updated: 2019-10-21)

### **How much will it cost me to run my In Home Display?**

Your In Home Display (IHD) uses a very small amount of electricity, typically less than 0.6 W. So if we assume the worst case of 0.6 W and that it is on all the time over a year this will consume 5.256 kWh. If we assume 28p/kWh this add up to an annual running cost of £1.47. (Updated: 2022-09-18)

### **What is a Dual Band Comms Hub?**

The current Communication Hubs have a single band 2.4 GHz HAN (Home Area Network) frequency and are known as Single Band Comms Hubs (SBCH) and should provide HAN coverage between meters and the IHD (In Home Display) in approximately 70% of premises.

For some buildings like blocks of flats or where walls are very thick, the smart meter can't communicate with the Comms Hub. So, by mid 2020, a more sophisticated hub with a choice of frequencies will be available. These are called Dual Band Comms Hubs. They use a HAN frequency of 868MHz along with the existing 2.4GHz frequency. Dual Band Comms Hubs (DBCH) are expected to increase coverage to 95% of premises.

(Updated: 2020-02-09)

### **What is the HAN range?**

The range of the Smart Meter HAN (Home Area Network) is about 15m, but this is reduced by obstructions such as walls and doors. Where the meter is a long way from the location of the IHD (In Home Display), or thick walls are in the way, the current technology (Zigbee at 2.4GHz) won't work. This could be the case for up to 30% of properties.

A different communications method (Zigbee 868MHz) available from mid 2020 will improve this for about 25% of properties but that still leaves a considerable number for whom Smart Meters won't work.

For these final properties, for example where meters are in a basement a long way from the customer's IHD, a separate company has been set up to investigate solutions, prepare contracts and procure the equipment. The company is the [Alt HAN Co Ltd](#) and solutions are expected in 2021. (Updated: 2022-09-03)

### **Why has my IHD got a Wi-Fi symbol?**

The Smart Meter system does not use Wi-Fi for normal operation but some IHDs have this as an additional facility. If you connect your IHD to your home broadband, these additional services can be provided:

- Some suppliers can provide access more quickly to your consumption information by uploading data to their systems more quickly through this route (normal collection of data is once a day)
- The supplier can check your IHD is operating normally
- The IHD can receive firmware updates (although these can also be received through the normal Smart Metering system).

(Updated: 2025-01-28)

### **How do I read an In Home Display?**

The In Home Display (previously known as Smart Meter Display or Home Energy Monitor) has been designed to provide information to customers in their homes, and so should be easy to understand. For both electricity and gas, it will display your energy consumption in either pounds and pence or kilowatt hours, helping you understand how you are using energy in your home at any given point in time. Unfortunately there are many different makes out there with different controls, so please check our [Documents](#) page or contact your supplier for additional information. (Updated: 2025-04-08)

### **How can I get my consumption data more quickly?**

If you want your consumption data updated more quickly than the normal once a day frequency, you have a couple of options:

1. [Hildebrand Technology Ltd](#) can retrieve data from your smart meter daily to display it in their Bright app. You can also swipe the screen in the app for a refresh via DCC and your smart meter.
2. For updates every 10 seconds you could purchase the [Hildebrand IHD/CAD](#). This device connects to the communications hub on your smart meter via the HAN as normal but passes the data collected via your home broadband to Hildebrand Technology Ltd so that it can be shown on the Bright app with less delay.

(Updated: 2022-01-15)

### **Why does my IHD show CO<sub>2</sub>?**

The measure of CO<sub>2</sub> on your IHD (In Home Display) shows the amount of CO<sub>2</sub> given off by power stations generating the electricity you are using. The calculation is set by Ofgem based on the average amount of carbon dioxide emitted for every kWh of energy generated. The average is for the fuel mix across entire UK energy industry, so may be misleading if you have opted for a CO<sub>2</sub> free source such as Wind or Nuclear.

(Updated: 2018-06-03)

### **What is an AIHD?**

An Accessible In Home Device (AIHD) has all the great features of a regular IHD, with the addition of accessibility features. These can include tactile buttons with feedback of a button press, a text-to-speech function for screen navigation and adjustable volume for the text-to-speech function.

When installing smart meters, the engineers usually carry AIHDs in their vans and ask whether you need an accessible device. But it is best to request one when you are booking your Smart Meter Appointment so they can ensure they have one to hand. (Updated: 2023-07-28)

### **Can I lay a cable to help join the devices together?**

The electric meter, gas meter and IHD (In Home Display) can only be joined through a radio link. This applies to all three standards of meters pre-SMETS, SMETS 1 and SMETS 2. However, suppliers can use a [Dual Band Communications Hub](#) or a [zigbee booster](#) to join devices together if they are a long way apart.

Our recommendation would be to let your supplier sort it out, as they have a number of [options](#) to try.

(Updated: 2026-05-30)

### **Are there special considerations for the location of a Smart Meter?**

A meter fitter is told what equipment is needed before visiting a premise to fit a SMETS 2 meter. This was determined by national site surveys to determine the signal strengths across the country. In the Central and Southern Regions this includes whether an aerial or mesh setup is required.

Once on site the fitter will test the recommended equipment to see if it can communicate and add additional equipment if possible.

The Smart Meters must be fitted in place of your old meters as it is expensive to move the incoming power cable and gas connection, and not good to have long cables from the main fuse (cutout) to the meter.

(Updated: 2026-03-23)

### **My IHD is showing the wrong time.**

If your IHD (In Home Device) is not showing the correct time, the IHD is not paired to the comms hub. Contact your supplier who will re-pair your devices. (Updated: 2023-07-28)

### **How far can I move my IHD?**

Try to keep your IHD (In Home Device) within 6 metres of the comms hub on top of the electricity meter. If there are walls in the way the signal will decline significantly. (Updated: 2024-02-08)

### **How often will my IHD be updated with data from my meters?**

Your IHD (In Home Display) will be updated by your electricity meter about every 10 seconds and by your gas meter about every 30 minutes. The gas meter updates less often to preserve its battery life which in normal use is expected to be at least 10-15 years. (Updated: 2020-10-23)

### **What is a PPMID?**

Customers who opt to pre-pay for their energy should have a fall back means of applying a top up locally to their meter in the event of a temporary loss of WAN communications. This can be most easily achieved with a PPMID (pre-payment meter interface device), which allows the customer to easily enter a purchase reference number. Most suppliers now use IHDs (In Home Displays) with integrated PPMID functionality. (Updated: 2020-02-09)

### **What is a HAN-connected auxiliary load control switch (HCALCS)?**

Similar to an ALCS (Auxiliary load control switch), a HCALCS allows large domestic loads, such as electric vehicles chargers, to be controlled independently of the main power supply. However, rather than being integrated with the meter directly, the switch is remotely connected via the Home Area Network. This provides more flexibility, avoiding the need for new wiring back to the meter when a new load is connected. Although we have seen some initial projects start using HCALCS, none seem to have reached mass production yet. (Updated: 2022-01-16)

### **What is the cost of the In Home Display (previously known as an SMD or HEM)?**

In Home Displays (previously known as Smart Meter Displays or Home Energy Monitors) are provided free to customers and cost suppliers about £15. Some suppliers are expected to offer enhanced Displays at a cost to the customer.

Suppliers have an obligation to replace a broken IHD in the first year after installation. (Updated: 2019-12-22)

### **How do I remove Gas from the IHD?**

Once the details on the account and National Database have been updated to indicate that the gas supply has been removed, the IHD should stop showing the gas information. This could take up to 6 weeks. If it hasn't happened by then, contact your supplier.

This will only happen if your supplier totally removes your gas supply by capping off the supply pipe and removing the meter. (Updated: 2025-07-26)

### **Could my IHD link to my neighbour's meters?**

Your IHD (In Home Display) is paired to your own meters by the installer. It won't pick up information from your neighbours and can't be used in another house. If you need a replacement IHD this will have to be paired with your meters. (Updated: 2023-06-24)