

User Fibre Optic Router – Calix Gigacentre 844g

Information and troubleshooting guide for Herefordshire Community Networks Fibre Router

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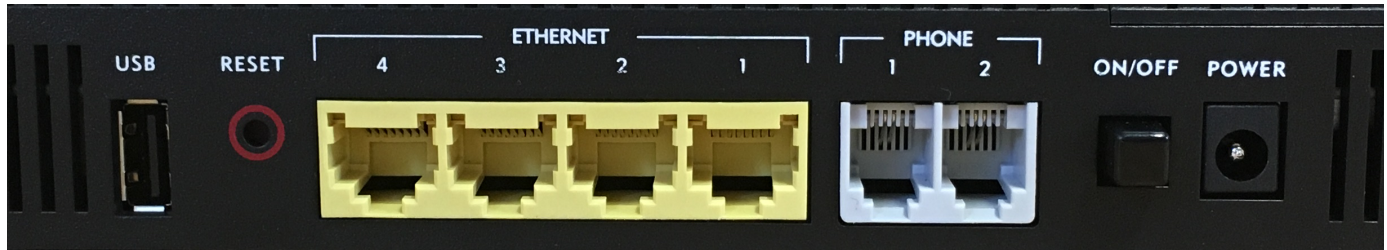
IMPORTANT SAFETY INSTRUCTIONS

When using your HCN Fibre Optic Router (the unit), basic safety precautions must always be followed to reduce the risk of fire, electric shock, and injury to persons. Precautions include the following:

- Do not use this product near water. For example, near a bathtub, washbowl, kitchen sink or laundry tub, or in a wet basement, or near a swimming pool
- Avoid using a telephone (other than a cordless phone) during an electrical storm. There may be a remote risk of electric shock from lightning
- The unit will not work if the electricity supply fails, and you will not be able to make emergency calls in the event of power failure

- If you wish to continue service during a power outage, please purchase an Uninterruptible Power Supply
- Use only the power cord supplied, preferably directly into a socket and not with an extension lead
- Do not attempt to remove the unit from its wall mounting, nor make any attempt to dismantle it. There are no user serviceable components inside
- This is a Class 1 laser product: fibre optic radiation can cause severe eye damage or blindness. Never look into the open end of an optical fibre (this is not possible unless the unit is dismantled from the wall).

1. WHAT TO CONNECT WHERE



Our engineer will have installed the fibre optic cable into your house and positioned the Fibre Optic Router at your chosen location. To connect the router, check the rear of the unit, as shown above.

With the Power turned off, plug your PC/laptop into any of the yellow Ethernet ports. Do not connect your phone as yet until you have registered for a telephone service (see Section 5). Then turn the Power on and wait for the router to go through its self-diagnostic tests – these will take around one minute to complete.

Note: The USB port is not used in our configuration, but is an excellent place to charge your smartphone or tablet, using the USB lead that came with your device!



Check the lights on the front of the router. Four steady green lights will show, as above, and it is good to go!

During the initial power application all the lights will come on momentarily to check the LEDs. All but the Power light will then extinguish.

- When the unit connects to the HCN head-end, the Broadband light will begin to blink, then will stabilise as solid green
- Once Internet service is established, the Service light will be solid green. If it is solid red there is a failure of the Internet service – follow the troubleshooting steps in Section 6
- The unit broadcasts on both 5Ghz and 2.4Ghz Wi-Fi frequencies (unless either or both are disabled by the user). Normally both lights will be solid green
- The Ethernet ports 1 – 4 will illuminate green if a powered device is attached and they will blink when activity occurs on that port. The rate of blink loosely translates to the amount of packets being transferred. If they remain off, no powered device is present
- The phone ports are not used in our implementation and the lights will remain off
- Usage of the WPS button is shown in Section 3.

2. TESTING YOUR BASIC CONNECTION

With a PC or laptop connected via an Ethernet port and the Service light green, your machine will be connected to the Internet. Open a web browser such as Microsoft Explorer, Google Chrome or Apple Safari and you should be able to search and connect to any websites. If you are unsure how to do this, please consult the documentation that came with your PC/laptop.

Once connected, search and open up a browser window to check you are receiving the connection speeds you requested. The preferred speed test site is the independent www.speedof.me. Should you receive speeds less than you have ordered, please contact support (Section 6) and we will rectify.

3. SET UP WI-FI AND OBTAIN BEST SPEEDS

The HCN fibre router broadcasts on both 5GHz and 2.4GHz frequency bands. If the device you are trying to pair with is capable of connection at either speed, it is normally recommended to use the 5GHz setting as this provides faster speeds and better security. However, many older devices will only use the 2.4GHz standard, so this should be used. Also, although 2.4GHz is slower, it does have longer range so for devices a long way from your fibre router this may be the better option.

The easiest way to set up your Wi-Fi services is to use the WPS (Wi-Fi Protected Set-up) button on the front of the unit below the indicator lights.

- Press the WPS button on the fibre unit a single time
- WPS light illuminates green and flashes for up to 120 seconds
- Initialise the Wi-Fi function on the device(s) to be paired – these may be laptops, smartphones, tablets or smart TV/TV boxes
- Wi-Fi 5.0 or 2.4GHz light begins flashing after approximately 10 seconds indicating the pairing process has begun
- If another device is found, the fibre unit pairs with the device, the Wi-Fi 5.0 or 2.4GHz light remains on continuously, and the WPS light goes out
- If no device is found, the WPS light turns red after the initial 120-second time-out and remains red for another 120 seconds.

The speeds available over Wi-Fi will be less than those available via wired connections. Partly this occurs because many smartphones/tablets have lower data speeds in-built, and partly because Wi-Fi signals get attenuated as they pass through the air and through different building materials.

| Material | Wi-Fi Attenuation |
|--|-------------------|
| Wood, drywall, particle board (MDF), tile, glass | Low |
| Brick, cinder block, water | Medium |
| Plaster, stucco, concrete, stone | High |
| Metal, metallised glass, foil-backed insulation | Very high |

Other devices in the home are also known to compromise Wi-Fi performance, particularly at the 2.4GHz frequency. In particular, microwave ovens, some cordless DECT phones, baby monitors, analogue TV repeaters and game consoles can all cause problems.

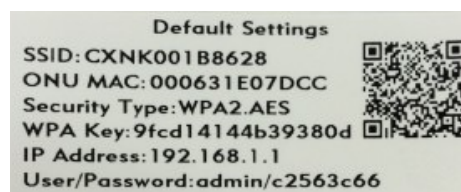
4. CHANGING NETWORK ID AND PASSWORD

Note that it is normally perfectly feasible to continue to use your fibre router as it was delivered and installed, and probably a majority of users do this.

However, you may wish to change your network name/ID to something more memorable. As shipped the network ID (also called the SSID, the Service Set Identifier) is made up of the letters CXNK along with a further 8 alphanumeric characters, and is shown on the sticker affixed to your router at installation. You may wish to change this to something that identifies your property for example, making it easier for visitors to identify the network. It can also be helpful to give your 2.4Ghz and 5Ghz Wi-Fi services separate names, so that you can see on your smartphone or tablet which service it has connected to (remembering that the 5Ghz service will normally provide a faster service).

Similarly, you may change the allocated password fundamentally for security purposes. Note particularly that if you change your password and forget it, we cannot retrieve it for you. We can, if requested, reset the SSID and the password to the factory default settings, but you will need to repeat the steps below to input your own settings.

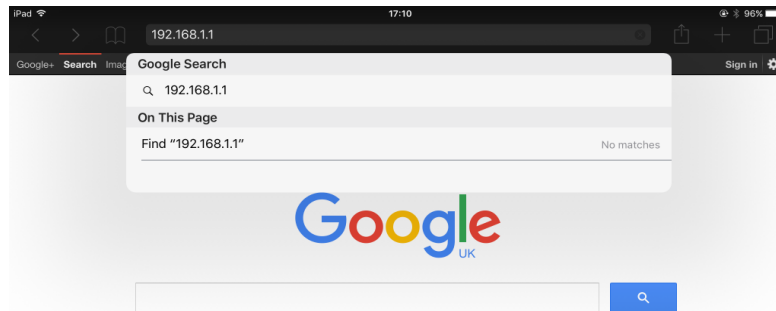
To change your network ID and/or password, find the sticker on your router – it should look like:



Connect wirelessly from your tablet, smartphone or laptop device by searching for the SSID of the router as shown on the sticker – CXNK001B8628 in the example above.

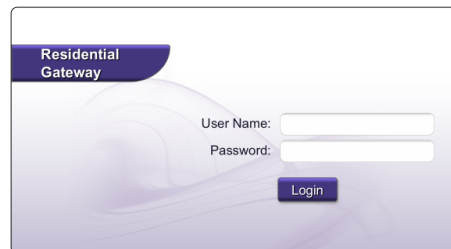
When prompted you will be asked for a password, please enter the 'WPA Key' which is the set password – in this instance '9fcd14144b39380d'.

Note: It is important that you use the WPA Key, not the details on the sticker for the administrative password.



Open your web browser and then type 192.168.1.1 in the address bar. Click Enter/Search.

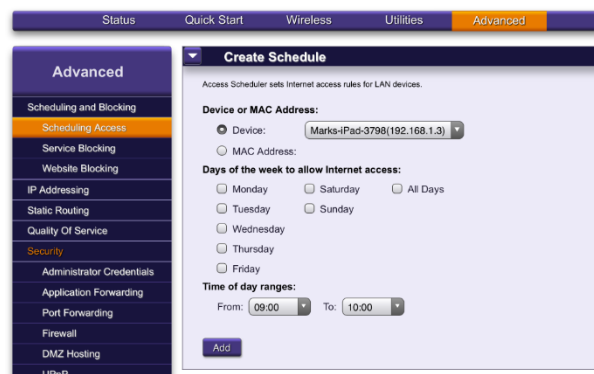
Note: If this does not work try 192.168.1.2 or 192.168.1.3 as alternate addresses.



You should now see the screen above. Enter the user name and password from the sticker on the fibre router. In the example they are – User: <admin>, Password: <c2563c66>. Click Login.



After logging in, click on the 'Advanced' tab on the right of the menu (above the gear wheels).



You should now see the screen above. Click on the 'Security' tab.

You should now be on this screen, where you change the credentials to get into the router, should you wish to use something more memorable. Save the changes.

Note: If you deliberately or accidentally hit the Reset button on the rear of the unit, the fibre router will reset to its original settings, as on the sticker.

Once you have set your administrator credentials, click on the 'Wireless' tab.

On this page, click onto the 'SSID' tab.

Here you can rename your 'SSID' (or wireless name as it is commonly called) to whatever you choose (alphanumeric, no symbols, up to 32 characters). As before, you may should you wish, give separate names to your 2.4 and 5GHz networks.

Navigate to the 'Security' tab once this step is complete.

Here you should change the default wireless password(s) to something more memorable. This must be alphanumeric, no symbols, and up to 63 characters long. Click 'Apply' to confirm the changes.

Save your administrator user name and password, and your Wi-Fi password(s) somewhere safe. Please note we cannot help you to find them if they are lost, all we can do is reset them to their original default settings.

5. CONNECTING PHONES

HCN does not support telephone services via the in-built phone ports — services are provided through independent VOIP phone service providers. You are welcome to use any of the UK providers, but we recommend those provided by Sipgate, Draytel or Vonage. See our support guide for details.

6. TROUBLESHOOTING AND SUPPORT

Troubleshooting: It is very helpful if you undertake the following checks before calling for support:

| | |
|---|--|
| Is the Power light on? | <p>If it is steady green, no action needed</p> <p>If it is flashing green, the hub is on battery power (needs UPS installed)</p> <p>If it is off, no power is reaching the router. Check the socket you are using is live. If still off, see points 1-4 below</p> |
| Is the Broadband light on? | <p>If solid green, broadband connection has been made</p> <p>If it is blinking, the router is trying to establish a connection with the HCN head-end. Wait 2 minutes</p> <p>If the light is off, no physical connection has been established. See points 1-4 below</p> |
| Is the Service light on? | <p>If solid green, Internet connection is established</p> <p>If solid red, connection has failed. See points 1-4 below</p> |
| Are the Wi-Fi lights on? | <p>If solid green, both channels are active and discoverable</p> <p>If off, then they have been disabled in the admin software</p> |
| Are the appropriate Ethernet lights on/ blinking? | <p>If yes, a powered device is successfully connected</p> <p>If no, there is no connection or the device is powered off</p> |
| Are phone 1/phone 2 lights on? | <p>Either light being on indicates that a phone has been (incorrectly) plugged into the phone ports</p> |

Then take the following action:

1. Turn the power off, wait for approximately five minutes, then turn the power on again.
2. Wait while the fibre router goes through its self-diagnostic tests. If all the connected lights are now green, the problem has been resolved.
3. If one or more lights has extinguished, press and hold the Reset button on the rear of the unit for over 15 seconds, then release. The unit will restore to its factory settings. If the unit now displays solid green lights, the problem is resolved, though you will have to re-enter your network ID/password if you have changed them (see Section 4).
4. If all the lights show you are connected but you still feel there are issues with speed, then please run a speed test and contact us for advice.

Support: If the above does not resolve your problem, you can get help in four ways:

- Check the Support FAQ section of our website
- Check with a neighbour – see if they are experiencing similar problems
- Send us a trouble ticket to hereford-cic@gmail.com
- Call us on 01432 617306

Note: The phone line is normally manned from 9.00 am until 5.00 pm Mondays – Fridays. At other times you may be invited to leave a support message via voicemail. These messages are monitored 24/7, but we will only return your call out of hours for a significant service-affecting fault and not for individual issues, such as forgotten passwords, etc.

PRODUCT SPECIFICATIONS – CALIX 844G ETSI

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| <p>DIMENSIONS</p> <ul style="list-style-type: none"> • Height: 10.6 in (26.9 cm) • Width: 7.9 in (20.0 cm) • Depth: 1.8 in (4.6 cm) • Weight: 28 oz. (0.8 kg) <p>PON CHARACTERISTICS</p> <ul style="list-style-type: none"> • Max. split: 64 GPON • Max. reach: 58 km (36 miles) with C+/FEC • Maximum Optical Distribution Network (ODN) Attenuation: GPON Class B+, 28 dB GPON Class C+, 32 dB • 1490 ± 10 nm optical receiver: -27.0 to -8.0 dBm • 1310 ± 20 nm optical transmitter: 0.5 to 5.0 dBm <p>INTERFACES</p> <ul style="list-style-type: none"> • Wireless: 2.4GHz 2x2 and 5Hz 4x4 internal antennas • Telephony: Two RJ-11 connectors • Data/IPTV: Four 10/100/1000 BaseT Ethernet ports, RJ-45 connectors • USB: USB 2.0 Type A • RF Video: F-connector, 75 Ohms • PON: Single 9/125 µm (single mode) fiber, SC/APC connector, minimum 50 dB return loss • Power: 2-pin connector • Power Switch: Push-button actuator <p>TELEPHONY</p> <ul style="list-style-type: none"> • General: SIP • Number of lines: 2 • RENs per line: 5 maximum • RENs per unit: 10 maximum • Drop length: Maximum 500 feet (152.4 m) • DSO Output: 23.5 mA <p>DATA</p> <ul style="list-style-type: none"> • Drop length: 328 feet (100 m) maximum using CAT5 cable • Auto MDI/MDIX crossover for 1000BASE-TX, 100BASE-TX, and 10BASE-T ports • Traffic Management and QOS: 802.11nQ VLAN; 802.11np voice, video, data and management priorities; Q-in-Q tagging; Rate limiting | <p>WIRELESS</p> <ul style="list-style-type: none"> • 2.4GHz 802.11 b/g/n 2x2 MIMO • 5GHz 802.11 a/g/n/ac 4x4 MU-MIMO, implicit/explicit dynamic beamforming • 2.4GHz and 5GHz simultaneous • 8 SSIDs per band (2 SSID subscriber default) • Auto channel selecting and interference detection • WPS, WPS push button • Wireless Security: Wi-Fi protected access (WPA/WPA2) WEP, MAC address filtering • Wi-Fi multimedia (WMM) <p>REMOTE MANAGEMENT</p> <ul style="list-style-type: none"> • OAM&P via Calix Management System (CMS) • TR-069 remote management • TR-064 CPE management • TR-098 Internet Gateway Device Data Model <p>ENVIRONMENTAL</p> <ul style="list-style-type: none"> • Operating temperature: Indoor ambient temperature, 0° to 40°C • Operating/storage relative humidity: 8 to 95 % non-condensing • Altitude: -200 to 10,000 feet (-61 to 3,048 m) above sea level <p>CERTIFICATION AND COMPLIANCE</p> <ul style="list-style-type: none"> • Emissions: • FCC Part 15 Class B • IC ICES-003 Class B • CISPR-22 • Safety: • UL 60950 and UL 1697 approved • CE Mark • IEEE: 802.3, 802.3AB, 802.3U, 802.11np, 802.11nQ • Wi-Fi Alliance Certified • 802.11ac and 802.11n <p>POWERING AND ALARMS</p> <ul style="list-style-type: none"> • 2-pin connector • Input voltage: 12 VDC (nominal), 10 VDC (min.), 15 VDC (max) • External Power Adapter: 12 VDC, 2.5 A • Power Switch |
|--|---|