

# Connectivity

Frequently asked questions regarding device connectivity issues.

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# Can I connect to the eGauge without a network?

You may also refer to the complete guide, [Directly Connecting to the eGauge](#)

Below are the recommended steps to establish communication with an eGauge when the HomePlug adapter or eGauge Ethernet port is directly connected to the Ethernet port of a computer, and the eGauge is configured for DHCP. Note that Ethernet to USB dongles may require additional configuration not covered here.

1. Configure the computer's Ethernet port to a static IP address of 192.168.1.11. The exact steps to do this vary, depending on the operating system of the computer. For Windows, this can be done by starting the "Control Panel", then selecting the "Network and Sharing Center". For Linux, this can be done by selecting "System", then "Administration", then "Network Tools". For Mac OS X, this can be done by clicking on the Apple Menu's "System Preferences", then on "Network Control Panels".
2. [Power-cycle](#) the eGauge main unit. To do this, turn off the breaker(s), wait for 5 seconds, then turn them back on.
3. EG30xx will have a [Status LED](#) blinking green/cyan or blue/cyan. EG4xxx will show an Ethernet icon on the [LCD Display](#).
4. Open a browser on the computer and enter the address



“ <http://192.168.1.88>

into the browser's address bar (not the search bar), then press the Enter key.

5. At this point, you should be connected to the eGauge.

If the eGauge has a static IP address, modify the IP address set on the computer and the IP address used to access the eGauge in the steps above. For example, if an eGauge has been set to use a static IP of 10.1.10.50, the computer should be set to 10.1.10.11 and <http://10.1.10.50> should be entered into the browser address bar.

# How much data (bandwidth) does the eGauge use?

The eGauge meter stores all data locally on the device itself, meaning it does not need to be connected to the internet and the proxy server for functionality. Because of this, data is only transferred when a user visits the device interface, or if data sharing is enabled to push data to a third-party server.

In most cases, any high-speed internet such as DSL, satellite, or cable is sufficient for networking multiple eGauge devices without any effect on other network traffic. Concerns may be raised on networks with limited data, such as cellular. In cases like this, if a browser window with the eGauge interface is left open, small amounts of data will be transferred indefinitely until the browser window is closed, and if data caps are exceeded, service may be disabled or overages charged.

Put simply, **every eGauge meter will use different amounts of data**, depending on multiple factors.

## Main device interface

The eGauge meter will use internet bandwidth when the eGauge main graph interface is viewed through our proxy server (ie, <http://DEVNAME.d.egauge.net/> or <http://DEVNAME.egaug.es/> or <https://DEVNAME.egauge.io/>). If the eGauge is viewed locally (ie, <http://DEVNAME/> on Windows, <http://DEVNAME.local/> on Mac or Linux, or the local IP address), this will only use internal network bandwidth, not external internet bandwidth. On limited bandwidth internet connections such as cellular, accessing locally will reduce data usage.

When the main graph page of the eGauge is requested, it may load between 200 to 250 KB of data. Depending on how many registers are being loaded and the time period displayed in the graph, the eGauge may load an additional 10KB to several hundred KB. After the initial load, the eGauge will need to send instantaneous (second by second) data which may range from 0.5KB to 10KB per request. These numbers represent one browser window viewing the main graph page; additional browsers viewing the graph will each use this amount of data.

## Pushed data

The eGauge has the ability to push stored data to a third party service. Push data usage is influenced by the number of registers, push interval, and any push options (such as totals or compression). As a rule, the smaller the interval, the more data is used. Depending on the configuration, push data usage can vary from a few megabytes to over a gigabyte per month. Beginning with firmware v2.03, push options gzip and deflate are available to compress the pushed data. This can significantly reduce the amount of data usage required for pushing data.

### Testing/tracking data usage

Data usage varies widely based on a number of factors, each eGauge will use different amounts of data. Also, data usage will not necessarily remain constant from month to month. To see data usage on the main interface, you can use a browser such as Google Chrome, open the developer console (usually CTRL+SHIFT+J or F12), click the "Network" tab, and open a device interface. Every page request and its size will be visible in the Network tab.

You can get an idea of how much data will be used by uncompressed pushes (or polls) by making CGI calls to `egaugeshow`, specifying different options such as interval. For example,

```
“ http://DEVNAME.egaug.es/cgi-bin/egaugeshow?m&n=360
```

will represent a single push from a device set to push every 6 hours with no options. Similarly,

```
“ http://DEVNAME.egaug.es/cgi-bin/egaugeshow?m&n=15&a
```

will represent one data push from an eGauge set to push every 15 minutes with totals as an option. For full details and parameters available, please see the eGauge [XML API document](#).

# How do I configure a static IP address?

May disrupt network-wide traffic. Do not attempt to configure a static IP address without knowledge of specific network information and access to gateway/router! Any incorrect settings can disrupt internet access for the whole network.

Changing the Hostname setting will revoke remote access through the proxy-server. Please contact eGauge support to request hostname changes if the proxy server is used for remote access.

It is impossible to enter a static IP address without specific details from a network administrator who manages and has access to the network gateway/router. eGauge support cannot provide these details.

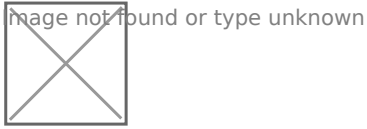
Enter valid Name server entries. If invalid or no name servers are entered, remote access over the proxy server will be unavailable as well as firmware upgrades. If valid Name servers are not known, you may enter Google Public DNS (8.8.8.8 and 8.8.4.4) and/or Cloudflare public DNS (1.1.1.1 and 1.0.0.1).

If in doubt, a static IP address is most likely not required. eGauge support can assist with setting a static IP address, but cannot guarantee that the values used in that address are correct for the network. Please refer to the document below for additional information and step by step instructions.

The eGauge by default comes configured for DHCP. If the eGauge is unable to obtain a DHCP address from the network, it will default to 192.168.1.88. Thus, it is possible to connect to the eGauge directly from a laptop or computer. To do this, connect a computer to the eGauge via HomePlug or direct Ethernet, configure the computer with an IP address of 192.168.1.11, and direct a browser to <http://192.168.1.88> to access the eGauge interface. More information on connecting directly is [available here](#).

## Configuration

A static IP address may be configured in **Settings -> Network Settings**. Default password information can be found in [this knowledgebase article](#). The following example shows a device configured with an IP of 10.1.10.23:



Every entry needs to be entered correctly for network functionality. Any Incorrect setting can disrupt all network traffic and make the eGauge inaccessible remotely and locally.

Other services such as BACnet can be disrupted if certain values such as the Broadcast address is incorrect.

The **Network** and **broadcast address** values can be calculated from the IP address and netmask, using a subnet calculator tool.

# How does proxy server connectivity work?

All metering data is stored locally on the meter hardware itself, the proxy server only acts as a relay between the internet and local meter interface to serve data remotely. The meter will have full functionality and no reduction in capacity if the meter is not connected to the eGauge proxy server or even the internet in general.

Accessing the meter via local network IP or hostname will show the same web interface as if visiting using the eGauge proxy server, for example <https://eGaugeHQ.d.egaug.net> or <https://eGaugeHQ.egaug.es> will show the same thing as if you were on the local network visiting the meter via IP address, such as <https://192.168.1.102>. For local IP or hostname access to work, you must be on the same local network as the meter.

egaug.es is an alias of d.egaug.net and may be used interchangeably.

Encrypted connections are supported on EG4xxx series meters. Legacy meters, such as the EG30xx and eGauge2 do not support an encrypted connection between the meter and proxy-server. However, if encryption is supported by the client browser, encrypted HTTPS may be used between the proxy-server URL and the client browser.

To disable the eGauge proxy server, navigate to Settings -> General Settings and set "Proxy-server hostname" to the number . In this case, support services may be limited due to the meter not being available for remote troubleshooting and assistance.

## Overview

Image not found or type unknown



The eGauge proxy server allows easy remote access to the eGauge webserver interface. Because the connection is established outbound from the device, usually no changes to the router or firewall are necessary.

The proxy server relays data stored on the eGauge meter to the client browser requesting it, and keeps the meter location and IP address anonymous. The client browser will see data coming from the eGauge proxy server, not the IP address of the eGauge device. All communication via the proxy is handled by the proxy, the client browser never directly communicates to the eGauge meter.

When an eGauge device is powered up, it connects to port 8082 (eGauge2/EG30xx, non-encrypted) and 8084 (EG4xxx, TLS 1.2 encrypted) of the server defined in the under **Settings -> General Settings -> Proxy-server hostname**. Normally, this is set to d.egauge.net but may be different for certain customers.

If the connection is successful, the device will be available remotely at <http://DEVNAME.PROXY> (and <https://DEVNAME.PROXY/> if EG4xxx model or newer) where **DEVNAME** is the [eGauge device name](#) and **PROXY** is the proxy-server hostname. For example, <http://eGauge99999.d.egauge.net> (or <http://eGauge99999.egaug.es>, as "egaug.es" is an alias for d.egauge.net).

If a device does not have a site-wide password enabled and is connected to d.egauge.net, it will become visible on the "Find my Device" page at [egauge.net/eguard/find/](http://egauge.net/eguard/find/). To be removed from this list, enable a site-wide password in the eGauge interface through **Settings -> Access Control -> Password-protect entire site**.

## Disabling the proxy-server connection

If for any reason it is undesirable to maintain the proxy-server connection, "Proxy-server hostname" under **Settings -> General Settings** can be set to "0" (the number zero, without any quotes). Once this setting is saved and the device restarted, it will only be possible to connect to the eGauge device from the LAN or with port-forwarding configured on the router/firewall.

# Security Considerations

If an eGauge device is available on the proxy server, anyone with the URL can attempt to access. If meter data is intended to be private, a site-wide password should be enabled as described in the previous section.

If remote administration is enabled on a user account ("Allowed to view all data and change settings from anywhere" access in **Settings -> Access Control**), the password must be secure enough to prevent brute-force attempts at cracking the password.

The proxy server uses a combination of hostname and private-public key authentication when meters connect. This ensures it is not possible for meters to be renamed and "overlap" with another, and ensures any connections to the proxy are authorized and commissioned by eGauge Systems.

## HTTPS Access

It is recommended to use up-to-date firmware as there are periodic releases with enhancements and bug fixes. Information on upgrading meter firmware can be found [here](#).

The current line of meters (EG4xxx) support HTTPS access locally and via the proxy server.

Data transferred between EG4xxx meters and the proxy server are encrypted using TLS 1.2, and data between the web browser and proxy server is encrypted using TLS 1.3.

Local webserver access to EG4xxx provide TLS 1.2. EG4xxx meters can use a [custom SSL certificate](#) as well.

Local insecure HTTP access may be disabled via Settings -> Network Settings -> Disable unencrypted network services.

## Legacy Model Meters

Legacy meters (eGauge2, EG30xx models) do not have encryption (HTTPS) available via the proxy server. Care should be taken when configuring passwords to ensure the local internet connection is not compromised. Credentials when used to save settings are not transmitted over plaintext or reversible as they use HTTP digest authentication.

# Related Articles:

[Network Connections](#)

# What data export and data import options does the eGauge support?

Most users will probably access data on an eGauge meter via the [classic interface](#) or [modern interface](#). These interfaces are designed for ease of use and accessibility. However, advanced users may also be interested in other options to read data from (or into) the eGauge meter.

eGauge meters feature a variety of communications options. These can be used to read data from third party devices into the meter, or make data available for third party devices to read from the meter. These communication options are briefly summarized below. Click on the links in the table for additional information.

The following tables apply to EG4xxx meters only. EG30xx and older meters cannot use any option requiring a serial to USB adapter.

## Data export (read data from the meter)

Method	Notes
<a href="#">Modbus TCP</a>	Function Code 4
<a href="#">Modbus RTU</a>	Function Code 4, <a href="#">serial to USB adapter</a> required, EG4xxx only
<a href="#">BACnet IP</a>	
<a href="#">BACnet MS/TP</a>	<a href="#">serial to USB adapter</a> required, EG4xxx only
<a href="#">XML API</a>	Deprecated, will continue functioning but only has data-read access
<a href="#">JSON API</a>	Replaces the XML API, supports configuration, data-read access and more

Remote eGauge	
USB Export	Can be <a href="#">scripted</a> to run automatically, EG4xxx only

## Data import (read data into the meter)

Method	Notes
<a href="#">Modbus TCP</a>	Function code 1, 2, 3, and 4
<a href="#">Modbus RTU</a>	Function code 1, 2, 3, and 4, <a href="#">serial to USB adapter</a> required
<a href="#">Remote eGauge</a>	