# What are some causes of HomePlug communication issues?

Note that a combination of the issues below may be involved with any communication problem. Also, there may be factors impacting eGauge/HomePlug communication not presented below.

GFCI Outlets

Almost all GFCI outlets will cause issues, but will not necessarily prevent communication. A standard outlet can be installed; however this may not be allowed by code. GFCI outlets which exist at the head of a chain (closest outlet to the electrical panel) will affect all other outlets on that chain.

AFCI Breakers

Some arc-fault breakers will trip when the HomePlug is connected. As of right now, eGauge Systems has no data on which breaker models have this issue. If you come across a model that causes issues, please contact the support department at support@egauge.net. Note that AFCI issues can be intermittent - for example, the breakers may trip consistently for a period, then not trip for several days, then start tripping again, with no changes to the hardware or site conditions.

Surge Protectors

Outlet-style and strip-style both cause significant issues with HomePlug communication by filtering out the HomePlug signal. More information is available here.

Phase Mixups

The eGauge communicates with the HomePlug over the phase connected to L1. If the HomePlug is installed on the phase connected to L2, it can cause significant communication issues. For more information, refer to the phasing document available here.

Transformers

In almost all cases, transformers will completely filter the HomePlug signal, resulting in a total loss of communication.

## Wire Run Length

The effective range of HomePlug communications is approximately 50-100ft. Note that this distance refers to the length of wire in the walls, not a straight line between the eGauge and HomePlug. Longer wire runs will cause communication problems.

## Other HomePlug Devices

Depending on the model, the eGauge either uses the HomePlug AV or HomePlug 1.0 communication protocol. Other devices using the same protocol can cause communication issues. Devices using the 1.0 protocol will not interfere with devices using the AV protocol, and vice versa. Pairing the eGauge and HomePlug together can often resolve these issues. Information on pairing the eGauge and HomePlug can be found here.

## LED Codes

The color and pattern of the LEDs on the eGauge and HomePlug can help troubleshoot communication issues. A guide to the HomePlug LED codes can be found here. A guide to the eGauge LED codes can be found here (eGauge2 and EG30xx only). A guide to the EG4xxx LCD can be found here.

## Out of Date Firmware

There are certain types of communication issues associated with older firmware versions. Keeping the eGauge firmware up to date is recommended. If you are unsure about the firmware version your device is using, refer to the instructions on checking firmware version located here.

## Different Encryption Keys

HomePlug adapters and meters can have a unique encryption key set. If the HomePlug adapter and eGauge meter have different HomePlug encryption keys, they will be unable to communicate. By default all EG4xxx meters and compatible HomePlug AV adapters use the same default encryption key of "HomePlugAV". EG30xx meters also use "HomePlugAV", while legacy eGauge2 model meters use an older, no longer available HomePlug version that uses an encryption key of "HomePlug". See this article on changing the encryption key and pairing eGauge and HomePlug adapters.

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