Monitoring 347/600V Services

Overview

The 347/600Vac wye service (347V phase to neutral, 600V phase to phase) is rarely seen in the USA, although it's quite common in Canada. As the eGauge is only rated for 277Vac from phase to neutral (480V phase to phase), it traditionally could not be used to monitor such a service.

However, with the introduction of the EV1000 High Voltage sensor, it's now possible to monitor these services directly, instead of using large and potentially inaccurate stepdown transformers.

To monitor a 347/600Vac service, the user will need one ESH044 Sensor Hub and three EV1000 High Voltage Sensors. An additional power supply is also required to power the eGauge (our standard 120Vac/12Vdc power supply can be used for this purpose if the barrel jack is removed).

> This guide only applies to EG4xxx meters. Older EG30xx and eGauge2 meters do not support the EV1000.

Installation Considerations

1. All hardware must be installed in a suitably rated enclosure. eGauge Systems offers several powered enclosure kits which are suitable for this purpose. Most kits feature DIN rails (for mounting the eGauge meter and EV1000s securely) along with a powered receptacle and optional stepdown transformer (which can be used to power the 5Vdc supply for the sensor hubs and/or other supporting hardware).

2. Sensor Hubs must be powered. Up to 2 hubs can be powered directly from the eGauge via the USB ports on the meter. For installations where more hubs are required or the USB ports are in use (e.g., for Modbus RTU communication) the hubs can be powered directly from a generic 5Vdc power supply.

3. The eGauge must have a separate power source in this configuration. This can either be an AC power supply connected to the L1 and N terminals providing 120Vac - 277Vac or a DC power supply connected to the Ldc terminal providing 12-60Vdc. Note that correct polarity is required
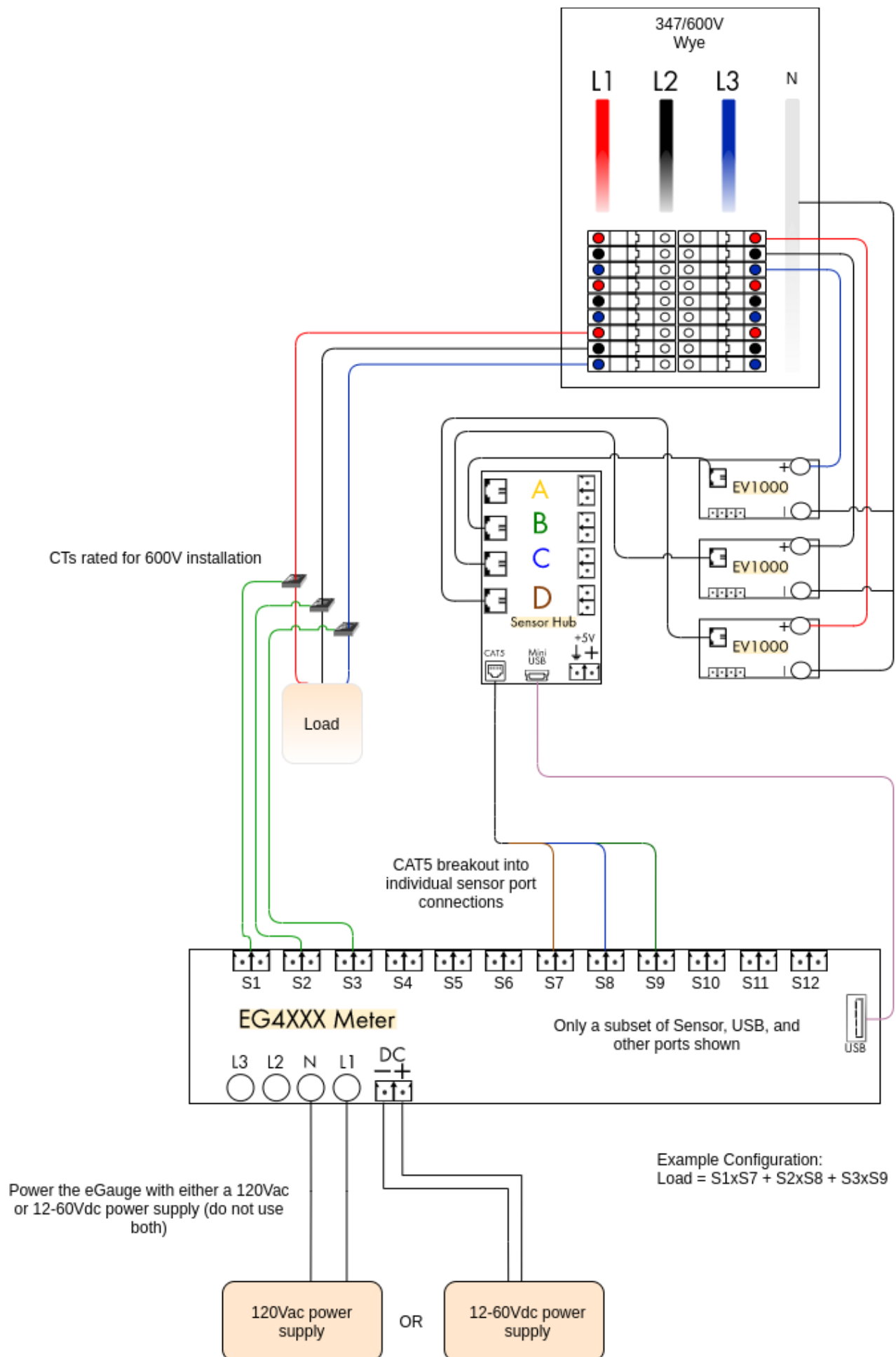
when using a DC power supply.

Examples

The following are general examples which may be useful for planning a specific installation. Note that these examples may omit certain details (for example, not all ports are shown on the eGauge meter). These are intended to serve as **guidelines only** - always consult local code requirements when planning an installation.

> Hardware appearance in the following diagrams may not reflect the actual size or layout of actual hardware. Refer to the product pages for actual measurements.

Configuration examples are correct for the diagram shown. Note that it is **essential** to associate CTs with the correct phase, and failure to do so will result in incorrect readings. Correct phasing can only be guaranteed using a multimeter to verify phasing.

347/600V Wye

In the following example, the eGauge is monitoring a single load on a 347/600V panel. Note that the neutral connection to the load is not shown. The eGauge can be powered via AC or DC - both options are shown, but only one is required.

347/600V
Wye

L1　　L2　　L3　　N

CTs rated for 600V installation

A
B
C
D
Sensor Hub

CAT5　Mini USB　+5V

EV1000
EV1000
EV1000

Load

CAT5 breakout into individual sensor port connections

S1　S2　S3　S4　S5　S6　S7　S8　S9　S10　S11　S12

EG4XXX Meter

Only a subset of Sensor, USB, and other ports shown

USB

L3　L2　N　L1　DC

Example Configuration:
Load = S1xS7 + S2xS8 + S3xS9

Power the eGauge with either a 120Vac or 12-60Vdc power supply (do not use both)

120Vac power supply　　OR　　12-60Vdc power supply

The meter configuration would be set as follows (note that the CT selection is filler - use the correct CTs for the actual installation):

Sensors:

CTid®

Use high-gain mode ☐

S1	JD JS 24mm/0.94" 100A ✕ 1	S2	JD JS 24mm/0.94" 100A ✕ 1	S3	JD JS 24mm/0.94" 100A ✕ 1
S4		S5		S6	
S7	EV1000 Voltage Sensor ✕ 1	S8	EV1000 Voltage Sensor ✕ 1	S9	EV1000 Voltage Sensor ✕ 1
S10		S11		S12	
S13		S14		S15	

Remote Devices:

Modbus Maps

Device name: Protocol: Device address:

Add Device

Registers (2 of 64 in use):

Name: Recorded value/formula:

Load   ✕ = P ✓ =   S1 ✓ ✕ S7 ✓ ✕ + S2 ✓ ✕ S8 ✓ ✕ + S3 ✓ ✕ S9 ✓ ✕   Add Component

Add Register

Please visit kb.egauge.net for the most up-to-date documentation.