

NRGpilot™ E3000 Net Meter Installation Guide

Introduction

NRGpilot™ separately measures the power and energy from local solar generation and the grid. It uses these values to calculate power and energy consumed by building loads. Cachelan provides one NRGpilot E3000 meter with split-core CTs for data collection and sending via internet to the NRGpilot remote servers. The installer must supply fuses, meter enclosure and installation. NRGpilot displays power and energy for generation, grid import, grid export and total loads. An option is available to monitor up to 6 individual loads separately. Status and logs display measured values for identifying grid and equipment issues. Use NRGpilot to understand power usage, check utility net meter credits and ensure the solar generation system is working correctly.

Site Preparation

NRGpilot is accessed from a browser using data sent over the internet from the E3000 NRGpilot meter connected to the site network as shown in fig 1. Connect a standard cat5e patch cable between the NRGpilot meter and the building router. The LAN must have persistent high speed internet service to an ISP to provide access to the internet. Alternatively, NRGpilot can be ordered with a 3G cellular modem for wireless internet connection. In this case, a 120VAC receptacle is required to plug in the 3G modem power dongle.

Net Meter Installation

NRGpilot Meter Mounting: Install a suitable enclosure for the E3000 meter near the main breaker panel. Mount the E3000 meter in the enclosure ready for connection of the CT secondaries and voltages from the breaker panel.

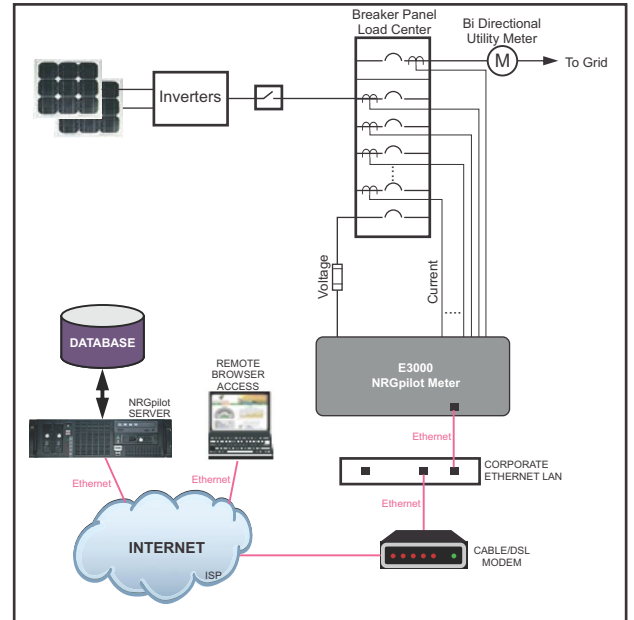
Power Supply: The NRGpilot E3000 meter receives control power from the voltage inputs on terminals L1 and N. No external power supply is required. Maximum voltage inputs are 480/277. For 600/347 systems, voltage transformers are required - consult factory for correct settings.

CT Wiring: The direction of the CTs during installation is very important for correct meter reading. Refer to fig 3a for 208/120V, 480/277 3 phase and 3b for 120/240 single phase for CT orientation details. As shown in the figures ensure the arrow mark on each CT points to the load or generator. Split-core CTs supplied by Cachelan with a secondary of 333mV are clamped on around existing wires inside breaker panel. For safety, power should be off when installing the CTs and wiring the voltage inputs.

CT Allocation: The NRGpilot E3000 meter has 12 CT inputs. Inputs 1 - 3 are reserved for measuring grid power; inputs 4 - 6 are reserved for generation power from the inverter(s) and inputs 7 - 12 are for optional individual circuit monitoring. CT configuration is programmed at the factory to match the order. See documentation supplied for assignment of CT connections recorded in the CT allocation table. Fig 2 is an example of the CT assignment for a 120/240V single phase system with no separate load monitoring. For typical installation wiring, refer to Fig 3a for a 208/120V, 480/277 3-phase 4-wire system and Fig 3b for a 120/240 split-phase 3-wire system.

If the CT allocation table is not correct or if the configuration needs to be changed contact Cachelan tech-support at 905.470.8400x224 for remote configuration update.

Fig 1 Typical connection for NRGpilot E3000 Meter



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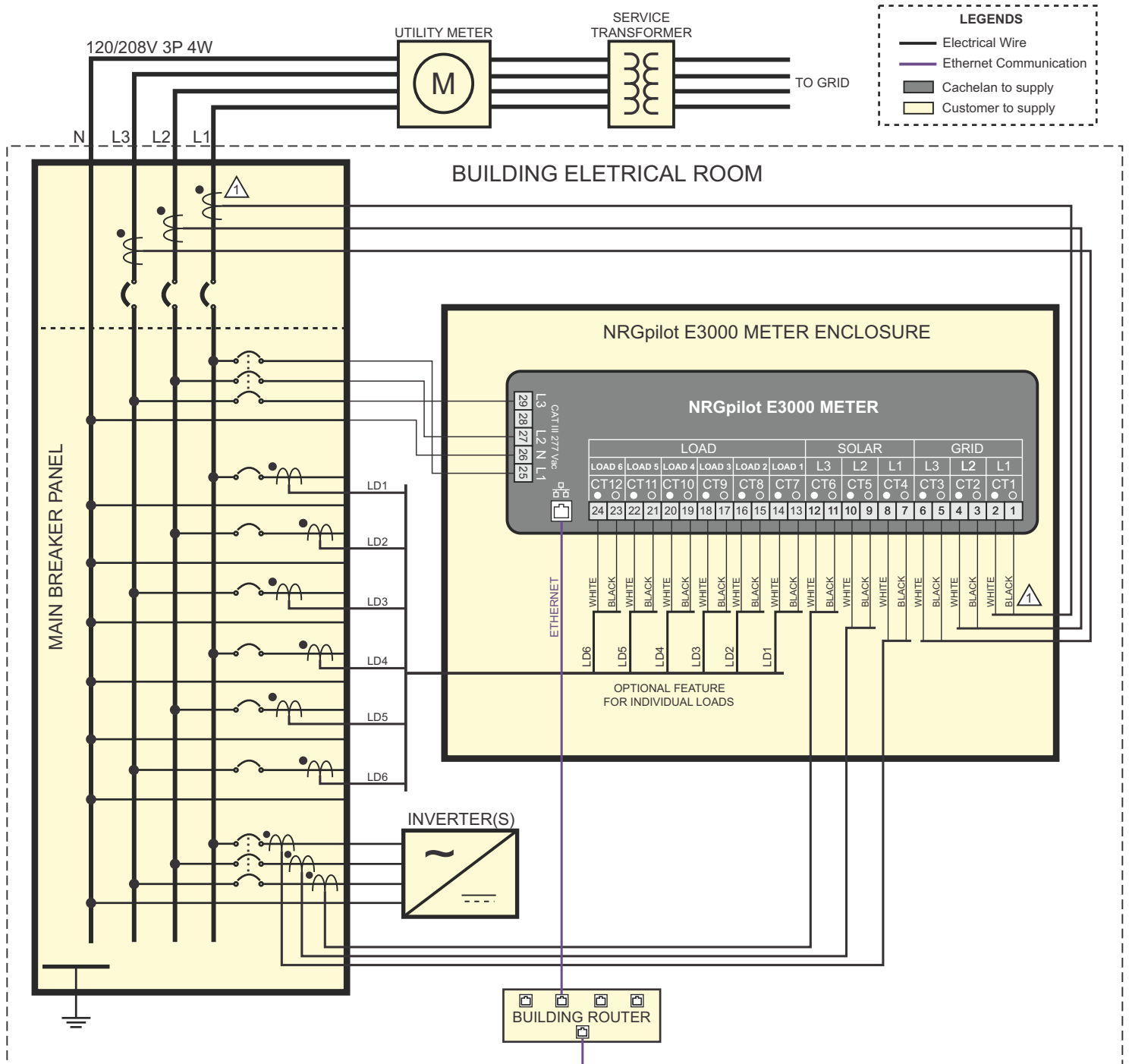
Fig 2 Device List

System Configuration: 120/240 single phase

Meter Serial Number: _____

CT Input #	Phase #	Primary CT Amp	Description
1	CT1	200A	Grid L1 current
2	CT2	200A	Grid L2 current
3	-	-	
4	CT4	50A	Inverter L1 current
5	CT5	50A	Inverter L2 current
6	-	-	
7			
8			
9			
10			
11			
12			

Fig 3a Typical Net Meter electrical wiring diagram for 120/208V 3P 4W



⚠ The arrow head on each split-core CT needs to face the load or generator side and the polarity dot needs to face the grid side. On the secondary side, the black wire connects to the black dot terminal and white wire connects to the white dot terminal of the E3000 meter

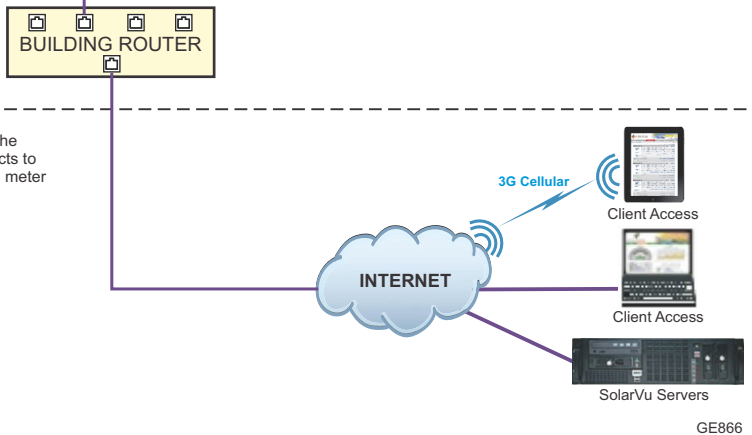
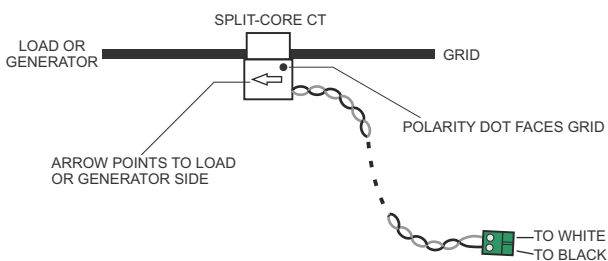
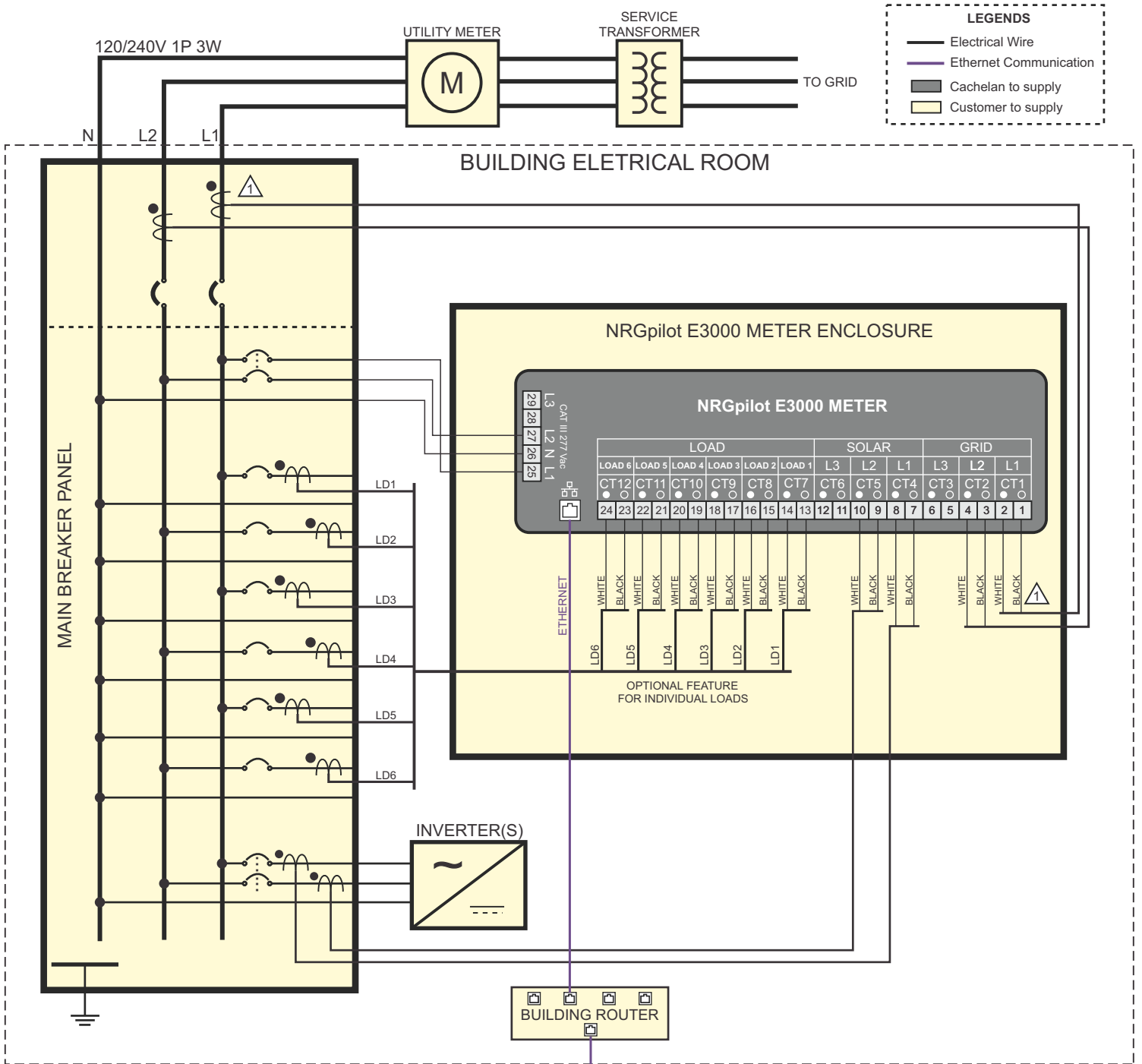
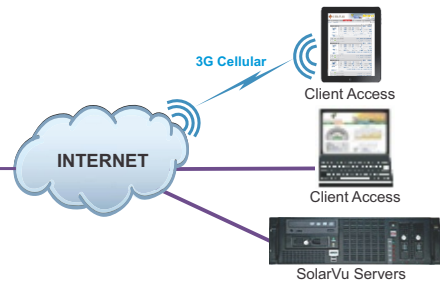
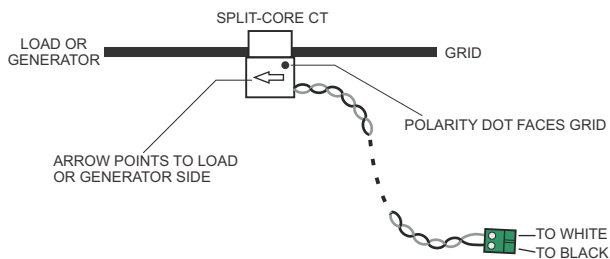


Fig 3b Typical Net Meter electrical wiring diagram for 120/240V 2P 3W



⚠ The arrow head on each split-core CT needs to face the load or generator side and the polarity dot needs to face the grid side. On the secondary side, the black wire connects to the black dot terminal and white wire connects to the white dot terminal of the E3000 meter



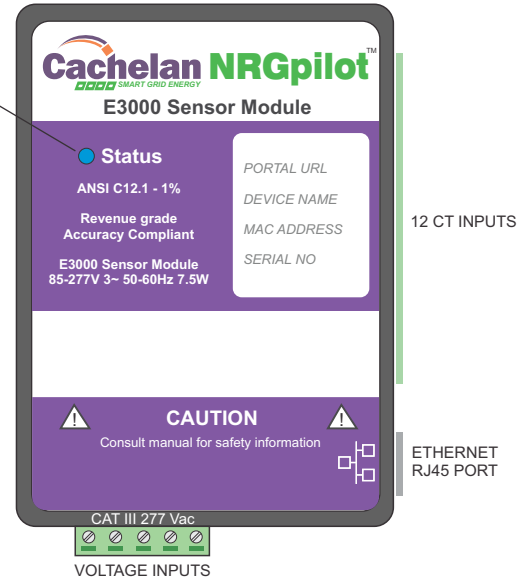
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Network Setup

The NRGpilot E3000 meter must be plugged into the building LAN router or 3G cellular modem/router for internet access. By default, each NRGpilot meter is set to DHCP to obtain its IP address from the network router automatically. The Status LED is an installation aid and can be used to determine the status of internet connectivity. For a static IP connection, consult the factory at time of order.

Fig 4 NRGpilot Meter Status Indicator Interpretation

INDICATOR STATUS		
STATUS LED COLOR		DESCRIPTION
	Amber to Blue	NRGpilot meter is starting up
	Blinking Blue	Normal. NRGpilot meter is connected to the internet
	Blinking Blue and Cyan	NRGpilot meter is not able to obtain an IP address from DHCP server in the router.
	Solid Blue	NRGpilot meter is not able to connect to internet or there is no Ethernet connection to the meter.
	Blinking Red	NRGpilot meter is overheating. Let the device cool by turning it off for a period of time



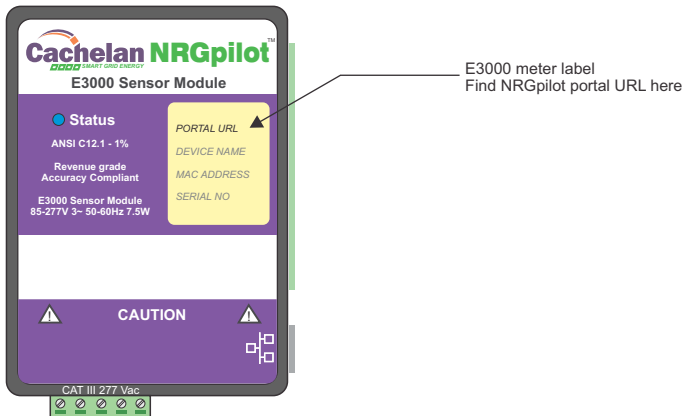
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Testing - Internet

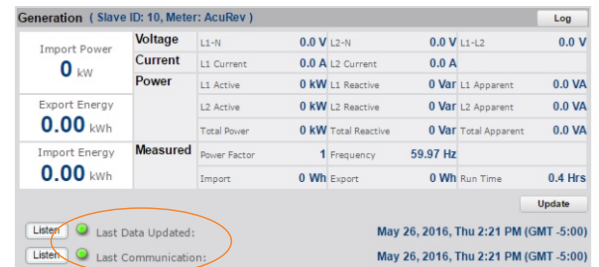
When NRGpilot E3000 meter is first powered up the Status light indicates blinking blue. Wait 1 minute for the power on sequence to complete. Launch the internet browser from either a smart phone or computer. Enter the NRGpilot portal URL shown on the E3000 meter label as shown in Fig 5 in the format *mysitename.NRGpilot.com*. After accessing the NRGpilot portal screen, go to ANALYZER --> Net Meter and check

- 1) The meter reading is displayed with actual values in blue
- 2) Both *Last Data Updated* and *Last Communication* indicators should be green and with a timestamp from the last 10 minutes. If the *Last Data Update* is red, no data has been received for at least 2 hours and the last received data values are displayed in gray. In this case check internet connections and network settings.
- 3) Check that the metered voltages and currents agree with values measured using a DMM to verify wiring is correct.

Fig 5 NRGpilot E3000 meter label



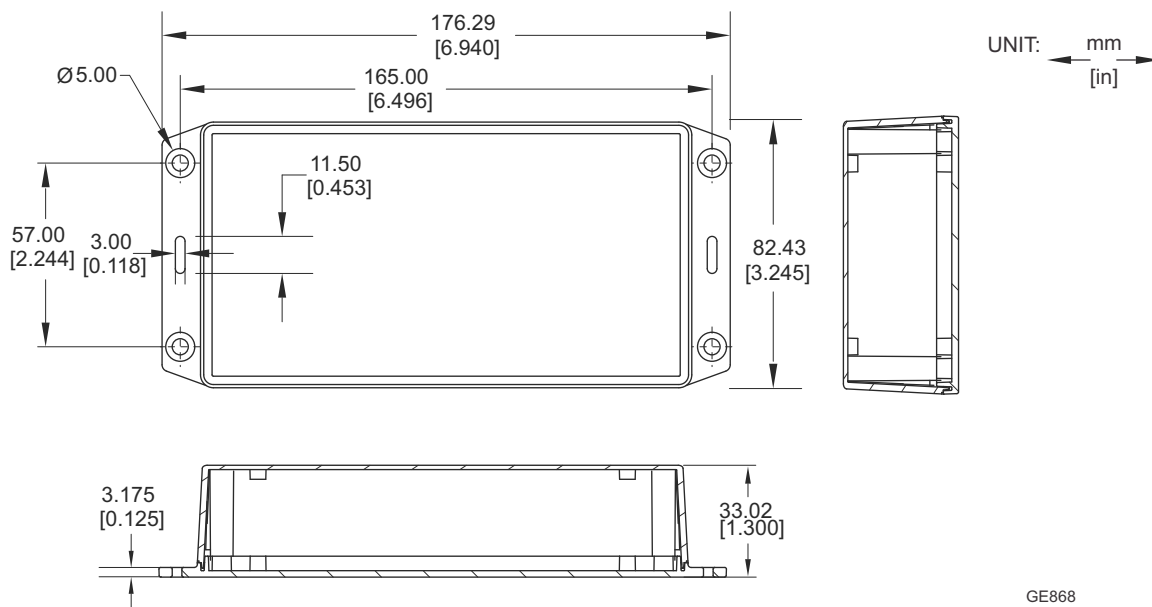
Check ANALYZER > INVERTER STATUS for communication



Cachelan Technical Support
contactus@cachelan.com
 905.470.8400 x224

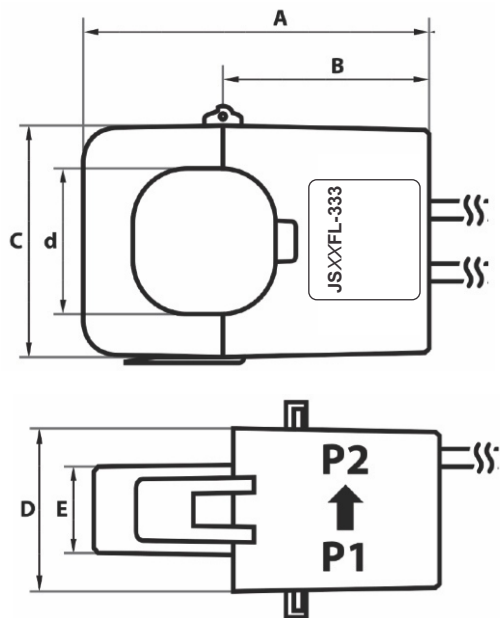
Meter & CT Dimension Specifications

Fig 5 NRGpilot E3000 Meter Dimensions



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Fig 6 Split-Core Current Transformer Dimensions



Part Number	Amp	A	B	C	D	E	∅ d
JS10FL-333	50A	40.5mm 2.56"	23mm 0.91"	23.7mm 0.93"	26.6mm 1.05"	14.5mm 0.57"	10mm 0.39"
JS16FL-333	100A	45mm 1.77"	26mm 1.02"	30mm 1.18"	31.6mm 1.24"	18.8mm 0.74"	16mm 0.63"
JS24FL-333	200A	65mm 2.56"	37.5mm 1.48"	45mm 1.77"	33.7mm 1.33"	21.1mm 0.83"	24mm 0.94"

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Ordering

120/240V Split Phase

NRGpilot E3000 Meter x1
Split Core CT JS24FL-333 200A:333mV x2
Split Core CT JS10FL-333 50A:333mV x2

OPTIONS

Split Core CT JS10FL-333 50A:333mV or
JS16FL-333 100A:333mV (max 6)
for individual load monitoring

120/208V Three Phase

NRGpilot E3000 Meter x1
Split Core CT JS24FL-333 200A:333mV x3
Split Core CT JS10FL-333 50A:333mV x3

OPTIONS

Split Core CT JS10FL-333 50A:333mV or
JS16FL-333 100A:333mV (max 6)
for individual load monitoring

Other Configuration

Consult Cachelan for other system configuration