



# Ethernet Gateway for BDFB Meter

VIM1EC meter and Gateway Assemblies may be factory or field installed in BDFBs.

Models for Field Installation

Gateway Assemblies - not required when used with GPS system equipped with Millennium® II or Pulsar Plus controller or when Gateway Assembly is factory mounted.

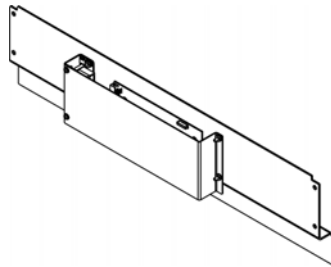
150047915 for H569445 G101 BDFB      150050054 for H569445 G103 BDFB  
150050351 for H569445 G7 and G8

VIM1EC meter - not required when factory mounted

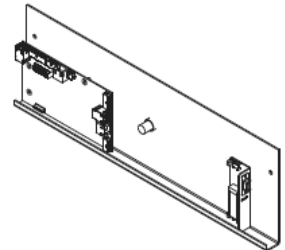
150050350 for H569445 G7 and G8  
150050178 for H569445 G101 and G103



VIM1EC Meter



Gateway Assembly 150047915 and 150050054



Gateway Assembly 150050351

**Warning:** Hazardous energy and voltages are present in a powered BDFB. Avoid contact with the DC buses. When making connection to energized DC buses place insulating material to prevent contact with other DC buses and grounded metal.

Before getting started, have the following **tools** and **information** available:

- IP Address and other network information from Systems Administrator
- PC or Laptop with RS-232, and Easyview2\* installed
- RS-232 cable
- Torque wrench - 0-240 in-lb / 28 Nm (Gateway installation only)
- Screw Driver - Phillips #2 (retrofit only)
- Socket - 5/16" (retrofit only)

\*EasyView2™ is the graphic user interface (GUI) GE provides for local serial port access to controllers (see Reference Documents).

## Installation Steps

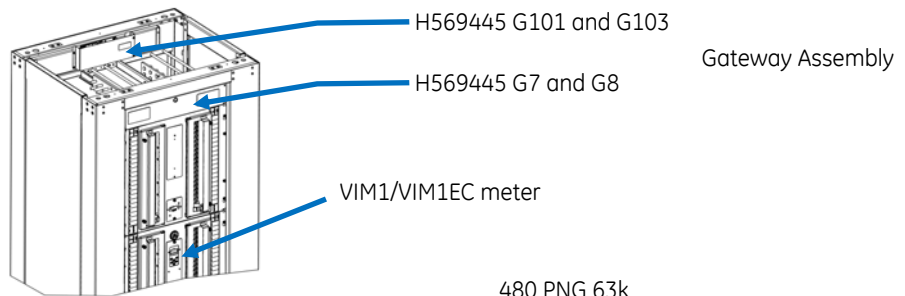
Ethernet access to BDFB Meter VIM1EC may be implemented via a Gateway card (factory-installed or field-installed), or via a Millennium® II or Pulsar Plus controller.

Start with the step indicated in this table for the equipment that you are installing.

Installing	Start with Step	Skip if
Gateway Assembly	<b>R1</b>	Not installing a Gateway Assembly
VIM1EC Meter	<b>V1</b>	Not installing a VIM1EC Meter

## Component Location

Front View of BDFB (typical)



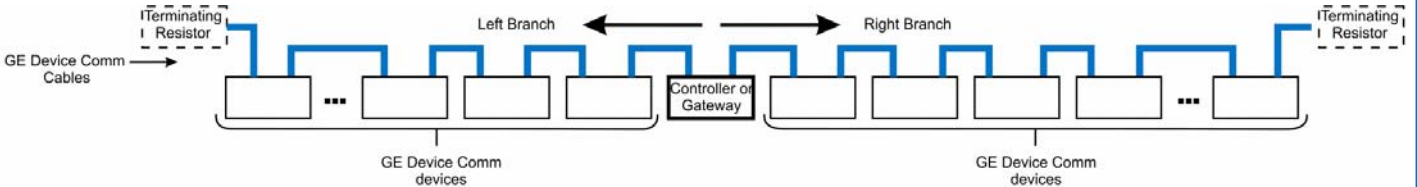
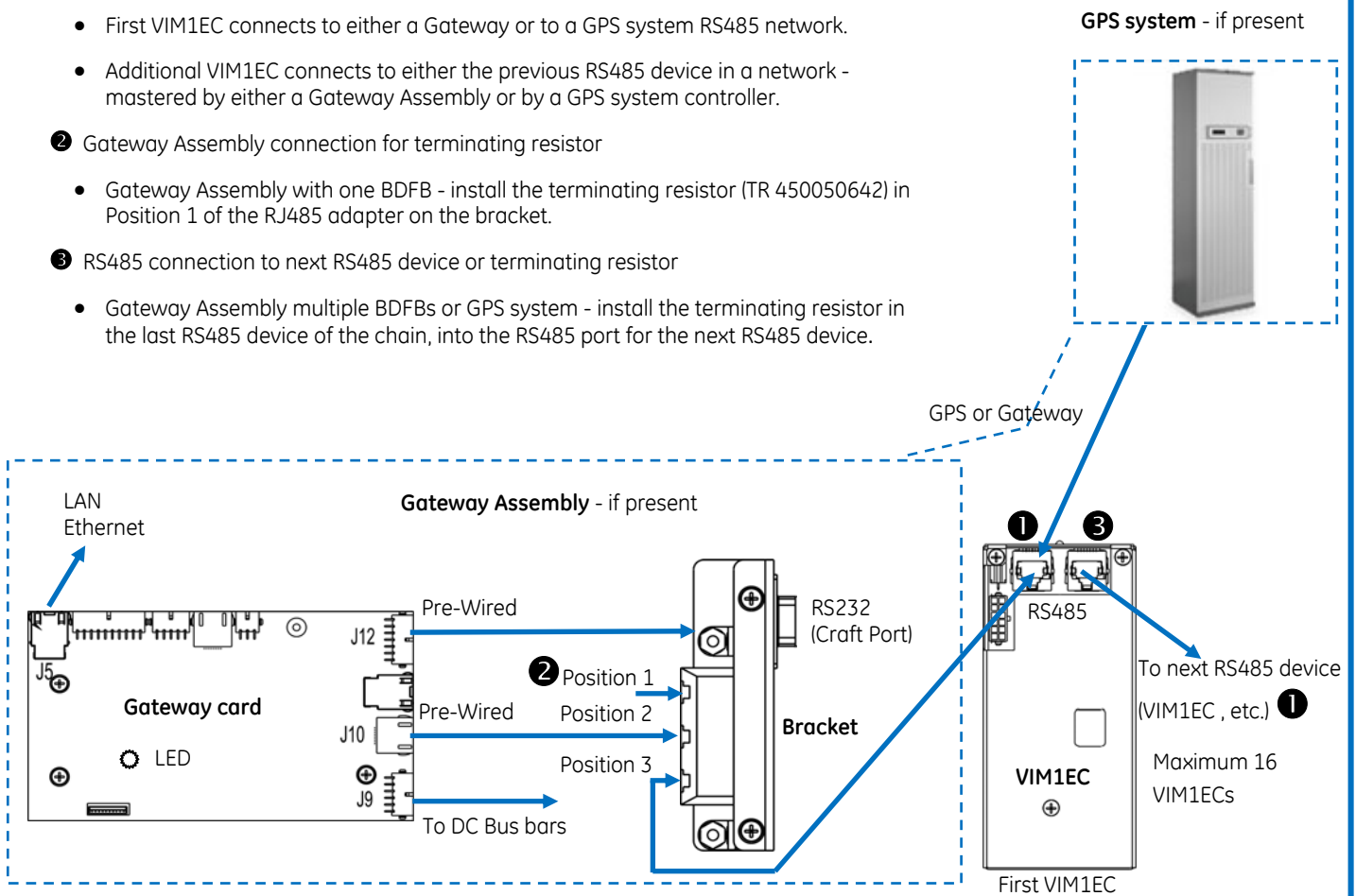
480 PNG 63k

## Wiring Diagram

VIM1EC meter is connected via RS485 daisy-chain network either to a GPS system equipped with Millennium® II or Pulsar Plus controller or to a Gateway Assembly.

RS485 Network:

- ① RS485 connection to previous RS485 device
  - First VIM1EC connects to either a Gateway or to a GPS system RS485 network.
  - Additional VIM1EC connects to either the previous RS485 device in a network - mastered by either a Gateway Assembly or by a GPS system controller.
- ② Gateway Assembly connection for terminating resistor
  - Gateway Assembly with one BDFB - install the terminating resistor (TR 450050642) in Position 1 of the RJ485 adapter on the bracket.
- ③ RS485 connection to next RS485 device or terminating resistor
  - Gateway Assembly multiple BDFBs or GPS system - install the terminating resistor in the last RS485 device of the chain, into the RS485 port for the next RS485 device.



RS485 Daisy Chain

(RS485 devices are also known as GE Device Comm devices)

## Install Gateway Assembly - R steps

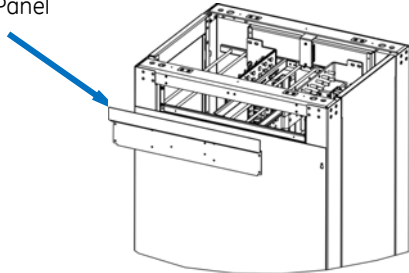
### Step R1 - Remove Existing Panel and Mount Gateway Assembly

Gateway assembly replaces a blank panel at the top of the BDFB:

H569445 G101 & G102 - Top Rear      H569445 G7 & G8 - Top Front

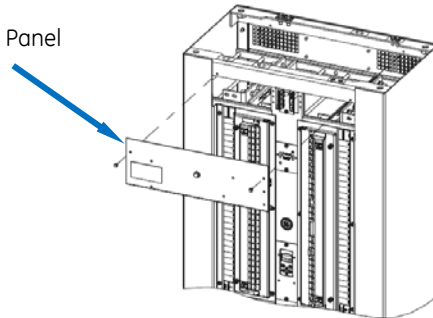
1. Remove existing panel by removing screws: rear panel - 4 screws, front panel - 2 screws. Save the hardware.
2. Mount Gateway assembly to chassis with the card on the inside of the panel: rear panel lip is top, front panel lip is on the bottom. Secure with screws removed in 1. Torque to 2.8Nm (25 in-lb) - 5/16" socket.

Rear Panel



H569445 G101 & G102

Front Panel



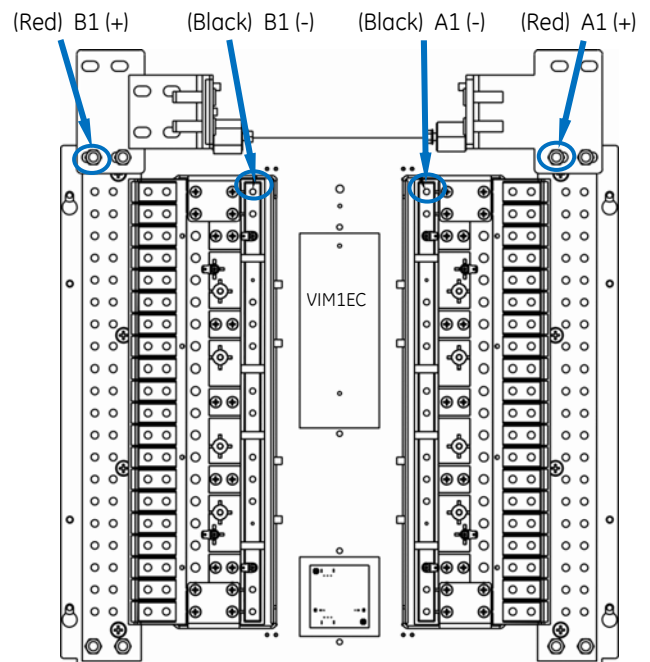
H569445 G7 & G8

### Step R2 - Install Gateway Power Cables

Note: Follow all safe and appropriate installation practices when performing this work on a live system.

Rear mounted Gateway assembly - You will need to remove the protective cover of the Gateway kit to be able to access its ports (four screws).

1. Remove the top BDFB rear access panel.
2. Verify polarity of bus bars with a meter before making connections.
3. Remove the protective cover of the Gateway kit (rear panel only) - four screws.
4. Connect the Gateway card to BDFB power using the 850048025 wire set provided with the kit:
  - a) If connection points shown at right have Faston blades replace the ring terminals of the wire set with Faston terminals (provided).
  - b) Attach the wire set terminals A1 (+), A1 (-), B1 (+), and B1 (-) to the DC bus bars. Use the provided hardware. Torque ring terminal screws to 65 in-lb if present.
  - a) Attach the other end of the cable assembly to the power connector **J9** located on the bottom right hand side of the Gateway card (see Wiring Diagram).
5. Route power and as desired using cable ties. Rear mounted Gateway Assembly: route the cables along the bracket connecting the front and back of the BDFB to keep them out of the path of the load wires.
6. Replace the top BDFB rear access panel.



BDFB Rear View



## Install Gateway Assembly - R steps continued

### Step R3 - Connect Ethernet Cable (LAN)

1. Connect Ethernet Cable (LAN) to Gateway Assembly J5 - see Wiring Diagram.
2. Replace the protective cover of the Gateway kit ( rear panel only) - four screws.

### Step R4 - Configure Gateway Card - per site engineering instructions

1. Connect a laptop or PC to the RS-232 port of the Gateway assembly (see Wiring Diagram).
2. If not already installed, download and install EasyView2 (see Reference Documents).
3. Start Easyview2.
4. Login as administrator - Password: administrator
5. Configure the **IPV4** or **IPV6** settings on the **Settings ► Network Settings** screen.
6. Configure password under **Settings ► Passwords**.

Go to **Step V1** if installing a VIM1EC Meter.

Go to **Step V3** if connecting to an existing VIM1EC Meter.

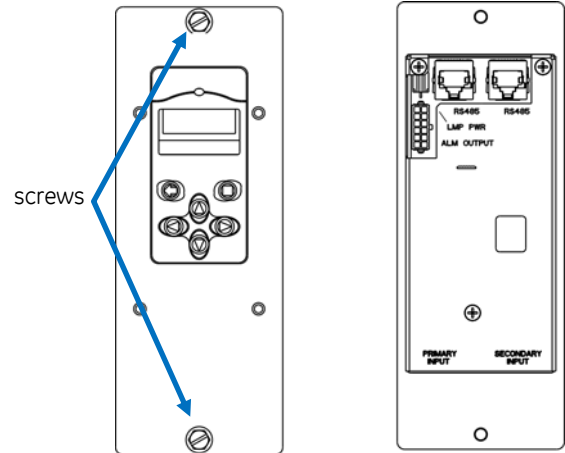
The screenshot displays the 'Network Settings' web interface. At the top, there is a navigation bar with tabs for Home, Reports, Maintenance, Settings, Installation, Software, and Logout. Below the navigation bar, the user is logged in as 'ADMINISTRATOR(CRAFT)' on '01/13/2016' at '03:19PM' with IP '172.16.11.8' and application version 'X3.2.22'. The main content area is divided into two sections: IPv6 and IPv4. The IPv6 section includes fields for Current IPv6 Address (2001:db8:1:2:002:1f4b:fe02:e3d3), Link Local IPv6 Address (fe80:21f4b:fe02:e3d3), Static IPv6 Address, IPv6 Prefix Length (64), IPv6 Working Gateway Address (fe80:21d:70:feab:e6a0), and IPv6 Static Gateway/Router Address. The IPv4 section is titled 'Network Port 1' and includes fields for Current IP Address (172.16.11.8), DHCP Client, Static IP Address, Subnet Mask, Default Gateway/Router, Domain Name, DNS Server, Host Name, Wake Enabled (yes), Mail Host, Send Message As, and Session Timeout (1400 minutes). A 'Submit' button is located at the bottom of the IPv4 section.

## Install VIM1EC Meter - V steps

### Step V1 - Record Configuration of Existing VIM1 Meter

See *Information VIM1EC Meter* for Meter Parameters table and Menu Map.

1. Read and record the parameters of the existing VIM1:
  - Number Of Loads (Item 5)
  - Meter Type (Item 6)
  - Load ID Format (Item 7)
  - First Load Location (Item 8)
  - Shunt Rating (Item 9)
  - Local Buzzer (Item 2)
  - Individual Load Parameters - record for each load
    - Load Available (Item 12)
    - Power Loss (Item 13)
    - Overload Type (Item 14)
    - Overload Alarm (Item 15)
    - Overload Delay (Item 16)
    - Assigned Circuit (Item 17)
  - Other parameters as instructed in Site Engineering Instructions.



### Step V2 - Remove VIM1 Meter

The VIM1 meter is mounted on the front of the BDFB.

1. Remove 2 screws.
2. Gently pull the meter out of the BDFB - do not apply excessive force on the attached cables. Leave cables attached to the meter.

### Step V3 - Install VIM1EC Meter

1. Move all cables from the VIM1C meter to the VIM1EC meter - connections are the same as on meter removed.
2. Gently put the meter in place in the BDFB - do not apply excessive force on the attached cables.
3. Secure with 2 screws.
  - Torque to 2.8Nm (25 in-lb) – 5/16" socket.

### Step V4 - Configure VIM1EC Meter

See *Information VIM1EC Meter* for Meter Parameters table and Menu Map.

1. Configure the VIM1EC meter with the parameters recorded from the removed VIM1 meter.
2. Configure Device ID per site engineering instructions
  - Each VIM1EC on an RS485 network must have a unique ID from 1 to 16.
  - The Device ID is factory set to 0. ID=1 is recommended for a VIM1EC in a BDFB with a Gateway assembly.

MENU ► SYSTEM PARAMETERS ► DEVICE ID
3. Confirm that the Gateway is powered up and communicating to the VIM1EC.
  - The LED located in the lower left side of the Gateway card should be green.
  - If LED is off, red, or yellow use the VIM1EC front panel to check and clear alarms
    - Possible alarms: Power not connected properly, Device ID not configured properly, tripped breaker, incorrect alarm threshold
4. Repeat from 2. above for each additional VIM1EC Meter if installing a Gateway Assembly connecting to multiple VIM1EC Meters.



## Install VIM1EC Meter - V steps continued

### Step V5 - Connect the VIM1EC to the RS485 Daisy-Chain Network

1 or 2 RS485 cables will be run to the back of the VIM1EC within the BDFB to other RS485 daisy-chain devices. The RS485 Daisy-Chain Network may be mastered by a Gateway Assembly or by a controller in a GPS system.

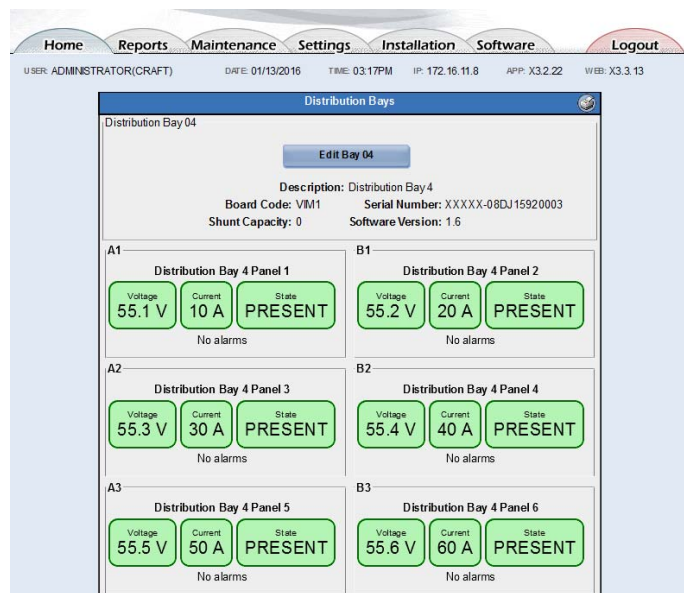
See Wiring Diagram.

1. Remove 2 screws securing VIM1EC meter.
2. Gently pull the meter out of the BDFB - do not apply excessive force on the attached cables. Leave cables attached to the meter.
3. Remove the RS485 Daisy Chain Network Terminating Resistor from the device at the end of the network, if present. Save the resistor.
4. Connect an RS485 cable between the VIM1EC and the device at the end of the network.  
If this VIM1EC is in the BDFB with the Gateway Assembly, connect to Position 3 on the Gateway Assembly bracket.
5. Connect an RS485 cable between the VIM1EC and VIM1EC in the next BDFB if present.
6. Install the terminating resistor in the unused RS485 port VIM1EC (now at the end of the daisy-chain network).

### Step V6 - Verify Connection to RS485 Daisy-Chain Network

1. Connect a laptop or PC to
  - a. RS-232 port of the Gateway assembly (see Wiring Diagram).  
or
  - b. The local port of the controller in the GPS system
2. If not already installed, download and install EasyView2 (see Reference Documents).
3. Start Easyview2.
4. Login as user- Password: lineage
5. Confirm Gateway is connected to the VIM1EC by navigating to **Home ► Distribution Bay Status** to make sure you can see the data for every BDFB load for each connected the VIM1EC.

Installation Completed.



## Information: VIM1EC Meter

Each load bus is equipped with a shunt: 1500 A for G7 and G8, 1600 A for G101 and G102. The VIM1C monitors these shunts to determine actual currents and the remaining capacity of each load bus.

VIM1C features include fuse/breaker alarms, power loss alarms, individually configurable overload thresholds, individually configurable power loss, audible, and remote form-C output alarms. The VIM1 receives redundant power from the A and B panels and external ABS.

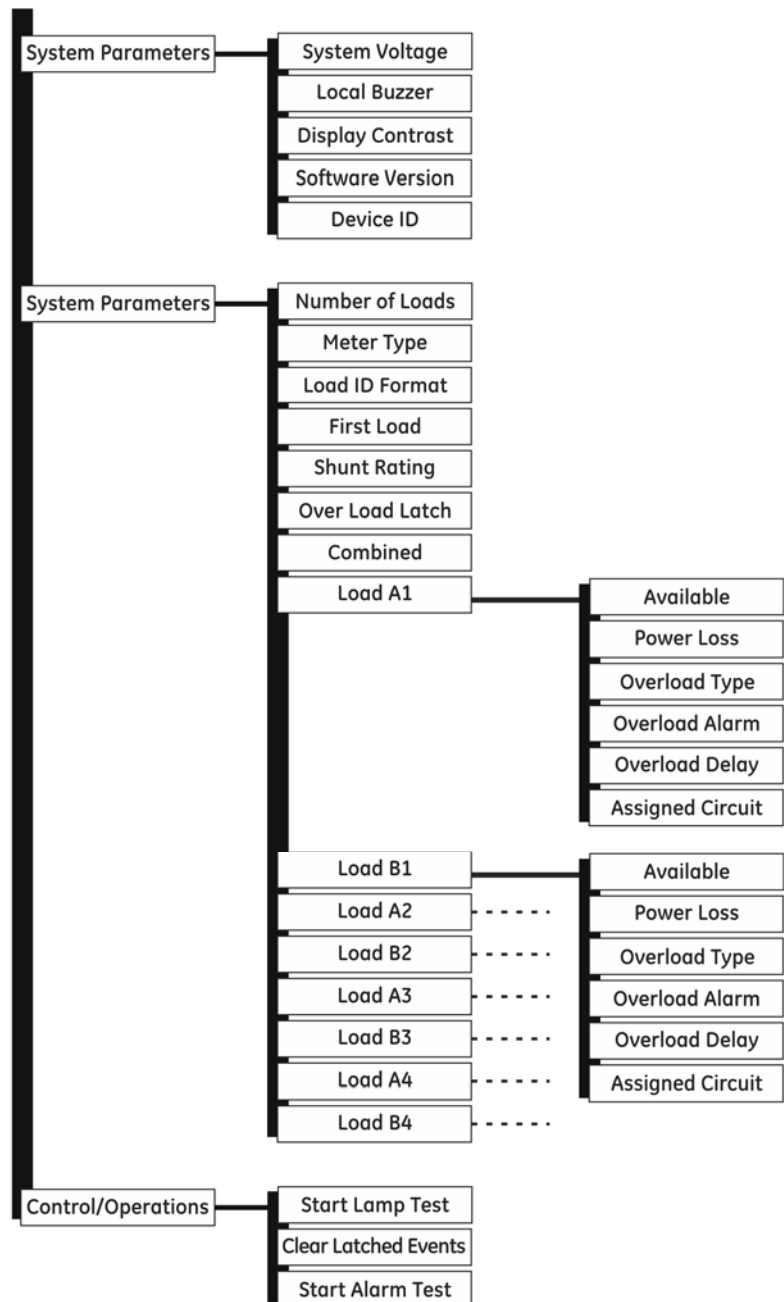
**Voltage and Current** - VIM1C displays voltage, current, and identifies each monitored load bus.

**Alarm Indication** - When an alarm occurs, the backlight on the display changes color from green (normal) to red (alarm active) and the front panel text also changes from "No Alarms" to "Alarms."

**Keys** - Left and Right keys are used to navigate the menu. Up and Down keys are used to adjust the parameters.

**Menus** -

### Main Menu



VIM1EC Meter Parameters		
Item	System Parameters	Description
1	System Voltage	Factory default is 48V.
2	Local Buzzer	Allows audible alarm to be Enabled or Disabled. Factory default is Disabled.
3	Display Contrast	Allows the display contrast to be adjusted for the local ambient lighting. Adjustable from 0-100% in 1% increments. Factory default is 50%.
4	Software Version	Displays the version of the application code running in the meter.
	<b>Load Parameters</b>	<b>Description</b>
5	Number Of Loads	Used to identify the number of individual loads/buses in the BDFB. Factory set from 1-8 depending on BDFB configuration.
6	Meter Type	Configures meter to display individual monitored bus voltages (voltage), voltages and currents (volt_curr), or only currents (current). Factory default is Voltage and Current (volt_curr).
7	Load ID Format	Configures display format used in referencing individual DC loads/buses. Allowable formats: A1, A, and 1. "A1" identifies loads using an A1, B1; A2, B2; ... format. "A" identifies loads using an A, B, C, D ... format. "1" identifies loads using a 1, 2, 3, 4 ... format. Factor Default is A format.
8	First Load (location)	Used to indicate where the first load in the distribution is located. Allowable configurations are: top-left, top-right, btm-left (bottom-left), btm-right (bottom-right). Every monitored shunt is considered a load. Factory default is determined by BDFB configuration.
9	Shunt Rating	Used to define the current rating of the shunt in the load bus. All shunts in the load must be of the same size. A 50mV shunt is assumed. Allowable range is 1-4000A. The factory default is 1500A in the BDFB.
10	Overload Latch	A single configuration for all panels/buses that allows a temporary Over Load event to be latched. Factory default is "Disabled".
11	Combined Load	Displays the load value as one combined sum by adding up all shunts in the system and presenting it as values for a single load. Factory default is disabled.
12	Load Available	Indicates if the load is available or in use. Allowable configurations are "installed" and "not installed". "Installed" loads imply that the load is in use. "Not Installed" loads imply that the load may be present, but it is not in use. Information obtained from the load should not be relevant. Factor default is set to be "installed".
13	Load Power Loss	The Power Loss (PL) alarm is triggered upon loss of the primary DC or when the individual's panels' DC input has reached the configured low voltage threshold. This Power Loss voltage threshold is configurable between 40.00-60.00V. Factory default is 40.00V.
14	Load Overload Type	The Power Overload Type defines whether the smart meter is to treat the Overload alarm event for a "Single Bus" or for a "Redundant Bus" configuration. The "Single Bus" configuration is based on straight Overload threshold being exceeded. The "Redundant Bus" configuration causes the VIM1 to sum the two respective left and right load shunt measurements and compare it to the individual overload thresholds configured for the each of the respective panels in the pairing. The lowest Overload value threshold configured for the Redundant loads shall take priority and be used in the comparison. Once the "Redundant Bus" measurement exceeds this threshold, the controller asserts the Over Load (OVL) alarm. Factor default is "Single Bus" configuration".
15	Load Overload	The Load Overload (OVL) alarm event is triggered when any measured panel currents exceed their respective configured thresholds. These OVL thresholds can be configured from 1-4000A. Factory default is 800A.
16	Load Overload Delay	An Overload Delay can be set to prevent nuisance alarms. This delay is configurable between 0-300 seconds. Factory default is 0 seconds.
17	Assigned Circuits	The VIM1 has eight individual load circuits with each circuit having voltage and shunt measurement capability. These circuits are pre-wired with fixed positions in the BDFB. If circuit wiring from the VIM is redressed in the field this feature can be used to assign the appropriate circuit to the new load location.
	<b>Control and Operations Parameters</b>	<b>Description</b>
18	Start Lamp Test	Cycles the illumination of the front panel LED and Backlight through Red, Amber, and Green
19	Clear Latched Events	Clears a latched Overload Alarm event. Note the Overload Latched Event must be enabled to have a latched alarm.
20	Start Alarm Test	Asserts Form-C alarms available at connector J3 in a fixed sequence: Fuse Alarm (FA), Power Loss (PL), and Overload (OVL). Alarm asserted is displayed on the front panel. Feature can be used to test the site's remote monitoring systems and wiring.
21	Device ID	RS485 VIM1EC ID. Unique, 1 to 16.





## Specifications and Application

- Specifications and ordering information are in the brochures listed in **Reference Documents**.
- Installation Environment - Install in Network Telecommunication Facilities, OSP, or where NEC applies.

## Reference Documents

These documents are available at [www.gecriticalpower.com](http://www.gecriticalpower.com).

Document	Title
4530236P	6420883P Kit 5069 BDFB VIM1EC Retrofit
CC848815341	Pulsar Plus Controller Family Product Manual
CC850018552	H569-445 Battery Distribution Fuse/Circuit Breaker Bay (BDFB/BDCBB)
ESAPP VIM1	Smart Distribution Monitor—VIM1 EasyView2™ GUI (under DC Power Systems > Software)
108994645	Basic Installation and User's Guide for the Millennium II Controller J85501P-1

Drawings and other engineering information are available - contact Technical Support at 1-888 546-3243 or PE.TechSupport@ge.com.







