Smart Distribution Monitor – VIM1

Adding Enhancements to BDFB/BDCBB Management
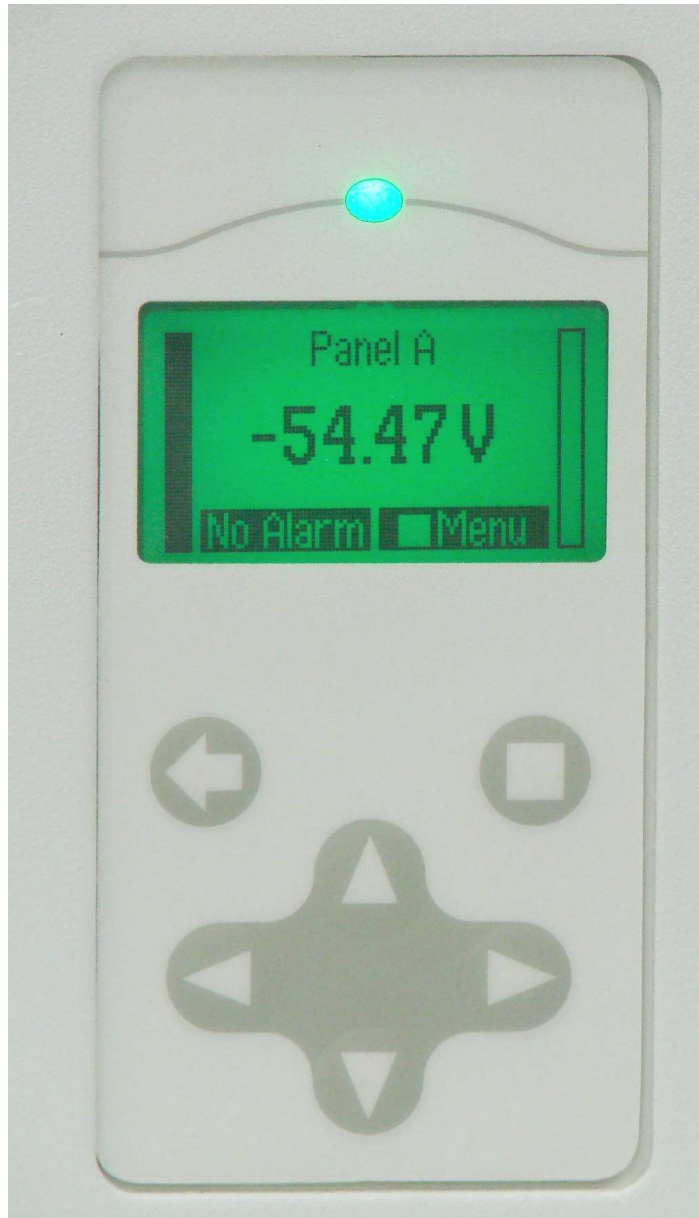
VIM1_OG   Rev. 1.0

Table of contents

The VIM1 Smart Distribution Monitor replaces the digital meters used on Lineage Power Battery Distribution Fuse Bays (BDFB) and Battery Distribution Circuit Breaker Bays (BDCBB). Traditional meter assemblies measure voltage and current of each load bus with separate alarm cards monitoring fuse and power loss alarms.

The VIM1 integrates these features into a single monitoring module that incorporates dual-bus powering capability, individually configurable overload thresholds, individually configurable power loss thresholds, audible and remote alarms with network connectivity and much more. Specific Kits are available to upgrade existing meters in the field.

Applications

- H569-445 BDFB/BDCBB

- ED83368-30 micro-BDFB

- Customized Solutions for monitoring DC Distribution Systems

Key Features

- Redundantly powered

- Hot-pluggable/removable

- 24V or 48V Compatible:

- Monitor/display up to eight 50mV shunt inputs (±1% accuracy ±1A resolution)

- Monitor/display up to eight DC bus inputs (±0.05% accuracy ±.01V resolution)

- Two fuse/breaker alarm inputs (FAJ)

- UL recognized

- RoHS 5 compliant

- Various BDFB retrofit kits available

- Visual, Audible and Remote Alarms

- Form-C contacts for:
    - Power Loss (PL)
    - Fuse Alarm (FAJ)
    - Overload (OVL)
    - Front panel Form-C test feature
- Enhanced front panel interface
    - 4x20 LCD Graphic Display
    - Alarm Sensitive backlight
    - Membrane Key Pads
    - Integrated Audible Alarm with enable/disable
    - Intuitive menu

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Front Panel

The VIM1 can be configured to display the voltage, current, and panel identifier of each monitored load bus. In some retrofit applications where the BDFB only monitors bus currents, the "panel type" parameter can be configured as "current" only. The front panel display default shows the first monitored bus as shown below.

Alarm Indication: When an alarm occurs, LCD backlight on the display changes colour from green (normal) to red (alarm active). The front panel text also changes from "No Alarms" to "Alarms"

Navigation Keys: Left and Right Keys are used for menu navigation. Up and Down keys are used to change the parameter values of the meter. They also allow screen contrast adjustment at Menu▸ System ▸Parameters ▸Display Contrast.

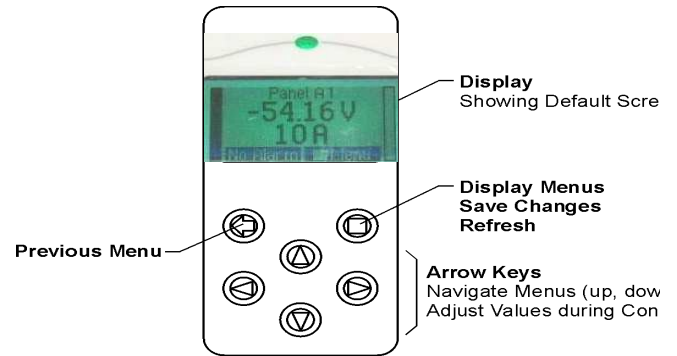**Alarm and Monitoring**

Visual, Audible and Remote Alarms: The VIM1 monitor includes an audible alarm with a user configurable on/off feature. There is a form-C relay for each of the three alarms for remote monitoring. An alarm cable is provided in micro-BDFB's to access these alarms. Order separately for H569-445 BDFB's

Power Loss/Under Voltage: Generates an alarm when power is lost to a load bus or when a user configurable low voltage threshold is reached.

Overload: Generates an alarm when a user configurable current threshold is reached. A configurable time delay may also be set to avoid nuisance alarms due to bus transients.

Breaker/Fuse: Generates an alarm when either a circuit breaker trips or a fuse blows.

Display
Showing Default Scre

Display Menus
Save Changes
Refresh

Previous Menu

Arrow Keys
Navigate Menus (up, dow
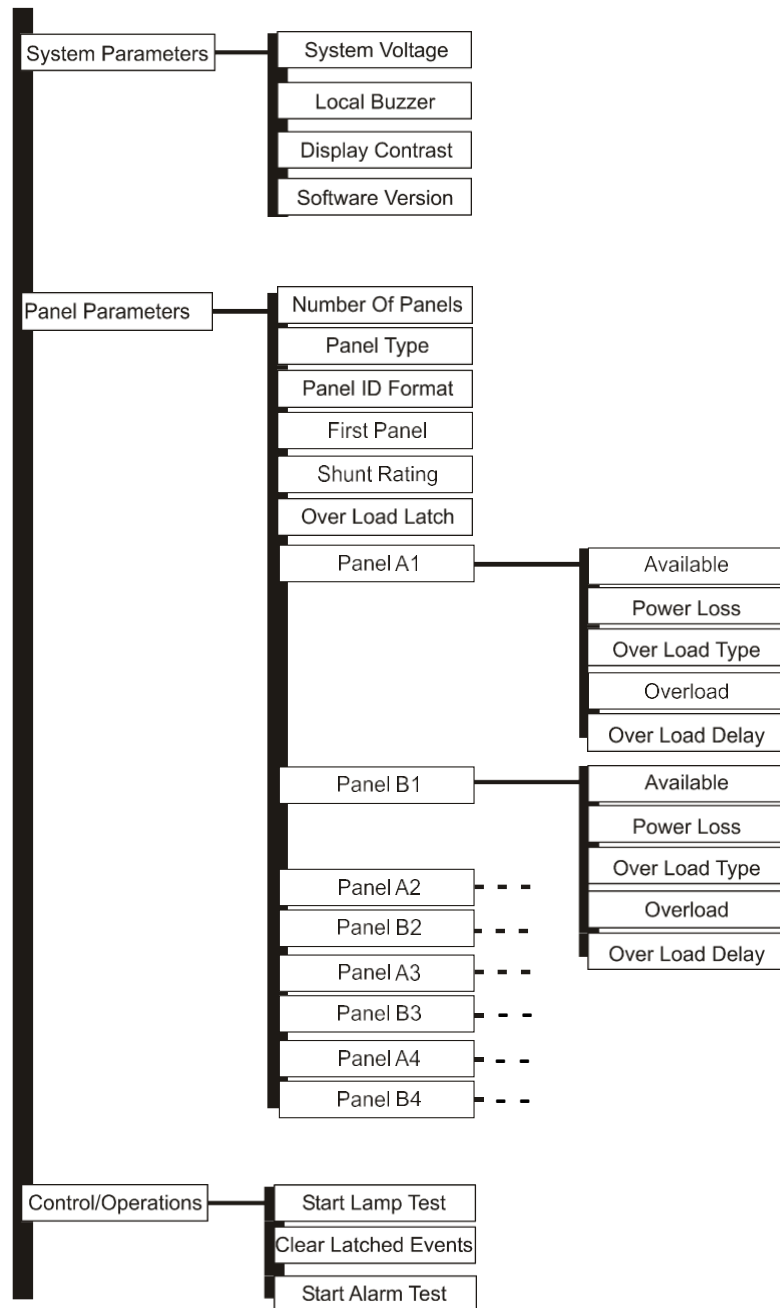Adjust Values during Con

Alarm Cable Pinouts and Description

Pin	Form-C Alarm	Wire Colour
7	Fuse NO	Blue
1	Fuse NC	White/Blue
2	Fuse C	Slate
10	OVL NO	White/Slate
4	OVL NC	Orange
5	OVL C	White/Orange
12	PL NO	Yellow
6	PL NC	White/Yellow
11	PL C	White

Network Connectivity: There are two RJ45 type connectors on the board. A future release of this product will allow multiple VIM1 boards to be daisy chained together for network connectivity. Network access with this upgrade will be achieved in two ways; Either through a serial connection to a Lineage Power controller or a Stand-alone network interface card providing an Ethernet LAN connection.

Menu Map

The VIM1 front panel is structured such there are three main menu items: System Parameters, Panel Parameters, and Control/Operations. Each key menu item has sub items as shown in the menu map below.

Main Menu

```
Main Menu
│
├── System Parameters ──┬── System Voltage
│                       ├── Local Buzzer
│                       ├── Display Contrast
│                       └── Software Version
│
├── Panel Parameters ───┬── Number Of Panels
│                       ├── Panel Type
│                       ├── Panel ID Format
│                       ├── First Panel
│                       ├── Shunt Rating
│                       ├── Over Load Latch
│                       ├── Panel A1 ──┬── Available
│                       │              ├── Power Loss
│                       │              ├── Over Load Type
│                       │              ├── Overload
│                       │              └── Over Load Delay
│                       ├── Panel B1 ──┬── Available
│                       │              ├── Power Loss
│                       │              ├── Over Load Type
│                       │              ├── Overload
│                       │              └── Over Load Delay
│                       ├── Panel A2 - - -
│                       ├── Panel B2 - - -
│                       ├── Panel A3 - - -
│                       ├── Panel B3 - - -
│                       ├── Panel A4 - - -
│                       └── Panel B4 - - -
│
└── Control/Operations ─┬── Start Lamp Test
                        ├── Clear Latched Events
                        └── Start Alarm Test
```

Programming The meter

Required parameters (like shunt size, number of load buses) are preconfigured when the VIM1 is factory installed in a BDFB/BDCBB. In these cases, only customer specific preferences need to be configured in the field. When the unit is sent as an upgrade kit, the user might need to change the factory default settings appropriate for the application. The following table lists the configurable parameters and factory defaults.

System Parameters	Description
System Voltage	Used to identify system voltage. Selectable between 24V and 48V. Factory default is 48V.
Local Buzzer	Allows the integrated audible alarm to be Enabled or Disabled. Factory default is Disabled.
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%.
Software Version	Displays the version of the application code running in the meter in the format (vX.Y).
Panel Parameters	**Description**
Number Of Panels	Used to identify the number of individual panels/buses in the distribution. Value configurable from 1-8. Factory default is 6.
Panel Type	Configures to meter to display the individual monitored buses Voltage (voltage),Voltage and Current (volt_curr), or only Current (current). This configuration is definedby the internal wiring of the distribution. Factory default is Voltage and Current (volt_curr).
Panel ID Format	Configures the format used in referencing the individual DC panels/buses. Allowable formats: A1, A, and 1. "A1" identifies panels using an A1, B1; A2, B2; ... format. "A" identifies panels using an A, B, C, D ... format. "1" identifies panels using a 1, 2, 3, 4 ...format. Factor Default is to use the A1 format.
First Panel	Used to indicate where the first panel in the distribution is located. Allowable configurations are: top-left, top-right, btm-left (bottom-left), btm-right (bottom-right). Factory default is "top-left".
Shunt Rating	Used to define the current rating of the shunt in the distribution panel. All shunts in the panel must be of the same size. A 50mV shunt is assumed. Allowable range is 1- 1000A. The factory default is 800A.
Overload Latch	A single configuration for all panels/buses that allows a temporary Over Load event tobe latched. Factory default is "Disabled".
Panel Available	Indicates to the meter if the panel is available or in use. Allowable configurations are installed and not installed. "Installed" panels imply that the panel is in use. "Not Installed" panels imply that the panel may be present but it is not in use so informationobtained from the panel should not be relevant. Factor default is set to be "installed".
Panel 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 low voltage threshold. This Power Loss voltage threshold is configurable between 40.00-60.00V for 48V systems and 20.00-30.00V for 24V systems. Factory defaults for these thresholds are 40.00V and 20.00V, respectively.
Panel Overload Type	The Power Overload Type defines whether the smart meter is to treat the Overload alarm event for a "Single Bus" or for an "OR'd Dual-Bus" configuration. The "Single Bus" configuration is based on straight Panel Overload threshold being exceeded. The"OR'd Dual-Bus" configuration causes the VIM1 to sum the two respective "OR'd" left and right panels shunt measurements and compare it to the individual overloadthresholds configured for the each of the respective panels in the pairing. The lowest Overload value threshold configured for the two OR'd panels shall take priority and beused in the comparison. Once the "OR'd" measurement exceeds this threshold, the controller shall assert the Over Load (OVL) alarm. Factor default is "Single Bus" configuration".

Programming The meter (Continued)

Panel Parameters	Description
Panel Overload	The Panel Overload (OVL) alarm event is triggered when the individually measured panel currents exceed their respective configured thresholds. These OVL thresholds can be
Panel 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.

Control and Operations Parameters	Description
Start Lamp Test	Cycles the illumination of the front panel LED and Backlight through Red, Amber, and Green
Clear Latched Events	Clears a latched Overload Alarm event. Note the Overload Latched Event must be enabled to have a latched alarm.
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.

Ordering Information

Description	Ordering Code	CLEI
VIM1A meter kit to upgrade H569445 G71 meters	CC109144812	PBM7600FRA
VIM1B meter kit to upgrade H569445 G172 meters	CC109144341	PBM7800FRA
VIM1 meter and door replacement kit for 19" ED83368-30 micro-bdfb	CC109146627	PBM7700FRA
VIM1 meter and door replacement kit for 23" ED83368-30 micro-bdfb	CC109146635	PBM7900FRA
Alarm cable	CC848846287	

Customer Service Contacts

For customers in the United States, Canada, Puerto Rico, and the US Virgin Islands, call 1-877-546-3243 This number is staffed from 7:00 am to 5:00 pm Central Time (zone 6), Monday through Friday, on normal business days. At other times this number contacts an answering service with on-call personnel for out of service emergencies. Services provided through this contact include initiating the spare parts procurement process, ordering documents, product warranty administration, and providing other product and service information.

Customer Training

OmniOn offers customer training on many Power Systems products. For information call 1-972-244-9288 This number is answered from 8:00 a.m. until 4:30 p.m., Central Time Zone (Zone 6), Monday through Friday.

Downloads and Software

To download the latest product information, product software and software upgrades, visit our web site at **omnionpower.com**

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