



**Micro-BDCBB DC Battery Distribution Circuit Breaker Bay  
ED83368-30**

**600 A, -48V / +24V, 19" or 23"**

Micro-BDCBB Configurations							
Mounting	Fuse/Breaker Positions	Shunts <sup>1</sup>	Buses		Meter	Ordering Code	Group
			Battery	Return			
19"	14	-	1 <sup>2</sup> or 2	1 <sup>2</sup> or 2	-	108992070	3
19"	14	2	2	1	VIM1	CC109145455	4
19"	14	2	1	1	VIM1	CC109145447	8
23"	22	-	1 <sup>2</sup> or 2	1	-	108991056	1
23"	22	2	2	1 <sup>2</sup> or 2	VIM1	CC109145463	2
23"	22	2	1	1 <sup>2</sup> or 2	VIM1	CC109145430	6

**Notes:**

1. Group 1 - Field conversion to +24V and Dual buses is not supported.
2. Group 3 - Field conversion to +24V is not supported.

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1 Shunts, when provided, are two 600A shunts, one on each side - A Bus (left) and B bus (right).

The VIM1 meter sums the two shunts for one battery bus configurations.

2 Factory Configuration - Convert to 2-bus by removing the installed bridging bus bar.

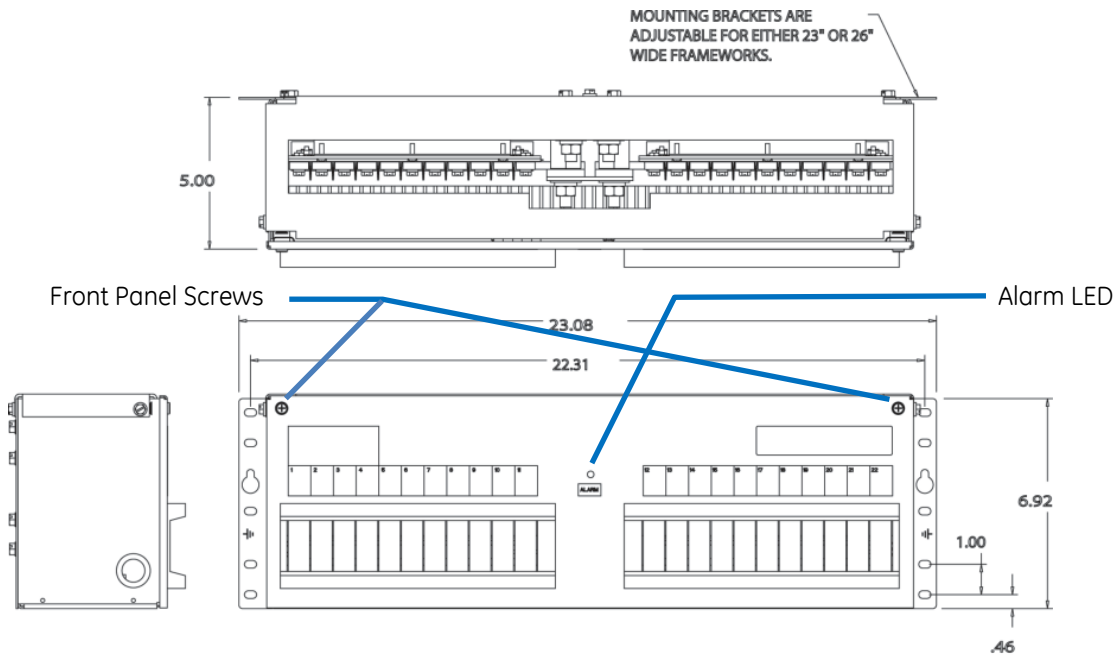


Figure 1 Group 1 - 23" Panel with 477D Alarm Card

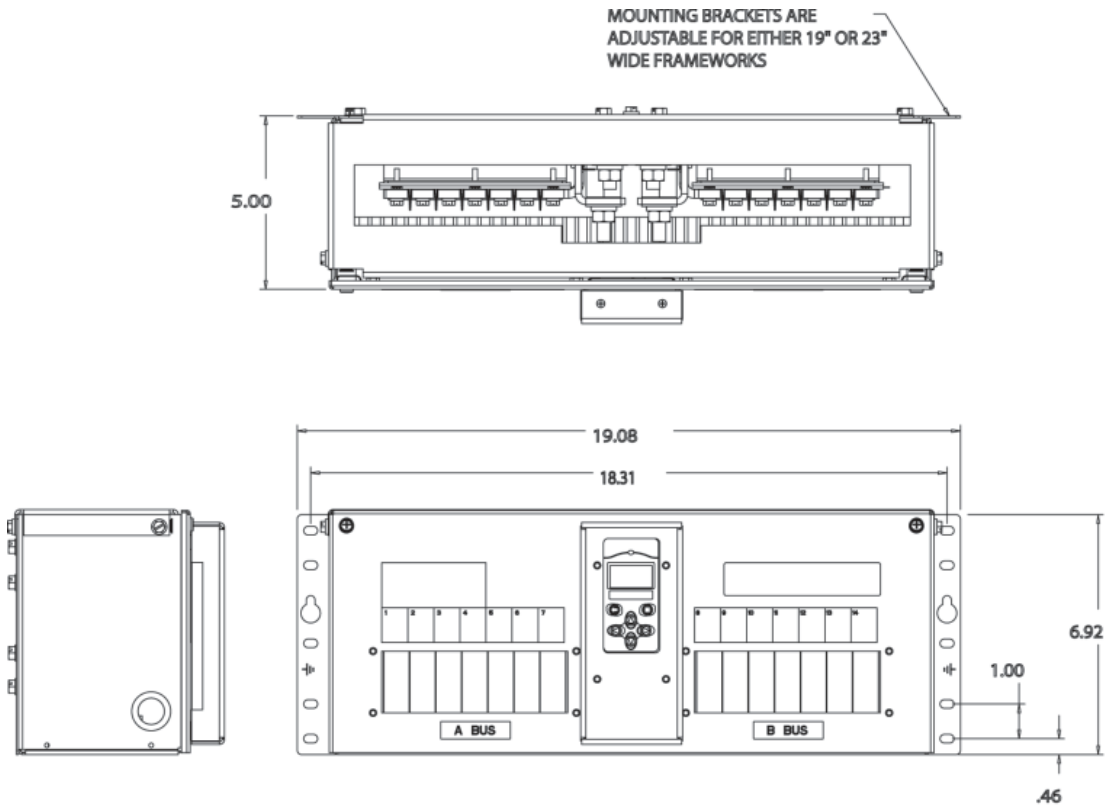


Figure 2 Group 8 - 19" Panel with VIM1 Meter

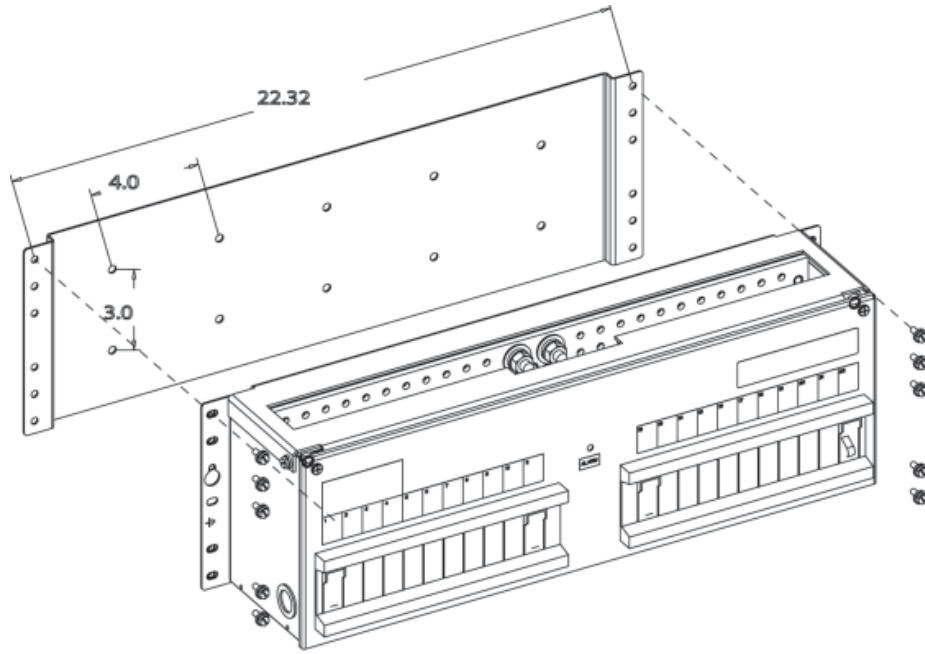


Figure 3 Wall Mounting Bracket – CC848786401

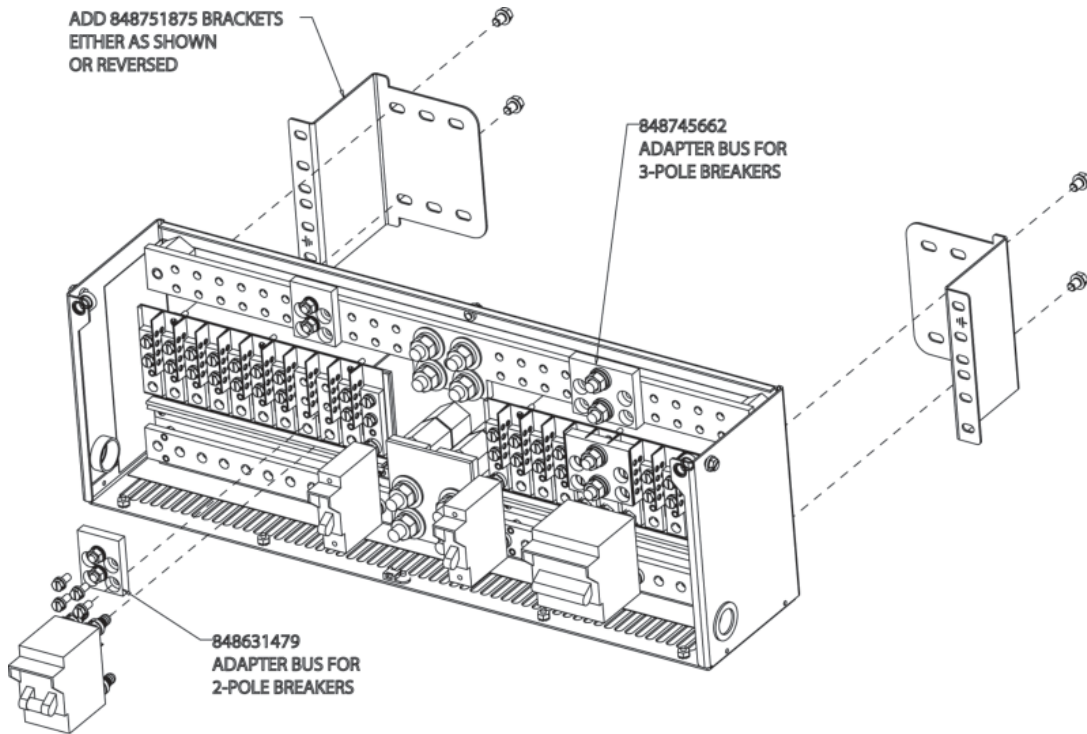


Figure 4 Accessory Items

## Installation Notes

1. Follow all Installation Notes. Read before installing, maintaining, or repairing the equipment.
2. Follow all site specific installation notes and instructions.
3. Mount to grounded frame using 12-24 screws provided.  
Grounding for the equipment is through this connection to the frame.  
Make sure frame is properly grounded.
4. Do not install this equipment over combustible surfaces.
5. Follow NEC, and local and national codes and rules.
6. Use a personal ESD strap when accessing or removing electronic components.
7. Use only protectors and holders specified in the equipment Ordering Guide.
8. 90A and 100A 1-pole breakers require an adjoining position be left unoccupied for thermal reasons.
9. Size protectors (fuses or circuit breakers) as required by the National Electric Code (NEC) and/or local codes.  
Refer to the equipment ratings to assure current does not exceed:  
    Continuous Load (List 1) - 64% of protector rating  
    Maximum Load (List 2 - typically end of discharge) - 80% of protector rating.
10. Field-wired Conductors - Follow all National Electric Code (NEC) and local rules and regulations when making field connections.
  - Size field-wired conductors based on listed recommendations, National Electric Code (NEC) and/or local codes based on 70°C ampacity.
  - Insulation rating: 90°C minimum; 105°C (minimum) if internal to enclosed equipment cabinets.
11. Bonding Network - Suitable for installation as part of either
  - Common Bonding Network (CBN)
  - Isolated Bonding Network (IBN)
12. Facilities - Suitable for installation in
  - Network Telecommunication Facilities
  - Locations where the NEC applies
13. DC Return - Isolated DC Return (DC-I) or Common DC Return (DC-C)
14. Intra-building ports - Equipment and subassembly ports are suitable for connection to intra-building or unexposed wiring or cabling. The equipment and subassembly ports can be connected to shielded intra-building cabling grounded at both ends.

## Convert from -48V to +24V

- Notes:**
1. Not applicable to panels with VIM1 meter which automatically work with -48V and +24V.
  2. Not Applicable to Panels with 477D alarm card.

Panels with VIM1 meter work with either +24V or -48V automatically.

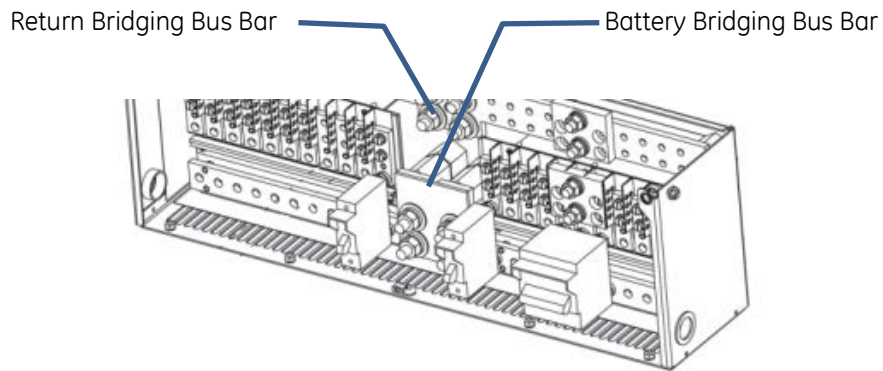
Panels with 477D alarm card work only with -48V.

## Convert Battery and Return from 1 bus to 2 buses – Group 3 only

- Notes:**
1. Not applicable to panels with VIM1 meter which must be factory configured for single or dual bus.
  2. Not applicable to Group 1 which is single bus only.

Battery and return buses may be converted in configurations bridging bus bars.

1. Remove nuts and washers securing bridging Bus Bar.
2. Remove bridging Bus Bar.
3. Replace nuts and washers.
4. Torque to 120 in-lb

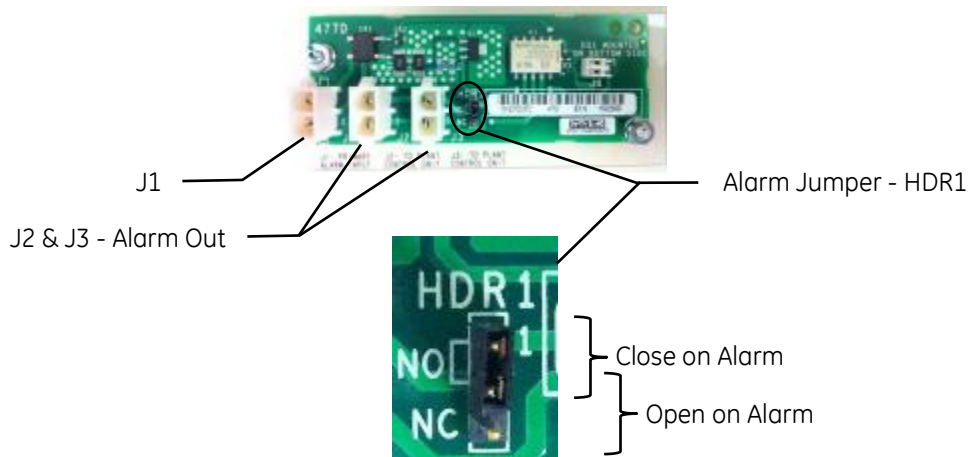


**Figure 5 Bridging Bus Bars**

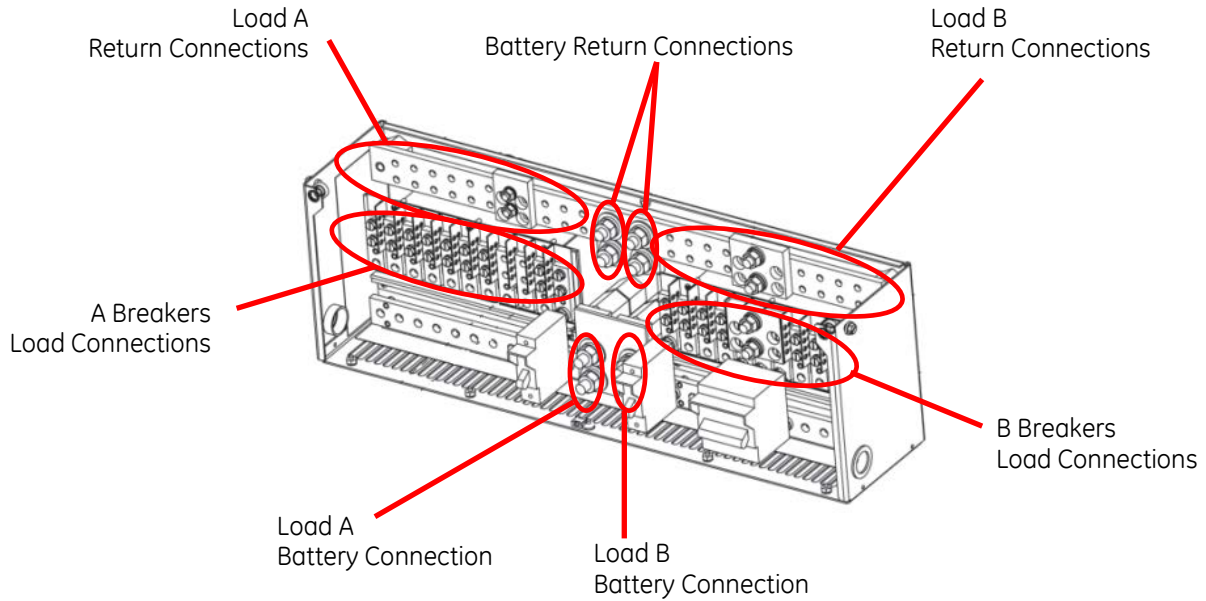
### Alarm Card 477 Alarm Jumper

**Not applicable to panels with VIM1 meter.**

Position the jumper on HDR1 for Open on Alarm or Close on Alarm.



**Figure 6 Alarm Card**



Battery Connections - 3/8" on 1" centers - torque 16 ft-lb  
 Breaker Load Connections - 1/4" on 5/8" centers - torque 55 in-lb

2-Load configuration shown

**Figure 7 DC Connections**

**Battery Connections – Loads - Figure 7**

For single load configurations, A and B sections are bridged: Battery, Battery Return, Breaker Loads, and Load Returns.

1. Connect battery feeds and returns.
2. Connect Breaker loads and returns.

**Breakers and Fuse Holders**

1. Open Breaker Access Covers by loosening front panel screws.
2. Install protectors and protector holders
3. Close Breaker Access Covers and tighten Breaker Access Screws.
4. Install fuses into fuse holders.
5. Install multi-pole bus kits included with each protector and protector holder occupying 2 or 3 positions.

**Load Connections - Figure 7**

1. Connect breaker load wires to Breaker Load Connections.
2. Connect breaker load return wires to the Return Bus.

**Alarm Wiring**

20 AWG recommended.

1. Butt-splice office alarm wires to the provided alarm cable.
2. Connect the alarm cable connector to the VIM1 meter or alarm card.

Alarm Cable Pinouts and Description					
VIM1 Meter			Alarm Card - 477		
Pin	Form-C Alarm <sup>3</sup>	Wire Color	Pin	Alarm	Wire Color
7	Fuse NO	Blue	J2-1	Fuse	Brown
1	Fuse NC	White/Blue	J2-2	Fuse C	Yellow
2	Fuse C <sup>4</sup>	Slate	J3-1	Fuse	Brown
10	OVL NO	White/Slate	J3-2	Fuse C	Yellow
4	OVL NC	Orange			
5	OVL C	White/Orange			
12	PL NO	Yellow			
6	PL NC	White/Yellow			
11	PL C	White			

<sup>3</sup> NO signals Open on Alarm. NC signals Close on Alarm.

<sup>4</sup> C signals, such as "Fuse C" are common or return signals for the similarly named signals, such as "Fuse NO".

## VIM1 Meter

The VIM1 can be configured to display the voltage, current, and panel identifier of each monitored load bus.

Notes specific to application in this equipment 5067:

1. Lamp Test does not activate 5067 Alarm LED - Figure 1.

### Alarm Indication

When an alarm occurs, LCD backlight on the display changes color 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

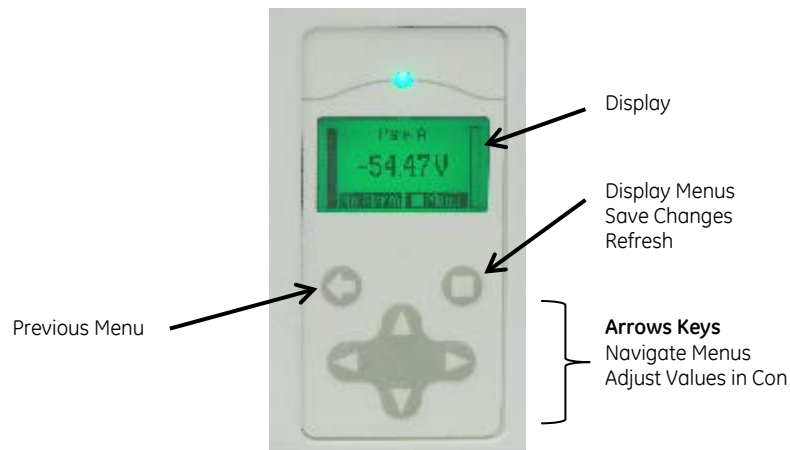


Figure 8 VIM1 Meter

## 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.

All alarms are active when the VIM1 is unpowered. Alarms are asserted when their relay coils are not powered.

### 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.

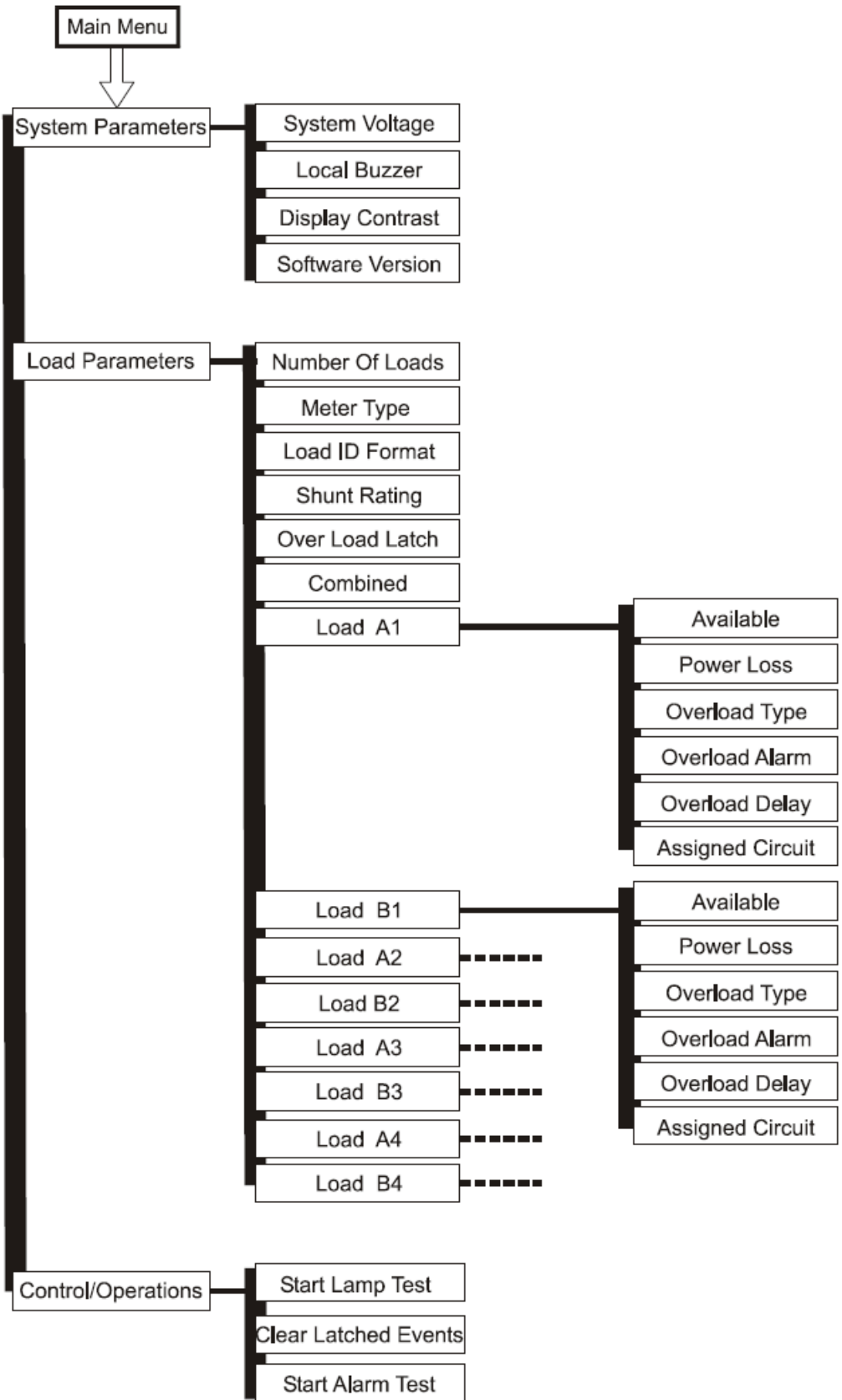
### Network Connectivity

There are two RJ45 type connectors on the board for future use.



**Menu Map**

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



## Programming the Meter

VIM1 parameters like shunt size and number of load buses are preconfigured when it is factory installed in a BDFB/BDCBB or Micro-BDFB. Only customer specific preferences need to be adjusted in the field. As a replacement or meter upgrade, the factory default settings may need to be adjusted for the application. Listed below are the configurable parameters and their associated factory defaults available through the front panel. Following the table are the typical items that need to be configured or verified in a retrofit or replacement application.

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). Version 1.5 is the latest as of this printing.
Load Parameters	Description
Number Of Loads	Used to identify the number of individual loads/buses in the distribution. Value configurable from 1-8. Factory default is 6.
Meter Type	Configures meter to display individual monitored bus voltages (voltage), voltages and currents (volt_curr), or only currents (current). This configuration is defined by the internal wiring of the distribution. Factory default is Voltage and Current (volt_curr).
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 to use the A1 format.
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 "top-left".
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 800A.
Overload Latch	A single configuration for all panels/buses that allows a temporary Over Load event to be latched. Factory default is "Disabled".
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.
Load Available (A1-A4;B1- B4)	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".
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 for 48V systems and 20.00-30.00V for 24V systems. Factory defaults for these thresholds are 40.00V and 20.00V, respectively.
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 an "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".
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.

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.
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 Lineage BDFB/BDCBBs. 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.  Note: in the 6-load H569-445 circuits 1-6 are attached in a descending order viewing from the front of the system in a top left to right numbering scheme. The VIM1 will automatically assign the right circuit if only the first "Load Location" is utilized and the internal wiring is not touched. Note: if wiring has been rearranged details of the circuit connections can be seen in T83150-30.
<b>Control and Operations Parameters</b>	<b>Description</b>
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.

Bullet Style Load Circuit Breakers			
Ordering Code	Amperage	CB Positions (Poles)	Min. Wire Gage
407998137	3	1	10
407998145	5	1	10
407998152	10	1	10
407998160	15	1	10
407998178	16	1	10
407998186	20	1	10
407998194	25	1	10
407998202	30	1	10
408213486	40	1	8
407998210	45	1	8
407998228	50	1	6
407998236	60	1	6
407998244	70	1	2
407998251	80	1	2
407998269	90	1	2
407998277	100	1	2
CC848808551	100	2	2
408185353	125	2	2
408185346	150	2	1/0
408564941	200	3	2/0
408573975	225	3	4/0
408535752	250	3	4/0

Multi-Pole Adapter Bus Kits - 1 per multi-pole breaker		
Ordering Code	CB Positions (Poles)	Hardware Included
850021775	2	5/16" on 1" centers
850021955	3	5/16" on 1" centers

<b>Bullet Style Fuse Holder and TPS/TLS Fuses</b>		<b>Style Fuse Holder and TPS/TLS Fuses</b>	
<b>Ordering Code</b>	<b>Amperage</b>		
406700567	3		
406700583	5		
406700591	6		
406700609	10		
406700617	15		
406700625	20		
406700633	25		
406700641	30		
406700658	40		
406700674	50		
406700682	60		
406700690	70		
CC408618020	80		
CC408618037	90		
CC408618045	100		
CC408618061*	125		
402328926	0.18 Alarm Fuse		
408548944	Bullet Fuse Holder, TFD-101-011-09 (Alarms on Blown Fuse or Fuse Head Removal)		
CC408617410	Bullet Fuse Holder, TFD-101-011-10 (Alarms on Blown Fuse Only)		
<b>Bullet Style GMT Fuse Holder and GMT Fuses</b>			
405006222	0.25A		
406976894	0.5A		
405673146	1.33A		
405181983	2A		
406976985	3A		
406159061	5A		
405725433	7.5A		
406159236	10A		
406473959	12A		
CC109103157	6-pos GMT Bullet Fuse Holder, requires 2 positions		
408515823	Fuse Puller		

\* Maximum of 3 125A fuses per side. A space must be left between each fuse.