

Dual Isolated Power Panels

Dual Voltage and Dual System Isolated Power Panels
For Hospitals and Critical Care Areas



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Dual Voltage Isolated Power Panel

Features

- **Power Distribution:** Loadcenters available for either plug-in or bolt-on circuit breakers
- **Mounting:** Available for flush- or surface-mounted applications
- **Advanced technology:** The LIM2010 line isolation monitor features self-testing, self-calibration, and a wide variety of alarms including voltage, overload, and overtemperature monitoring
- **Standards:** Listed to UL 1047, the standard for isolated power system equipment
- **Warranty:** Industry-first 5 year warranty

Introduction

BENDER Isolated Power Panels are designed to provide isolated power to electrical power systems in operating rooms and other critical areas. Designed in strict compliance with UL 1047, UL 1022, and UL 50, BENDER isolated power panels offer the most up-to-date technology for all isolated power distribution requirements.

Standard Features: Dual Voltage Panel

Dual voltage isolated power panels provide two separate voltage outputs using a single isolation transformer. A standard dual voltage panel consists of the following:

- One (1) single-phase isolation transformer with dual secondary outputs (120 V side and 208 V or 240 V side)
- Two (2) BENDER LIM2010 Line Isolation Monitors (LIM)
- Two (2) Reference ground buses
- One (1) Primary circuit breaker
- One (1) Secondary main circuit breaker for 120 V side
- Eight (8) branch circuit breakers for 120 V side, field-convertable up to 16
- One (1) Secondary main circuit breaker for 208 V or 240 V side
- Provision for two (2) 2-pole branch circuit breakers for 208 V or 240 V side

Standard Features: Dual System Panel

Dual system panels provide two separate voltage outputs from two isolation transformers. This system is equivalent to two independent standard isolated power panels in one enclosure. A standard dual system panel consists of the following:

- Two (2) single-phase isolation transformers
- Two (2) BENDER LIM2010 Line Isolation Monitor (LIM)
- Two (2) Reference ground buses
- Two (2) Primary circuit breakers
- Branch circuit breakers (Qty. 8 standard, field-convertable up to 16 per system)

Backbox

All backboxes are fabricated from a minimum of 14GA galvanized steel. Surface mounted enclosures are finished with a coat of hospital ivory baked enamel.

Front Trim

Manufactured from a minimum of 14GA type 304 stainless steel with a #4 brushed finish, the front trim contains two doors with hidden hinges and a flush mounted key lock covering the loadcenter(s). The front trim for flush-mounted units extends 1" on all sides of the backbox. For surface-mounted panelboards, the front trim has the same dimensions as the enclosure.

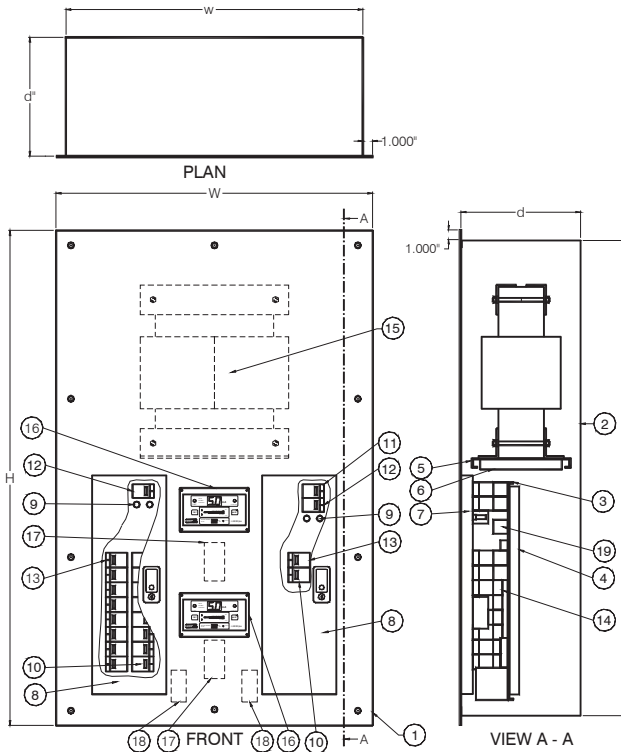
Line Isolation Monitor

The BENDER LIM2010 series Line Isolation Monitor provides both digital and analog displays. The LIM is available with readouts and response values of 2 mA or 5 mA. The LIM2010 utilizes a unique measuring principle and is capable of detecting all combinations of capacitive and resistive faults, including balanced, unbalanced, and hybrid faults. The LIM contributes less than 35 μ A to the Total Hazard Current (THC).

Loadcenter

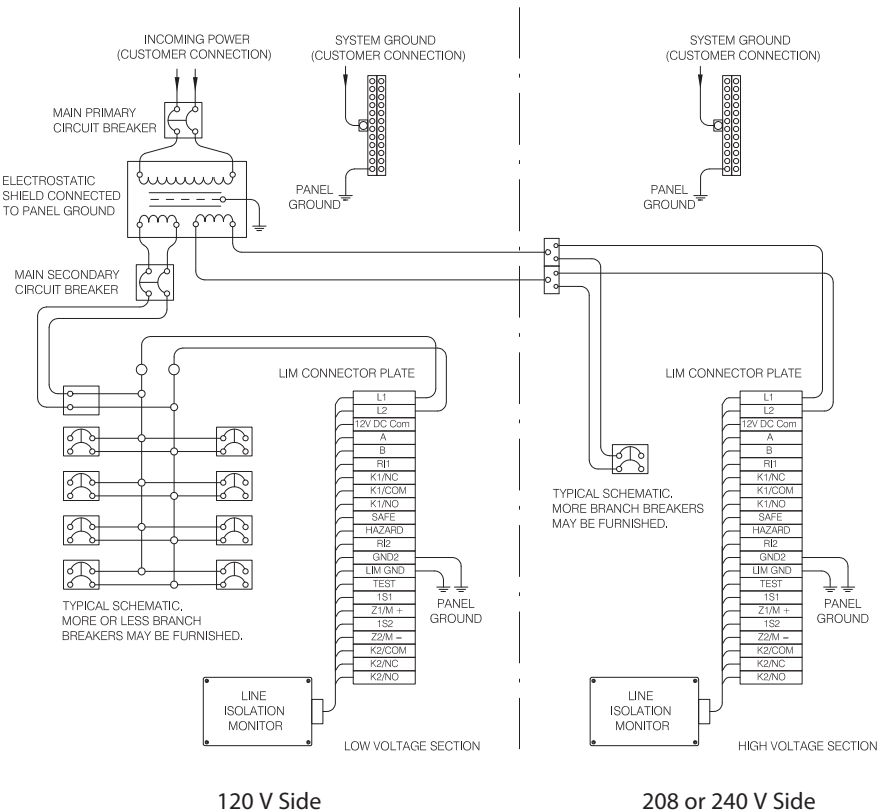
The loadcenter is an integral part of the isolated power panel. Included is a primary circuit breaker which provides protection for the isolation transformer. All isolated power panels may accommodate either plug-in (snap-in) or bolt-on branch circuit breakers.

Sample Outline: Dual Voltage Isolated Power Panel



- 1 - Stainless steel front trim
- 2 - Backbox, galvanized steel
- 3 - Backplate, galvanized steel
- 4 - Backplate mounting bracket
- 5 - Transformer shelf
- 6 - Transformer shelf mounting bracket
- 7 - Circuit breaker deadfront
- 8 - Stainless steel door with lock
- 9 - LIM fuses (optional)
- 10 - LIM circuit breaker, 2P (optional)
- 11 - Main, primary circuit breaker, 2P
- 12 - Main, secondary circuit breaker, 2P
- 13 - Branch circuit breakers, 2P
- 14 - Loadcenter
- 15 - Isolation transformer, dual secondary, single-phase
- 16 - Line isolation monitor (LIM), single-phase
- 17 - LIM connector plate
- 18 - Ground bus
- 19 - Distribution blocks

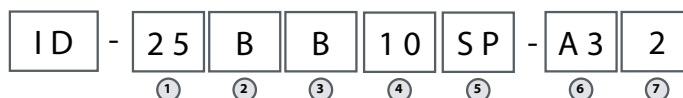
Sample Wiring Diagram: Dual Voltage Isolated Power Panel



Ordering Information: Dual Voltage Isolated Power Panel

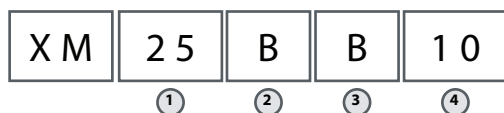
BENDER dual voltage panels are comprised of four assembly types: the transformer, backbox, front trim, and interior.

STEP 1: Interior - Dual Voltage Panel



- | | |
|---|--|
| <p>1 - KVA rating of transformer
25: 25 kVA</p> <p>2 - Primary voltage of transformer
B: 208 V E: 480 V
C: 240 V H: 220 V
D: 277 V J: 380 V</p> <p>3 - Secondary voltage of transformer
B: 208 V C: 240 V</p> <p>4 - KVA rating of 120 V secondary
10: 10 kVA</p> | <p>5 - Loadcenter/Panelboard Manufacturer
SP: Square D, Plug-On (Snap-In)
SB: Square D, Bolt-On
CP: Cutler-Hammer, Plug-On (Snap-In)
CB: Cutler-Hammer, Bolt-On
GP: General Electric, Plug-On (Snap-In)</p> <p>6 - Branch circuit breaker(s) rating, 208 or 240 V side
A2: 20 A A5: 50 A
A3: 30 A A6: 60 A</p> <p>7 - Qty. of branch circuit breakers, 208 or 240 V side
1: One 2: Two</p> |
|---|--|

STEP 2: Transformer



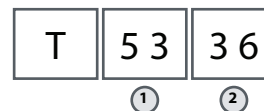
- 1 -** KVA rating of transformer
25: 25 kVA
- 2 -** Primary voltage of transformer
B: 208 V E: 480 V
C: 240 V H: 220 V
D: 277 V J: 380 V
- 3 -** Secondary voltage of transformer
B: 208 V C: 240 V
- 4 -** KVA of 120 V secondary
10: 10 kVA

STEP 3: Backbox



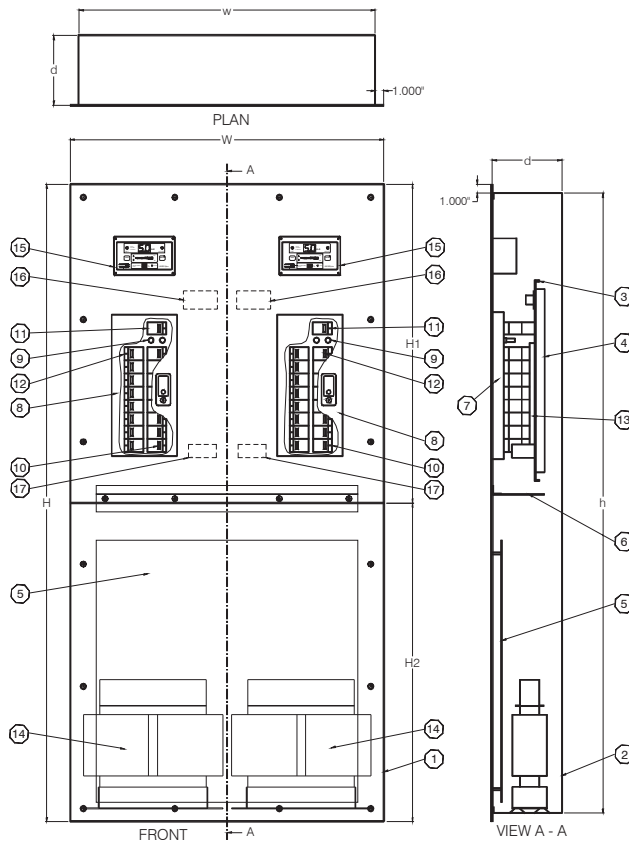
- 1 -** Height of backbox
51: 51"
- 2 -** Width of backbox
34: 34"
- 3 -** Depth of backbox
14: 14"
- 4 -** Type of mounting
S: Surface
If flush mounted, leave this item blank.

STEP 4: Front Trim



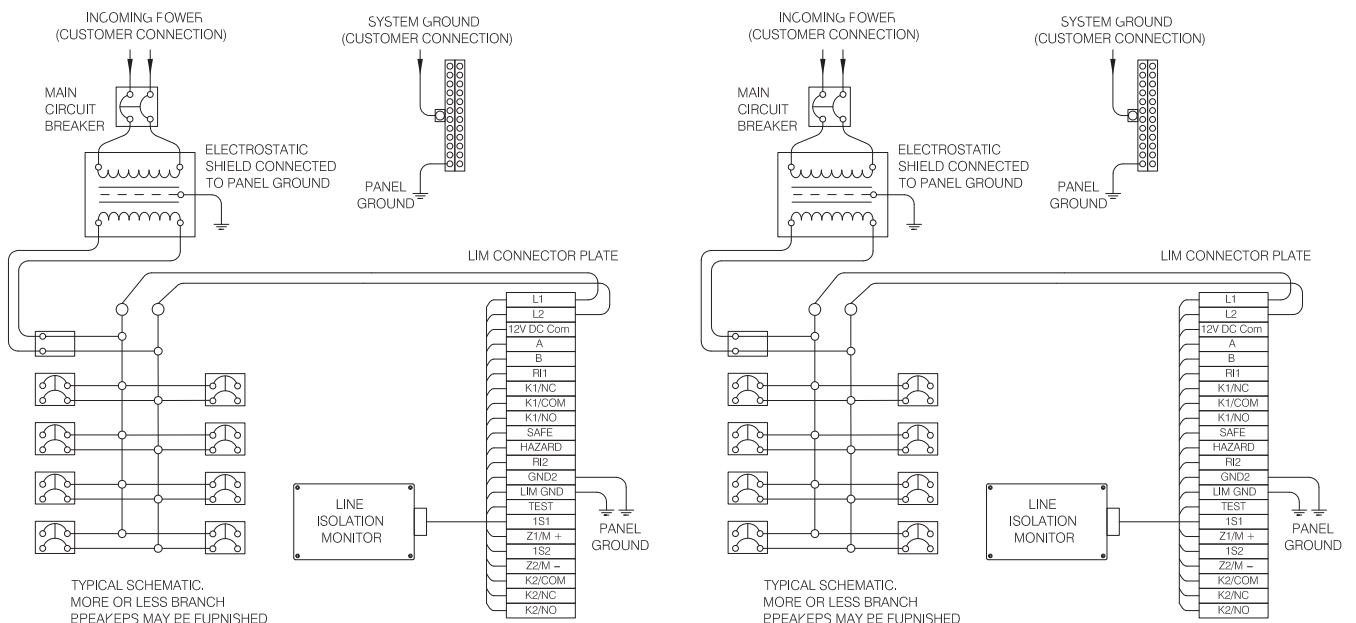
- 1 -** Height of front trim
53: 53", Flush Mount
51: 51", Surface Mount
- 2 -** Width of front trim
36: 36", Flush Mount
34: 34", Surface Mount

Sample Outline: Dual System Isolated Power Panel



- 1 - Stainless steel front trim, two (2) sections
- 2 - Backbox, galvanized steel
- 3 - Backplate, galvanized steel
- 4 - Backplate mounting bracket
- 5 - Heat shield, vertical
- 6 - Heat shield, horizontal
- 7 - Circuit breaker deadfront
- 8 - Stainless steel door with lock
- 9 - LIM fuses (optional)
- 10 - LIM circuit breaker, 2P (optional)
- 11 - Main circuit breaker, 2P
- 12 - Branch circuit breakers, 2P
- 13 - Loadcenter
- 14 - Isolation transformer, single-phase
- 15 - Line isolation monitor (LIM), single-phase
- 16 - LIM connector plate
- 17 - Ground bus

Sample Wiring Diagram: Dual System Isolated Power Panel



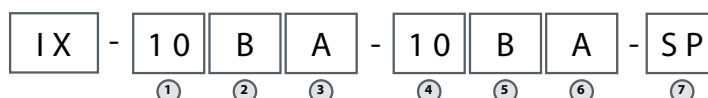
System 1

System 2

Ordering Information

BENDER dual system panels are comprised of four assembly types: the transformers, backbox, front trim, and interior.

STEP 1: Interior - Dual System Panel



System 1

- 1 - System 1 - Total kVA

03: 3 kVA	07: 7.5 kVA
05: 5 kVA	10: 10 kVA
- 2 - System 1 - Primary voltage

A: 120 V	G: 110 V
B: 208 V	H: 220 V
C: 240 V	I: 230 V
D: 277 V	J: 380 V
E: 480 V	
- 3 - System 1 - Secondary voltage

A: 120 V	G: 110 V
B: 208 V	H: 220 V
C: 240 V	I: 230 V

System 2

- 4 - System 2 - Total kVA

03: 3 kVA	07: 7.5 kVA
05: 5 kVA	10: 10 kVA
- 5 - System 2 - Primary voltage

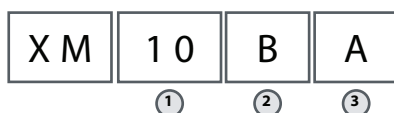
A: 120 V	G: 110 V
B: 208 V	H: 220 V
C: 240 V	I: 230 V
D: 277 V	J: 380 V
E: 480 V	
- 6 - System 2 - Secondary voltage

A: 120 V	G: 110 V
B: 208 V	H: 220 V
C: 240 V	I: 230 V

Both Systems

- 7 - Loadcenter/Panelboard Manufacturer
 - SP: Square D, Plug-On (Snap-In)
 - SB: Square D, Bolt-On
 - CP: Cutler-Hammer, Plug-On (Snap-In)
 - CB: Cutler-Hammer, Bolt-On
 - GP: General Electric, Plug-On (Snap-In)

STEP 2: Transformer* (Two Required)



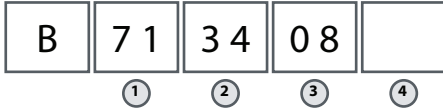
Note*: This step must be completed twice. Two transformers are required for a complete dual system isolated power panel.

- 1 - Total kVA of transformer

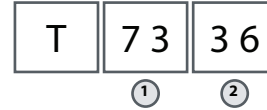
03: 3 kVA	07: 7.5 kVA
05: 5 kVA	10: 10 kVA
- 2 - Primary voltage of transformer

A: 120 V	G: 110 V
B: 208 V	H: 220 V
C: 240 V	I: 230 V
D: 277 V	J: 380 V
E: 480 V	
- 3 - Secondary voltage of transformer

A: 120 V	G: 110 V
B: 208 V	H: 220 V
C: 240 V	I: 230 V

STEP 3: Backbox


- 1 - Height of backbox
71: 71"
- 2 - Width of backbox
34: 34"
- 3 - Depth of backbox
08: 8"
- 4 - Type of mounting
S: Surface
If flush mounted, leave this option blank.

STEP 4: Front Trim


- 1 - Height of front trim
73: 73", Flush Mounted
71: 71", Surface Mounted
- 2 - Width of front trim
36: 36", Flush Mounted
34: 34", Surface Mounted

Spare Parts / Additional Parts Lists for Isolated Power Panels

Branch Circuit Breakers					
Model No.	Type	Brand	Amperage Rating	Line Rating	Ordering No.
QO220	Plug-On	Square-D	20 A	120/240 VAC, 1Ø, 2-pole, 10 kAIC	P 1230 0001
QOB220	Bolt-On	Square-D	20 A	120/240 VAC, 1Ø, 2-pole, 10 kAIC	P 1230 0093
QO215	Plug-On	Square-D	15 A	120/240 VAC, 1Ø, 2-pole, 10 kAIC	P 1230 0046
QOB215	Bolt-On	Square-D	15 A	120/240 VAC, 1Ø, 2-pole, 10 kAIC	P 1230 0065
BAB2020	Bolt-On	Cutler-Hammer	20 A	120/240 VAC, 1Ø, 2-pole, 10 kAIC	P 1230 0107
BAB2015	Bolt-On	Cutler-Hammer	15 A	120/240 VAC, 1Ø, 2-pole, 10 kAIC	P 1230 0036
CHP220	Plug-On	Cutler-Hammer	20 A	120/240 VAC, 1Ø, 2-pole, 10 kAIC	P 1230 0009
CHP215	Plug-On	Cutler-Hammer	15 A	120/240 VAC, 1Ø, 2-pole, 10 kAIC	P 1230 0063
THQP215	Plug-On	General Electric	15 A	120/240 VAC, 1Ø, 2-pole, 10 kAIC	P 1230 0099
THQP220	Plug-On	General Electric	20 A	120/240 VAC, 1Ø, 2-pole, 10 kAIC	P 1230 0100

Isolated Power Equipment and Accessories



MK2000 Series Remote Indicators

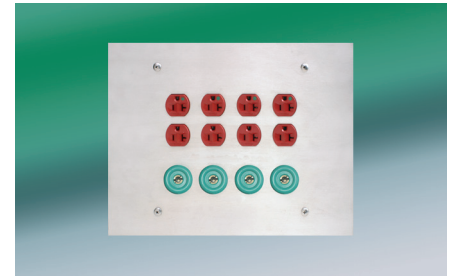
The MK2000 series provides visible and audible alarm indications in a remote location for the installed line isolation monitor. The standard model features alarm status LEDs, a mute button, and LED mute indication. A wide variety of options are available, including remote test button and transformer overload indication.

MK2000 series indicators are supplied with stainless steel wallplates for flush mounting.

GPM Series Power and Ground Modules

BENDER power and ground modules provide a combination of hospital grade power receptacles and/or hospital grade ground jacks. Straight-blade single, straight-blade duplex, and twist-to-lock receptacles can be provided in a wide array of combinations. Also available are hospital grade ground jacks to facilitate implementation of an equipotential environment.

Modules are provided on stainless steel wall plates that are compatible with standard contractor supplied electrical gang boxes. Galvanized steel backboxes are also available.



HGC Series Hospital Grade Ground Cords

BENDER hospital grade ground cords are available in various lengths for implementing an equipotential environment. Cords are highly flexible and are available with either a heavy duty clip or lug on one end, and terminal lug on the other.

Communication Solutions

BENDER provides complete communication solutions to keep your facility continuously notified of electrical issues. Advanced remote indicators for nurse stations and electrical stations provide simple and customizable notifications to personnel. Gateway devices provide integration into existing communication networks.



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