

# ISOLATED POWER PANELS DUAL SYSTEM

- **Applications**  
Single phase systems
- **Power Distribution**  
Dual loadcenters for dual sets of plug-on or bolt-on circuit breakers
- **Mounting**  
Available for flush or surface mounted applications
- **Advanced Technology**  
The BENDER LIM2000plus™ series Line Isolation Monitor (LIM) features self-test, self-calibration and optional load monitoring
- **Standards**  
UL 1047 - Isolated Power Systems Equipment
- **Warranty**  
Industry's first 5 year limited warranty



ISOLATED  
POWER PANEL  
DUAL SYSTEM

COMMITTED TO EXCELLENCE

## Introduction

ISOTROL SYSTEMS Type IPPDS Isolated Power Panels Dual System have been designed to provide isolated power to electrical circuits installed within operating rooms and other electrically susceptible patient care areas. Designed in strict compliance with Underwriters Laboratories Standards UL1047, UL1022 and UL50, the IPPDS offers the most current technology for all isolated power distribution requirements.

## General

The Type IPPDS typically includes two (2) single phase transformers, two (2) BENDER Line Isolation Monitors (LIMs), two (2) reference ground buses, two (2) primary circuit breakers, and two (2) sets of branch circuit breakers. The number of plug-on or bolt-on branch circuit breakers is limited to sixteen (16) for each section.

## Backbox

All backboxes are fabricated from 14GA galvanized steel. Surface mounted enclosures are finished with a coat of hospital ivory, epoxy enamel. Outline drawings shown on the following pages of this brochure provide additional dimensional and construction details.

## Front Trim

Manufactured from 14GA Type 304 Stainless Steel with a #4 brushed finish, the front trims contain doors with hidden hinges and a flush mounted key locks that cover the load centers. The front trim for flush mounted units extends 1" on all sides of the backbox. For surface mounted units, the front trim shall exactly match the dimensions of the backbox.

## Isolation Transformer

Isolation transformers are available with various primary and secondary single phase voltages. The transformer ratings are given on the isolation transformer data sheet found in ISOTROL's full catalog or by request.

## Line Isolation Monitor (LIM)

The BENDER LIM2000plus™ series Line Isolation Monitor provides a digital / analog display. The LIM is available in single or three phase models with readout and response values of 2 or 5mA. The LIM2000plus™ has a patented measuring principle and is capable of detecting all combinations of capacitive and resistive faults, including balanced, unbalanced and hybrid faults. A self-test and calibration function is also featured. The LIM2000plus™ series LIM contributes less than 35µA to the Total Hazard Current (THC). Available options include load monitoring and RS485 communication. For further information see the LIM2000plus™ series data sheet.



Line Isolation Monitor  
LIM2000plus™

## Loadcenter

The loadcenters are integral parts of the IPPDS. Included in each section is a primary circuit breaker which provides protection for each isolation transformer. All Isolated Power Panels Dual Systems can accommodate either plug-on or bolt-on circuit breakers in each section.

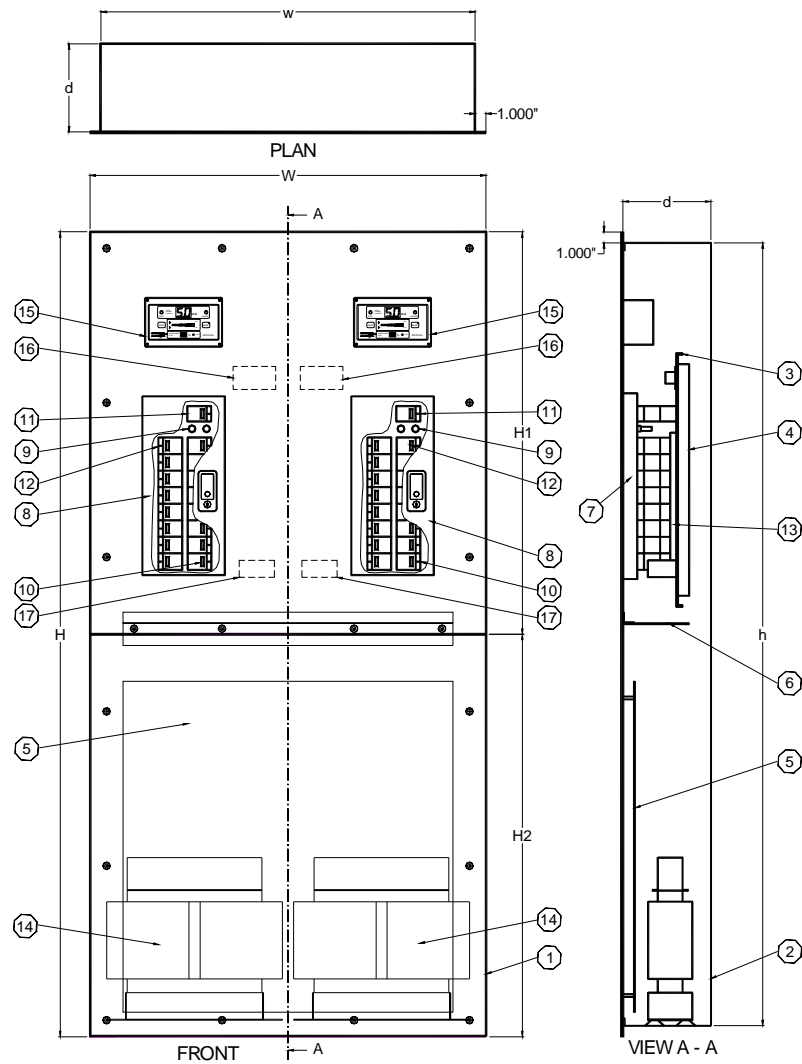
## Reference Ground Bus

The Type IPPDS is provided with two (2) twenty (20) point reference ground buses to satisfy internal grounding requirements and for connection to master ground modules and ground jacks in patient ground modules and receptacle ground modules.

## Support and Services

- On-site installation inspection and certification services
- System design assistance provided upon request
- Technical support hotline: (800) 833-6834

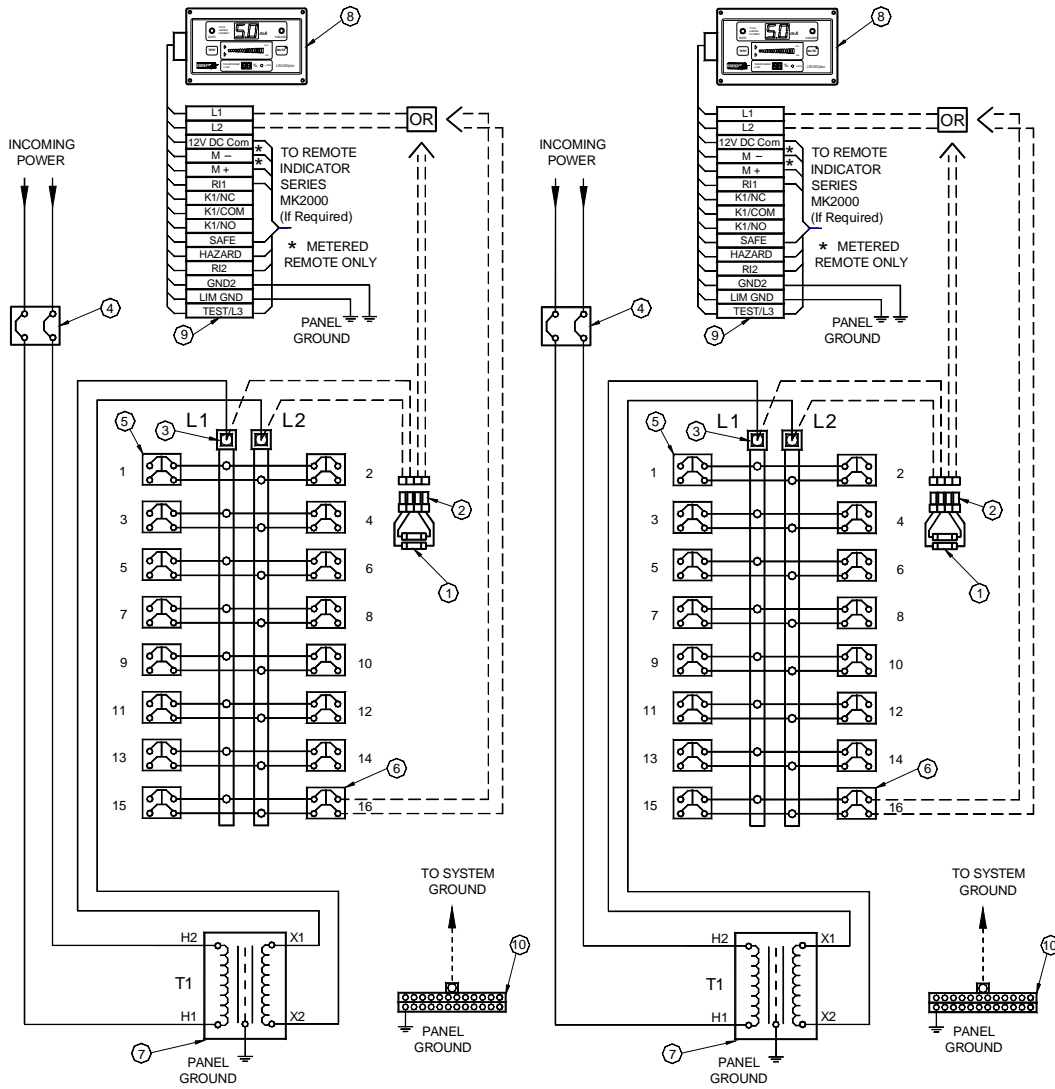
# Outline Drawing for IPPDS Single Phase 3 to 10kVA



BACKBOX DESIGNATION	TRANSFORMER kVA SIZE	DIMENSION					
		h	w	d	H	W	H1 H2
G	3, 5, 7.5, 10	71"	34"	8"	73"	36"	36.5"

- 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 w/Lock
- 9 LIM Fuses
- 10 LIM Circuit Breaker, 2P (Optional)
- 11 Main Circuit Breaker, 2P
- 12 Branch Circuit Breaker, 2P
- 13 Loadcenter
- 14 Isolation Transformer, 1Ph
- 15 Line Isolation Monitor (LIM), 1Ph
- 16 LIM Connector Plate
- 17 Ground Bus

# Wiring Diagram for IPPDS Single Phase 3 to 10kVA



- 1 LIM Fuses
- 2 LIM Fuses Disconnect
- 3 Loadcenter
- 4 Main Circuit Breaker, 2P
- 5 Branch Circuit Breaker, 2P
- 6 LIM Circuit Breaker, 2P (Optional)
- 7 Isolation Transformer, 1Ph
- 8 Line Isolation Monitor (LIM), 1Ph
- 9 LIM Connector Plate
- 10 Ground Bus

# Selection Guide for Isolated Power Panels Dual System (Type IPPDS)

When selecting the Isolated Power Panel for your application, use the Product Code below. If you have any questions or need further assistance, please call us using our toll-free number: (800) 833-6834.

## Code A - Basic Designation

IPPDS: Isolated Power Panel Dual System

## Code B - Transformer Power Rating

3: 3kVA 5: 5kVA 7: 7.5kVA 10:10kVA X:Special kVA

## Code C - Transformer Primary Voltage

A: 120V B: 208V C: 240V D: 277V  
E: 480V G: 220V H: 110V X: Special Voltage

## Code D - Transformer Secondary Voltage

A: 120V B: 208V C: 240V G: 220V H: 110V X: Special Voltage

## Code E - Phase

1: 1 Phase

## Code F - Loadcenter - Manufacturer, Size, and Type

C1: Cutler Hammer 12 Position Plug-On & Bolt-On  
C2: Cutler Hammer 16 Position Plug-On & Bolt-On  
CX: Cutler Hammer Lug-to-Lug Circuit Breakers (No Loadcenter)  
G1: General Electric 14 Position Plug-On only  
G2: General Electric 16 Position Plug-On only  
GX: General Electric Lug-to-Lug Circuit Breakers (No Loadcenter)  
S1: Square D 12 Position Plug-On & Bolt-On  
S2: Square D 16 Position Plug-On & Bolt-On  
SX: Square D Lug-to-Lug Circuit Breakers (No Loadcenter)

## Code G - Quantity of Branch Circuit Breakers

## Code H- Circuit Breaker Type

P: Plug-on B: Bolt-on L: Lug-to-lug

## Code I - Number of Circuit Breaker Openings in Deadfront (Must be less than or equal to Loadcenter positions)

## Code J - Backbox Sizes (Height x Width x Depth)

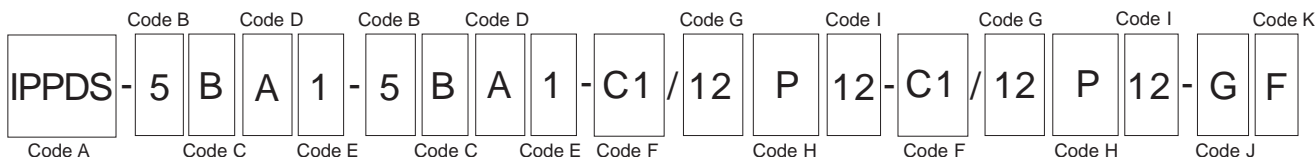
G : 71" x 34" x 8" Up to 10KVA  
X : Special

## Code K - Type of Mounting

F: Flush S: Surface

Call the factory for additional equipment or custom requirements

## Example for ISOTROL type IPPDS Product Code



# Suggested Specification for ISOTROL SYSTEMS Type IPPDS Isolated Power Panels Dual System

Furnish and install ISOTROL SYSTEMS Type IPPDS Isolated Power Panels Dual System in the locations shown on the architectural / electrical drawings. The IPPDS shall be UL Listed and labeled as an assembly. The Type IPPDS shall consist of the following:

## Backbox

Shall be flush or surface mounted as required, and shall be fabricated from 14GA galvanized steel. Surface mounted panels shall be finished with a coat of hospital ivory, epoxy enamel.

## Front Trim

Shall be fabricated from 14GA Type 304 Stainless Steel with #4 brushed finish. Each circuit breaker section shall be accessible from a door, with hidden hinges, that is flush with the front trims. Each door shall contain a flush lock that can be opened without a key when unlocked; all IPPDSs shall be keyed alike. The front trim shall contain one (1) cut out for each Line Isolation Monitor (LIM) which shall remain visible at all times. The front trim for flush mounted units extends 1" on all sides of the backbox. For surface mounted units, the front trim shall exactly match the dimensions of the backbox. The front trim shall be attached to the backbox by a minimum of twenty (20) #10-32 x 1" Stainless Steel Oval Head Phillips machine screws and twenty (20) #10 Stainless Steel finishing washers.

## Isolation Transformers

Shall be two (2) single phase, 50Hz or 60Hz, with primary and secondary voltages as indicated on the drawings. The transformers shall be manufactured using class H-rated insulation. Both transformers shall have an electrostatic shield between the primary and secondary windings which shall be grounded to the enclosure. The transformers' core shall be a stacked design and securely clamped. Core and coil shall be vacuum impregnated, with a final wrap of insulating material. The core and coils shall be isolated from the enclosure by means of isolation mounts. The weight of the transformers shall not be supported by shear connections.

Total leakage current to ground from the transformers secondary winding shall be in compliance with UL1047, Tables 30.1 and 30.2. Maximum sound level of transformer: 25dB for 5kVA units or less, 30dB for 7.5kVA units, and 35dB for 10kVA units. Temperature rise limited to 115 degree C above ambient under full load conditions. Transformer shall be UL Listed or Recognized as a component, for the voltages, amperage, and kVA rating required.

## Line Isolation Monitor

Shall be BENDER LIM2000plus™ series Line Isolation Monitor with solid state modular assemblies utilizing the dynamic principle of constantly monitoring the impedance between each circuit conductor and ground, and shall provide visual and audible indications of a first fault condition for each section.

Each LIM shall be capable of detecting all combinations of capacitive and resistive faults, including balanced, unbalanced and hybrid faults. The total hazard current shall be set at the factory to either 2mA or 5mA, and shall be field adjustable to either milliampere.

Each LIM shall contain a continuous display (digital / analog), an audible alarm device which shall sound in the event of a hazard condition, and a visual indication of the system status. A green LED shall indicate "SAFE" status, a red LED shall indicate "HAZARD" status, and an amber LED shall indicate that the audible alarm feature is in the "MUTE" mode. A "TEST" button shall be provided so the functions of each LIM can be tested by hospital personnel. Each digital display, indicating LEDs, and "TEST" button shall all be flush with the face of each LIM and shall be protected by a rugged Lexan front foil. Remote indicator connections shall also be provided.

Each LIM shall contain overload protection with an automatic reset feature. It shall be possible to order the LIM with an optional RS485 communication port. Each LIM shall be UL Recognized as a component.

## Primary Circuit Breakers

Shall be one (1), in each section, two-pole sized in accordance with NFPA 70 (NEC) and UL1047 Standard based on the transformer primary voltage and kVA ratings as shown on the contract documents, and shall be full size, thermal magnetic type, minimum 10kAIC.

## Secondary Branch Circuit Breakers

Shall be two-pole, ampacities, and quantities based on contract drawings. Sized in accordance with NFPA 70 (NEC) and UL1047 Standards. Shall be full size and thermal magnetic type with a minimum 10kAIC.

## Reference Ground Bus

Shall contain a minimum of one (1) #4-2/0 main lug and nineteen (19) #14-4 grounding lugs.

Specifications and other data subject to change without notice.

## Our Address ISOTROL SYSTEMS

700 Fox Chase  
Coatesville, PA 19320  
Phone: 800-833-6834  
610-383-9655  
Fax: 610-383-7100  
E-mail: isotrol@bender.org

