

# G&W

Engineered to order. Built to last.

# TRIDENT<sup>®</sup>

PADMOUNT SOLID DIELECTRIC SWITCHGEAR CATALOG





▲ G&W headquarters in Bolingbrook, IL USA

## COMPANY PROFILE

Since 1905, G&W Electric has helped energize the world with innovative power system solutions. With the introduction of the first disconnecting cable terminating device, G&W began to build a reputation for engineering custom solutions to meet the needs of system designers. Solutions which today have extended far beyond cable accessory products and into the latest in load and fault interrupting switchgear, reclosers, system protection equipment and distribution automation.

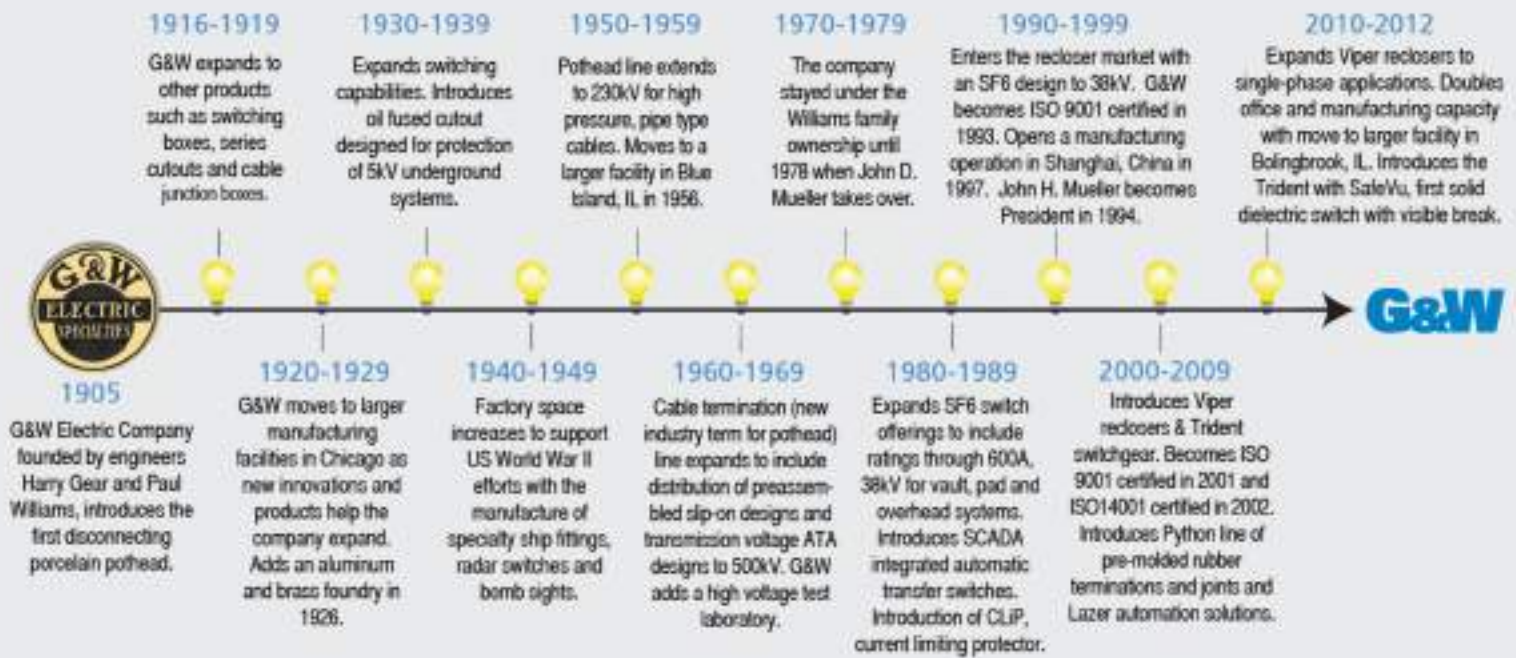
## HEADQUARTERS

G&W headquarters is located in Bolingbrook, IL, USA, a suburb of Chicago. G&W also has manufacturing facilities or sales offices in China, Mexico, Canada, India, Singapore and Brazil. G&W covers the globe with product installations and sales representation in over 100 countries and all seven continents.



G&W Electric Facilities:
G&W Electric Co. Headquarters (Bolingbrook, IL, USA)
G&W China (Shanghai)
G&W Canada (Mississauga, Ontario)
G&W Mexico (San Luis Potosi)
G&W do Brasil (Salvador)
G&W sales office (Dubai)
G&W sales office (Delhi, India)
G&W sales office (Singapore)
Manufacturer's Brass and Aluminum Foundry (Blue Island, IL, USA)

# OVER 110 YEARS SERVING OUR MARKETS



## G&W PRODUCT OVERVIEW



Single and Three Phase Solid Dielectric Reclosers



Solid Dielectric Underground Distribution Switchgear



SF6 Underground Distribution Switchgear



System Automation and Smart Grid Solutions



System Protection Equipment



Transmission and Distribution Cable Accessories

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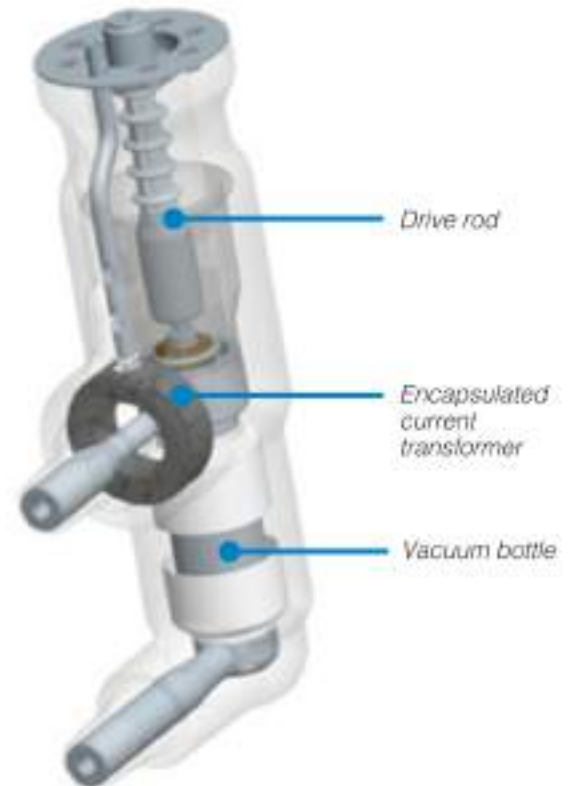
## WHAT IS SOLID DIELECTRIC INSULATION?

G&W's solid dielectric insulation is a field proven epoxy which is used to insulate the high voltage connections of a vacuum switch. The load break and fault interrupting vacuum bottle and bushing conductors are fully over molded creating a single phase module. Each module is then coated with a semi-conductive paint creating a continuous grounding surface for a truly dead front design. For three phase switches, three modules are combined together to create one way of the switch.

Each module can also include an integral current transformer fully protected by the solid dielectric epoxy. This ensures that the transformer is impervious to environmental conditions and insulated from extreme temperatures.

G&W's molding expertise allows for various options including 200A bushing wells or 600A apparatus bushings. The rugged epoxy surface minimizes the force required for removing elbow connections compared to rubber-to-rubber junctions. Different module orientations are available which permit cable entry from the front, back, or bottom of the unit.

The solid dielectric insulations and vacuum bottle combination make the Trident switchgear suitable for wet and corrosive environments, vertical or horizontal mounting and use in any altitude.



## WHEN YOU NEED VISIBLE BREAK... TRIDENT WITH SAFEVU™

Trident switches are available with the SafeVu™ option. These switches include an innovative visible break feature built into the switch, which eliminates the need to remove elbows or use externally mounted components to provide a visible open. The SafeVu operating handle is operable via hook stick or rope rigging, making it ideal for subsurface applications where space or safety practices prevent the operator from entering the vault to create a visible break.



▲ Close up of integrated visible break in the open position

### DESCRIPTION

The visible break is achieved with a blade type switch incorporated within the solid dielectric module. The blade is in series with the vacuum interrupter and provides a clear visible open. The blade is easily visible through a viewing window molded as an integral part of each module.



▲ Internal components are shown outside the module as reference.

# Multi-way Trident Solid Dielectric Switches

## FRONT ACCESS



### FRONT ACCESS

Front Access Trident Switches provide a solution for environments where space or aesthetics are critical factors:

- Single Side Entry – There are only doors on one side of the pad mount enclosure which means the enclosure can be placed close to a structure
- Easy Access – All components, connections, and operators are located within one compartment
- Flexible Configurations – Switches can range from a two way (in and out) to 6 way and can include inverted designs (bushings towards the top) or bus-tie options.

# Multi-way Trident Solid Dielectric Switches

## FRONT/BACK ACCESS



### FRONT/BACK ACCESS

Front/Back Access Trident Switches provide a compact foot print in a traditional switch design:

- Two Side Entry – With two entry points, one side of the switch can be designated Line (Source) and the other Load to simplify operations
- Compact Foot print – The Front/Back switches can be designed to fit on existing or pre-manufactured pads to simplify installation

# Multi-way Trident Solid Dielectric Switches

Trident solid dielectric insulated switches provide the total life cycle cost and operational benefits of fuseless, electronically controlled, resettable overcurrent protection, with the safety and maintenance benefits of an environmentally friendly dead-front design.

The Trident utilizes G&W's time proven, submersible epoxy insulation to fully encapsulate load and fault interrupting vacuum interrupters. This solid dielectric insulation eliminates the degradation of dielectric integrity commonly associated with oil and air insulated switchgear.

## PLS SWITCH SERIES

The Trident PLS Series is available in two through six way configurations, in any combination of three phase load break switch ways and three phase fault interrupter ways. The fault interrupter utilizes a trip-free mechanism, which provides interruption independent of the operating handle when closing into a fault. Viewing windows provide visible indication of the contact position.

## APPLICATIONS

Trident load and fault interrupting combination switches provide a direct replacement for power fused air and vacuum-in-oil switchgear. Some ideal applications include:

**Transformer and Motor Protection** — The three phase trip feature and high continuous current make the PLS switches ideal for protecting three phase motors and transformer loads.

**Loop Switching** — Standard 600A loop switching is accomplished using field proven vacuum switching and solid dielectric insulation. Switching through 630A provides up to 12.5kA symmetric fault protection using resettable, electronically controlled vacuum interrupters. The vacuum interrupters also function as load break switches.

**Access Options** — Trident switches are available in a Front Access design, with operating handles and bushings on the same side of the switch, and a Front/Back Access design, with operating handles and bushings on both sides of the switch.



▲ Trident PLS Switch Series

## ADDITIONAL FEATURES

**Visible Break** — The load break and three phase fault interrupter ways are available with G&W's SafeVu feature, which provides an integrated visible break disconnect switch in series with the vacuum interrupter. This eliminates the need to remove elbows or use externally mounted linkage systems to provide a visible open. Switches equipped with the SafeVu feature incorporate redundant mechanical interlocks to ensure the load break switch is open prior to the operation of the visible break switch.

## TESTING

Trident switches are designed and tested to applicable standards including IEEE C37.74 (IEEE C37.71 and C37.72), IEEE 386, IEC 60265, IEEE 592, and IEEE C57.12.28. All fault interrupter devices have passed IEEE C37.60. Trident switches are RUS accepted.

Fully encapsulated current transformers provide power and sensing for G&W's Vacuum Interrupter controls. The controls emulate the most common time current curves (TCC) for power fuses, mechanical relays, and fuse links. Control options include Ground Fault (Phase Imbalance), Time Delays, and Inrush Restraint (Cold Load Pickup).



# Multi-way Trident Solid Dielectric Switches

## FEATURES AND BENEFITS

Features	Benefits
Epoxy Insulation (No oil or SF6 gas, and dead-front design)	No maintenance or monitoring system necessary, lowest total life cycle costs
	Dead-front design provides increased operator safety by eliminating all exposed live parts
	Epoxy is inert, environmentally friendly, with no EPA usage restrictions
Resettable Vacuum Interrupter Mechanism	No fuses or fuse links to stock and replace
Integral self-powered overcurrent protection available	Integrated solution with fully encapsulated current transformers and no external power source or PT required

## RATINGS

The switch is designed, tested and built per IEEE C37.74 for load break switching, IEEE C37.60 for fault interrupting, IEEE 386 for bushing specification, and IEC 60529 for environmental protection rating. Certified test reports are available.

Load Break Ratings			
Voltage Class	15kV *	25kV	35kV
Max System Voltage	15.5kV	27kV	38kV
BIL	110kV †	125kV	150kV
Continuous Current	630A	630A	630A
Load Break Current	630A	630A	630A
AC Withstand, 1 minute	35kV	60kV	70kV
AC Withstand, Production, 1 minute	34kV	40kV	50kV
DC Withstand, 15 minutes	53kV	78kV	103kV
Momentary Current, RMS, asym	20kA	20kA	20kA
Fault-Close 3-times, asym	20kA	20kA	20kA
1 Second Current, sym	12.5kA	12.5kA	12.5kA
Load Break Switch Mechanical Operations	2,000	2,000	2,000

(\*) Integrated visible break available on 15kV load break and three phase fault interrupters.

(†) BIL impulse rating is 95kV when using integrated visible break feature.

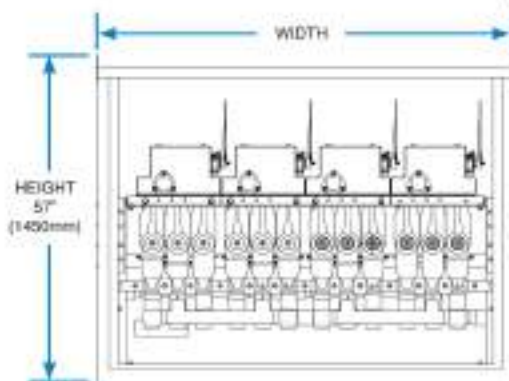
Fault Interrupting Ratings			
Voltage Class	15kV *	25kV	35kV
Max System Voltage	15.5kV	27kV	38kV
BIL	110kV †	125kV	150kV
Continuous Current	630A	630A	630A
AC Withstand, 1 minute	35kV	60kV	70kV
AC Withstand, Production, 1 minute	34kV	40kV	50kV
DC Withstand, 15 minutes	53kV	78kV	103kV
Fault Interrupting Current, sym	12.5kA	12.5kA	12.5kA
Vacuum Interrupter Mechanical Operations	2,000	2,000	2,000

### IEEE C37.60 Fault Interrupting Duty

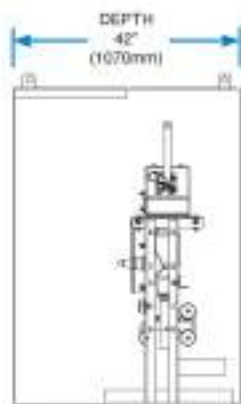
Percent of Maximum Interrupting Rating	Approximate Interrupting Current, Amps	Number of Fault Interruptions
15-20%	2,000	44
45-55%	6,000	56
90-100%	12,500	16
Total Number of Fault Interruptions: 116		

# Front Access

## PLS-FA SWITCH SERIES



FRONT



SIDE

Depth = 42in (1070mm)  
48in (1220mm) with SafeVu feature  
with standard 24" cable compartment

Height = 57 in (1450 mm)  
with standard 24" Bushing height.

Dimensions are approximate.  
Do not use for construction.

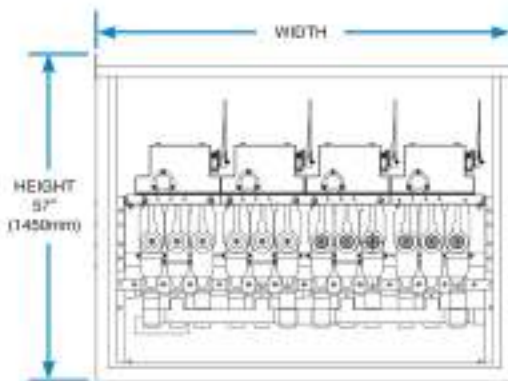
Model	One-line Diagram	Voltage (kv)	Catalog Number	Approximate	
				Width Inches (mm)	Weight lbs (kg)
6		15	PLS32-376-12-6FA	71 (1800)	1750 (800)
			PLS32-376-12-6FAVU*	71 (1800)	1850 (800)
		25	PLS32-386-12-6FA	71 (1800)	1750 (800)
7		35	PLS32-396-12-6FA	71 (1800)	1750 (800)
		15	PLS31-376-12-7FA	71 (1800)	1750 (800)
			PLS31-376-12-7FAVU*	71 (1800)	1850 (800)
9		25	PLS31-386-12-7FA	71 (1800)	1750 (800)
		35	PLS31-396-12-7FA	71 (1800)	1750 (800)
		15	PLS42-376-12-9FA	89 (2260)	1800 (800)
10			PLS42-376-12-9FAVU*	89 (2260)	1900 (900)
		25	PLS42-386-12-9FA	89 (2260)	1800 (800)
		35	PLS42-396-12-9FA	89 (2260)	1800 (800)
11		15	PL44-376-20-10FA	89 (2260)	1800 (800)
			PL44-376-20-10FAVU*	89 (2260)	1900 (900)
		25	PL44-386-20-10FA	89 (2260)	1800 (800)
12		35	PL44-396-20-10FA	89 (2260)	1800 (800)
		15	PLS43-376-12-11FA	89 (2260)	1800 (800)
			PLS43-376-12-11FAVU*	89 (2260)	1900 (900)
13		25	PLS43-386-12-11FA	89 (2260)	1800 (800)
		35	PLS43-396-12-11FA	89 (2260)	1800 (800)
		15	PLS41-376-12-12FA	89 (2260)	1800 (800)
40			PLS41-376-12-12FAVU*	89 (2260)	1900 (900)
		25	PLS41-386-12-12FA	89 (2260)	1800 (800)
		35	PLS41-396-12-12FA	89 (2260)	1800 (800)
50		15	PL33-376-20-13FA	71 (1800)	1750 (800)
			PL33-376-20-13FAVU*	71 (1800)	1850 (800)
		25	PL33-386-20-13FA	71 (1800)	1750 (800)
51		35	PL33-396-20-13FA	71 (1800)	1750 (800)
		15	PS40-376-12-40FA	89 (2260)	1800 (800)
			PS40-376-12-40FAVU*	89 (2260)	1900 (900)
52		25	PS40-386-12-40FA	89 (2260)	1800 (800)
		35	PS40-396-12-40FA	89 (2260)	1800 (800)
		15	PS50-376-12-50FA	107 (2720)	2150 (1000)
55			PS50-376-12-50FAVU*	107 (2720)	2300 (1000)
		25	PS50-386-12-50FA	107 (2720)	2150 (1000)
		35	PS50-396-12-50FA	107 (2720)	2150 (1000)
56		15	PLS51-376-12-51FA	107 (2720)	2150 (1000)
			PLS51-376-12-51FAVU*	107 (2720)	2300 (1000)
		25	PLS51-386-12-51FA	107 (2720)	2150 (1000)
57		35	PLS51-396-12-51FA	107 (2720)	2150 (1000)
		15	PLS52-376-12-52FA	107 (2720)	2150 (1000)
			PLS52-376-12-52FAVU*	107 (2720)	2300 (1000)
58		25	PLS52-386-12-52FA	107 (2720)	2150 (1000)
		35	PLS52-396-12-52FA	107 (2720)	2150 (1000)

\*VU indicates the switch includes the SafeVu integrated visible break.

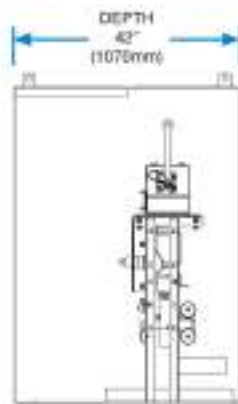
Visit [gwelec.com/specs.html](http://gwelec.com/specs.html)  
for electronic versions of  
guide specifications.

# Front Access

## PLS-FA SWITCH SERIES



FRONT



SIDE

Depth= 42in (1070mm)  
48in (1220mm) with SafeVu feature  
with standard 24" cable compartment

Height = 57 in (1450 mm)  
with standard 24" Bushing height.

Dimensions are approximate.  
Do not use for construction.

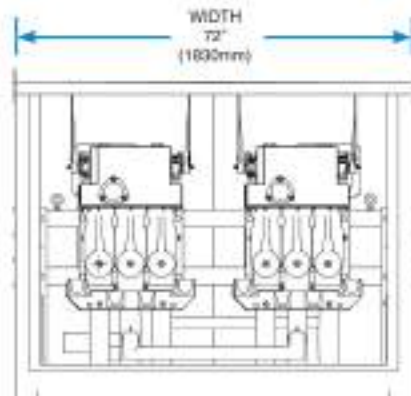
Model	One-line Diagram	Voltage (kv)	Catalog Number	Approximate	
				Width Inches (mm)	Weight lbs (kg)
53		15	PLS53-376-12-53FA	107 (2720)	2150 (1000)
			PLS53-376-12-53FAVU*	107 (2720)	2300 (1000)
		25	PLS53-386-12-53FA	107 (2720)	2150 (1000)
			PLS53-396-12-53FA	107 (2720)	2150 (1000)
54		15	PLS54-376-12-54FA	107 (2720)	2150 (1000)
			PLS54-376-12-54FAVU*	107 (2720)	2300 (1000)
		25	PLS54-386-12-54FA	107 (2720)	2150 (1000)
			PLS54-396-12-54FA	107 (2720)	2150 (1000)
55		15	PL55-376-20-55FA	107 (2720)	2150 (1000)
			PL55-376-20-55FAVU*	107 (2720)	2300 (1000)
		25	PL55-386-20-55FA	107 (2720)	2150 (1000)
			PL55-396-20-55FA	107 (2720)	2150 (1000)
60		15	PS60-376-12-60FA	125 (3180)	2600 (1200)
			PS60-376-12-60FAVU*	125 (3180)	2800 (1300)
		25	PS60-386-12-60FA	125 (3180)	2600 (1200)
			PS60-396-12-60FA	125 (3180)	2600 (1200)
61		15	PLS61-376-12-61FA	125 (3180)	2600 (1200)
			PLS61-376-12-61FAVU*	125 (3180)	2800 (1300)
		25	PLS61-386-12-61FA	125 (3180)	2600 (1200)
			PLS61-396-12-61FA	125 (3180)	2600 (1200)
62		15	PLS62-376-12-62FA	125 (3180)	2600 (1200)
			PLS62-376-12-62FAVU*	125 (3180)	2800 (1300)
		25	PLS62-386-12-62FA	125 (3180)	2600 (1200)
			PLS62-396-12-62FA	125 (3180)	2600 (1200)
63		15	PLS63-376-12-63FA	125 (3180)	2600 (1200)
			PLS63-376-12-63FAVU*	125 (3180)	2800 (1300)
		25	PLS63-386-12-63FA	125 (3180)	2600 (1200)
			PLS63-396-12-63FA	125 (3180)	2600 (1200)
64		15	PLS64-376-12-64FA	125 (3180)	2600 (1200)
			PLS64-376-12-64FAVU*	125 (3180)	2800 (1300)
		25	PLS64-386-12-64FA	125 (3180)	2600 (1200)
			PLS64-396-12-64FA	125 (3180)	2600 (1200)
65		15	PLS65-376-12-65FA	125 (3180)	2600 (1200)
			PLS65-376-12-65FAVU*	125 (3180)	2800 (1300)
		25	PLS65-386-12-65FA	125 (3180)	2600 (1200)
			PLS65-396-12-65FA	125 (3180)	2600 (1200)
66		15	PL66-376-20-66FA	125 (3180)	2600 (1200)
			PL66-376-20-66FAVU*	125 (3180)	2800 (1300)
		25	PL66-386-20-66FA	125 (3180)	2600 (1200)
			PL66-396-20-66FA	125 (3180)	2600 (1200)

\*VU indicates the switch includes the SafeVu integrated visible break.

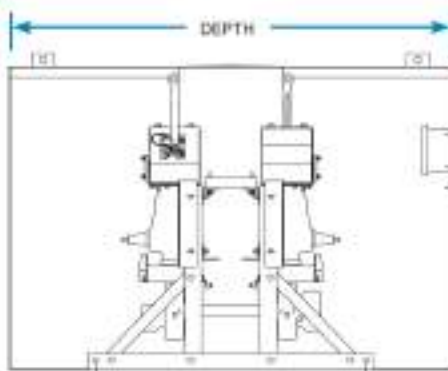
Visit [gwelec.com/specs.html](http://gwelec.com/specs.html)  
for electronic versions of  
guide specifications.

# Front/Back Access

## PLS-FB SWITCH SERIES



FRONT



SIDE

Width = 72 in (1830 mm)

Height = 57 in (1450 mm)  
with standard 24" Bushing height.

Depth includes 24" cable compartments

Dimensions are approximate.  
Do not use for construction.

Model	One-line Diagram	Voltage (kv)	Catalog Number	Approximate	
				Depth Inches (mm)	Weight lbs (kg)
6		15	PLS32-376-12-6FB	77 (1960)	1900 (900)
			PLS32-376-12-6FBVU*	92 (2340)	2100 (1000)
		25	PLS32-386-12-6FB	77 (1960)	1900 (900)
7		15	PLS31-376-12-7FB	77 (1960)	1900 (900)
			PLS31-376-12-7FBVU*	92 (2340)	2100 (1000)
		25	PLS31-386-12-7FB	77 (1960)	1900 (900)
9		15	PLS42-376-12-9FB	77 (1960)	2100 (1000)
			PLS42-376-12-9FBVU*	92 (2340)	2400 (1100)
		25	PLS42-386-12-9FB	77 (1960)	2100 (1000)
10		15	PL44-376-20-10FB	77 (1960)	2100 (1000)
			PL44-376-20-10FBVU*	92 (2340)	2400 (1100)
		25	PL44-386-20-10FB	77 (1960)	2100 (1000)
11		15	PLS43-376-12-11FB	77 (1960)	2100 (1000)
			PLS43-376-12-11FBVU*	92 (2340)	2400 (1100)
		25	PLS43-386-12-11FB	77 (1960)	2100 (1000)
12		15	PLS41-376-12-12FB	77 (1960)	2100 (1000)
			PLS41-376-12-12FBVU*	92 (2340)	2400 (1100)
		25	PLS41-386-12-12FB	77 (1960)	2100 (1000)
13		15	PL33-376-20-13FB	77 (1960)	1900 (900)
			PL33-376-20-13FBVU*	92 (2340)	2100 (1000)
		25	PL33-386-20-13FB	77 (1960)	1900 (900)
40		15	PS40-376-12-40FB	77 (1960)	2100 (1000)
			PS40-376-12-40FBVU*	92 (2340)	2400 (1100)
		25	PS40-386-12-40FB	77 (1960)	2100 (1000)
		35	PS40-386-12-40FB	77 (1960)	2100 (1000)

\*VU indicates the switch includes the SafeVu integrated visible break.

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for electronic versions of  
guide specifications.

# Two-way Trident Solid Dielectric Switches

Trident solid dielectric insulated switches provide the total life cycle cost and operational benefits of fuseless, electronically controlled, resettable overcurrent protection, with the safety and maintenance benefits of an environmentally friendly dead-front design.

The Trident utilizes G&W's time proven, submersible epoxy insulation to fully encapsulate load and fault interrupting vacuum interrupters. This solid dielectric insulation eliminates the degradation of dielectric integrity commonly associated with oil and air insulated switchgear.

## CONFIGURATIONS

The two way Trident is available as a loadbreak switch or a fault interrupter. The fault interrupter utilizes a trip-free mechanism, which provides interruption independent of the operating handle when closing into a fault. Viewing windows provide visible indication of the contact position.

## APPLICATIONS

Trident load and fault interrupting switches provide a direct replacement for power fused air and vacuum-in-oil switchgear. Some ideal applications include:

**Transformer and Motor Protection** — The three phase trip feature and high continuous current make the two way Trident fault interrupters switches ideal for protecting three phase motors and transformer loads.

**Access Options** — Trident switches are available in a Front Access design, with operating handles and bushings on the same side of the switch, and a low profile Front/Back Access design, with bushings on both sides of the switch.

## ADDITIONAL FEATURES

**Visible Break** — The Front Access two way Trident is available with G&W's SafeVu feature, which provides an integrated visible break disconnect switch in series with the vacuum interrupter. This eliminates the need to



▲ Front Access Design

remove elbows or use externally mounted linkage systems to provide a visible open. Switches equipped with the SafeVu feature incorporate redundant mechanical interlocks to ensure the load break switch is open prior to the operation of the visible break switch.

## TESTING

Trident switches are designed and tested to applicable standards including IEEE C37.74 (IEEE C37.71 and C37.72), IEEE 386, IEC 60265, IEEE 592, and IEEE C57.12.28. All fault interrupter devices have passed IEEE C37.60. Trident switches are RUS accepted.

Fully encapsulated current transformers provide power and sensing for G&W's Vacuum Interrupter controls. The controls emulate the most common time current curves (TCC) for power fuses, mechanical relays, and fuse links. Control options include Ground Fault (Phase Imbalance), Time Delays, and Inrush Restraint (Cold Load Pickup).

# Two-way Trident Solid Dielectric Switches

## FEATURES AND BENEFITS

Features	Benefits
Epoxy Insulation (No oil or SF6 gas, and dead-front design)	No maintenance or monitoring system necessary, lowest total life cycle costs
	Dead-front design provides increased operator safety by eliminating all exposed live parts
	Epoxy is inert, environmentally friendly, with no EPA usage restrictions
Resettable Vacuum Interrupter Mechanism	No fuses or fuse links to stock and replace
Integral self-powered overcurrent protection available	Integrated solution with fully encapsulated current transformers and no external power source or PT required

## RATINGS

The switch is designed, tested and built per IEEE C37.74 for load break switching, IEEE C37.60 for fault interrupting, IEEE 386 for bushing specification, and IEC 60529 for environmental protection rating. Certified test reports are available.

Load Break Ratings			
Voltage Class	15kV *	25kV	35kV
Max System Voltage	15.5kV	27kV	38kV
BIL	110kV †	125kV	150kV
Continuous Current	630A	630A	630A
Load Break Current	630A	630A	630A
AC Withstand, 1 minute	35kV	60kV	70kV
AC Withstand, Production, 1 minute	34kV	40kV	50kV
DC Withstand, 15 minutes	53kV	78kV	103kV
Momentary Current, RMS, asym	20kA	20kA	20kA
Fault-Close 3-times, asym	20kA	20kA	20kA
1 Second Current, sym	12.5kA	12.5kA	12.5kA
Load Break Switch Mechanical Operations	2,000	2,000	2,000

Fault Interrupting Ratings			
Voltage Class	15kV *	25kV	35kV
Max System Voltage	15.5kV	27kV	38kV
BIL	110kV †	125kV	150kV
Continuous Current	630A	630A	630A
AC Withstand, 1 minute	35kV	60kV	70kV
AC Withstand, Production, 1 minute	34kV	40kV	50kV
DC Withstand, 15 minutes	53kV	78kV	103kV
Fault Interrupting Current, sym	12.5kA	12.5kA	12.5kA
Vacuum Interrupter Mechanical Operations	2,000	2,000	2,000

### IEEE C37.60 Fault Interrupting Duty

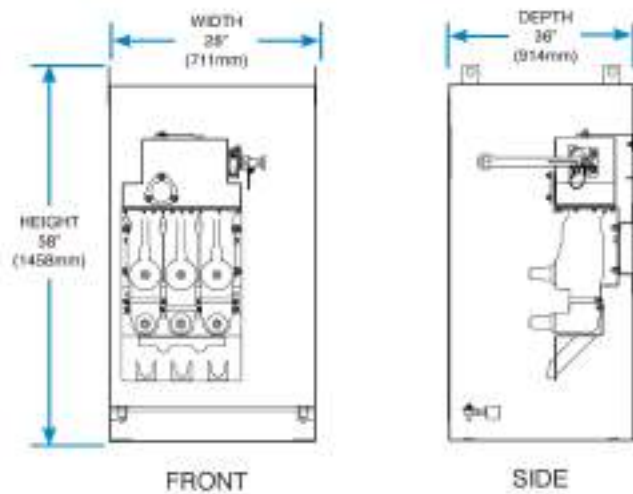
Percent of Maximum Interrupting Rating	Approximate Interrupting Current, Amps	Number of Fault Interruptions
15-20%	2,000	44
45-55%	6,000	56
90-100%	12,500	16
Total Number of Fault Interruptions: 116		

(\* ) Integrated visible break available on 15kV load break and three phase fault interrupters.

(†) BIL impulse rating is 95kV when using integrated visible break feature.

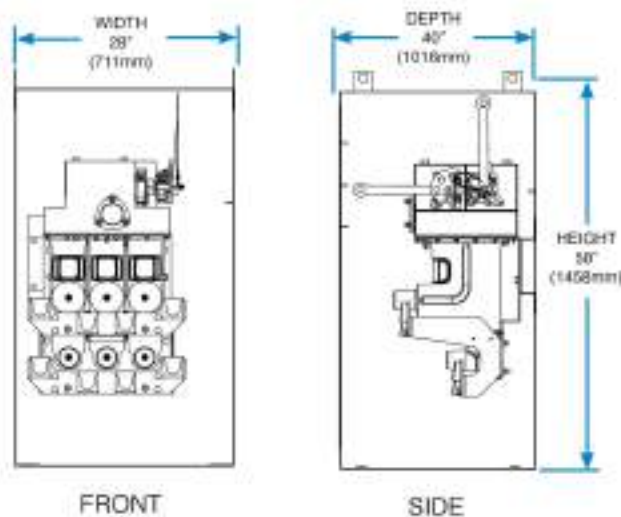
# Two-way Trident Solid Dielectric Switches

## FRONT ACCESS SWITCH SERIES



Model	One-line Diagram	Voltage (kv)	Catalog Number
3		15	PL21-376-20-3FA
		25	PL21-386-20-3FA
		35	PL21-396-20-3FA
4		15	PS20-376-12-4FA
		25	PS20-386-12-4FA
		35	PS20-396-12-4FA

## FRONT ACCESS WITH SAFEVU SWITCH SERIES



Model	One-line Diagram	Voltage (kv)	Catalog Number
3		15	PL21-376-20-3FAVU
4			PS20-376-12-4FAVU

Depth includes 24" cable compartment

Dimensions are approximate.  
Do not use for construction.

# Components for Three Phase Switches

## OVERCURRENT PROTECTION

Fault interrupters are equipped with an encapsulated 500:1 or 1000:1 current transformer and a G&W self powered Vacuum Interrupter Control. Alternately, a wide variety of protective relay packages are available, including relays from SEL and other leading relay suppliers.

## EXTERNAL CTs AND EXTERNAL PTs

Metering or relaying accuracy current and potential transformers are available for use with protective relay packages.



▲ Example of integrated external transformer

## OPERATING HANDLE

G&W will select the appropriate handle based on the application. Handles are operable via hook stick or rope rigging.

## KEY INTERLOCKS

Key interlocks may be used to ensure safe coordination of equipment. All Trident ways can be equipped with provisions for key interlocks. Key interlocks can be provided, and factory installed if required.



▲ Key interlock

## AUXILIARY CONTACTS

Auxiliary contacts are mounted internal to the mechanism housing to provide remote indication of switch contact position. One normally open and one normally closed Form C contact is provided. A junction box is available with terminal strip connections for up to four auxiliary contacts.

## MOTOR ACTUATOR


Automation begins with the addition of motor actuators to a manual switch. These actuators can be factory installed for new equipment or retrofitted to switchgear installed in the field. (Refer to the Motor Operator catalog, MO11, for motor control options.)



▲ Trident with Motor Actuator



# Overcurrent Protection Options

Type		Trip Selection	Enclosure Rating	User Interface	Settings Available	Notes
Type 1.0		Single or Three Phase	NEMA 4X*	Knobs	Phase Only	
Type 2.0		Three Phase	NEMA 4X*	Knobs	Phase and Ground	
Type 3.1		Single or Three Phase	NEMA 4X*	Via computer using a programming port, or manually via the pushbuttons on the front panel	Phase and Ground	Available as EZset or Plus
Type 4.1 NEMA 4X		Single or Three Phase	NEMA 4X	Computer using a Programming Port	Phase and Ground	Available as EZset or Plus
Type 4.1 IP68		Single or Three Phase	IP68 (submerged in 20' of water for 20 days)	Computer using a Programming Port	Phase and Ground	Available as EZset or Plus
Type 7.1		Single or Three Phase	IP68 (located within the mechanism housing)	Computer using a Programming Port	Phase and Ground	Available as EZset or Plus

\* Optional clear lid enclosure available (shown above on Type 2)

# Single Phase

Trident solid dielectric insulated switches provide the total life cycle cost and operational benefits of fuseless, electronically controlled, resettable overcurrent protection, with the safety and maintenance benefits of an environmentally friendly dead-front design.

The Trident utilizes G&W's time proven, submersible epoxy insulation to fully encapsulate load and fault interrupting vacuum interrupters. This solid dielectric insulation eliminates the degradation of dielectric integrity commonly associated with oil insulated switchgear.

## SINGLE PHASE

Trident single phase, spring-assisted switchgear is available for load break or fault interrupting switching. The compact units are ideal for switching residential loops and for oil fuse cutout replacements. Fault protection can be provided using vacuum interrupters with integral current transformers and a variety of overcurrent controls.

The Single Phase Trident is available in a Front Access design, with operating handles and bushings on the same side of the switch. The switch can be mounted vertically (as shown on the right) or horizontally (as shown on page 19) to best meet the requirements of the application.

## TESTING

Trident switches are designed and tested to applicable standards including IEEE C37.74 (IEEE C37.71 and C37.72), IEEE 386, IEC 60265, IEEE 592, and IEEE C57.12.28. All fault interrupter devices have passed IEEE C37.60. Trident switches are RUS accepted.

Fully encapsulated current transformers provide power and sensing for G&W's solid state electronic controls. The controls emulate the most common time current curves (TCC) for power fuses, mechanical relays, and fuse links.

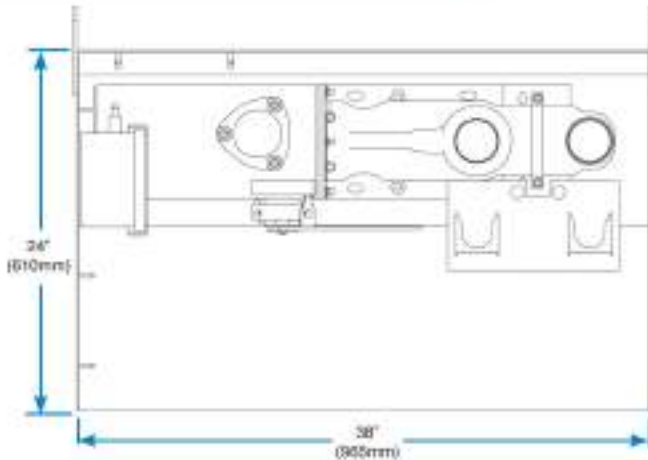


▲ Single phase Trident switch

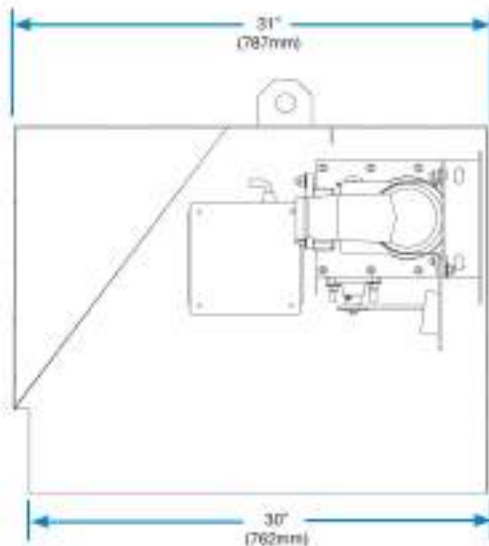
## FEATURES AND BENEFITS

Features	Benefits
Epoxy Insulation (No oil or SF6, and true dead-front design)	No maintenance or monitoring system, lowest total life cycle costs
	Dead-front design provides increased operator safety by eliminating all exposed live parts
	Epoxy is inert, environmentally friendly, with no EPA usage restrictions
Resettable Vacuum Interrupter Mechanism	No fuses or fuse links to stock and replace
Integral self-powered overcurrent protection available	Integrated solution with fully encapsulated current transformers and no external power source or PT required

# Single Phase



FRONT



SIDE

Approximate Weight = 150 lbs. (68 kg)

Dimensions are approximate.  
Do not use for construction.

## RATINGS

Load Break & Fault Interrupting Ratings		
Voltage Class	15kV	25kV
Max System Voltage	15.5kV	27kV
BIL	110kV	125kV
Continuous Current	630A	630A
Load Break Current	630A	630A
AC Withstand, 1 minute	35kV	60kV
AC Withstand, Production, 1 minute	34kV	40kV
DC Withstand, 15 minutes	53kV	78kV
Momentary Current, RMS, asym	20kA	20kA
Fault-Close 3-times, asym	20kA	20kA
Fault Interrupting Current, asym	12.5kA	12.5kA
1 Second Current, sym	12.5kA	12.5kA
Load Break Switch Mechanical Operations	2,000	2,000

## CATALOG NUMBERING

Model	One-line Diagram	Voltage (kv)	Catalog Number
3		15	PL21-176-20-3FA
		25	PL21-186-20-3FA
4		15	PS20-176-12-4FA
		25	PS20-186-12-4FA

# G&W offers Technical Support and Services:



## Custom Engineering

Our engineers can tailor our products to meet the needs of any application.



## Custom Programming

Our automation engineers can provide tailored relay programs to meet any specified needs.



## Factory Acceptance Testing

G&W's Factory Acceptance Testing ensures customers' automation solutions are certified to operate properly and meet all requirements prior to being installed in the field.



## Training Services

G&W offers a range of training solutions at both G&W facilities and on site.



## 24 Hour Technical Support

Technical support for G&W products is available 24 hours a day, 7 days a week.



Engineered to order. Built to last.



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