

Metal-Enclosed Load-Interrupter Switchgear

Description:	Three-Phase, Group-Operated Load-Interrupter Switches with Fuses in Single and Multi-Bay Assemblies	
Method of Operation:	Manual, Automatic Source Transfer, SCADA Control, Shunt-Trip	
Circuit Configurations:	Per Specification	
Applicable Standards:	C37.20.3, C37.20.4, C37.57, C37.58 and C57.12.28 UL Listing at 5kV and 15kV, 600 to 1200 amperes	
Voltage Range:	5kV – 35kV	
BIL:	60kV – 200kV	
Ratings:	600 and 1200 ampere continuous 3-phase load-break switches Fusing to 1100 amps with current-limiting fuses Fusing to 720 amps with power fuses Switch 3-Phase 40ka asymmetrical 3-time fault-closing 61ka asymmetrical 1-time fault-closing 61ka momentary at 38kV 100 load-break operations at 600 amperes UL Recognized – 600A, 1200A at 5kV and 15kV 1,000 mechanical operations	
Optional Features:	Key Interlocks Copper Bus Metering Requirements Vacuum Circuit Breakers Close-Coupled to Transformer	Stainless Steel Enclosure Special Colors Monitoring Requirements Category A, B and C Enclosures Stainless Steel Switches
Users:	Utility, Industrial, Military, Universities, Correctional, Hospitals, WWT Facilities	



Unit Substation Primary Switchgear

Description:	Three-Phase, Group-Operated Load-Interrupter Switches with Fuses in Single and Multi-Bay Assemblies in Combination with Dry-Type Transformers	
Method of Operation:	Manual, Automatic Source Transfer, SCADA Control, Shunt-Trip	
Circuit Configurations:	Per Specification	
Applicable Standards:	C37.20.3, C37.20.4, C37.57, C37.58 and C57.12.28 UL Listing at 5kV and 15kV, 600 to 1200 amperes, 1,000 mechanical operations	
Voltage Range:	5kV – 35kV	
BIL:	60kV – 200kV	
Transformers:	Through 10MVA at 35kV to C57.12.51	
Current Ratings:	600 and 1200 ampere continuous 3-phase load-break switches Fusing to 1100 amps with current-limiting fuses Fusing to 720 amps with power fuses Switch 3-Phase 40ka asymmetrical 3-time fault-closing 61ka asymmetrical 1-time fault-closing 61ka momentary at 38kV 100 load-break operations at 600 amperes UL Recognized – 600A, 1200A, 5kV, 15kV 1,000 mechanical operations	
Optional Features:	Key Interlocks Copper Bus Copper Core & Coil Metering Requirements Monitoring Requirements Vacuum Circuit Breakers Category A, B and C Enclosures	Stainless Steel Enclosures Special Colors Stainless Steel Switches
Users:	Utility, Industrial, Military, Universities, Correctional, Hospitals, WWT Facilities	



Air-Insulated Live-Front Pad-Mounted Switchgear – Type PSI/II

Description: Three-Phase, Group-Operated Load-Interrupter Switches and Single-Pole, Hookstick Operated Fuses with Integral Load-Interrupters for Switching

Method of Operation: Manual, Automatic Source Transfer, SCADA Control, Shunt-Trip

Circuit Configurations: 25 one-line diagrams in 2, 4, 6 and 8 compartment designs

Applicable Standards: C37.74 and C57.12.28

Voltage Range: 15kV - 25kV (for 38kV consult factory)

Current Ratings: 600 and 1200 ampere continuous 3-phase load-break switches
200 ampere continuous 1-phase load-break with fuses
Fusing to 200 amperes with current-limiting or power fuses

Switch 3-Phase
40ka asymmetrical 3-time fault-closing
61ka asymmetrical 1-time fault-closing
100 load-break operations at 600 amperes
UL[®] Listed – available to 600A at 15kV and 25kV
1000 mechanical operations

Optional Features:

Key Interlocks	Surge Arresters
Base Spacers	Ground Studs
Stainless Steel Enclosure	Copper Bus
Stainless Steel Switches	Fuse Storage
Cable Supports	Inner Barrier Doors
Special Colors	Moisture Barriers
Provisions for Fault Indicators	Heaters
Metering Transformers	1200 Amp Switches
Designs Engineered to Customer Requirements	

Users: Utility, Industrial, Military, Universities, Correctional, Hospitals, WWT Facilities



Air-Insulated Dead-Front Pad-Mounted Switchgear – Type PSE

Description: Three-Phase, Group-Operated Load-Interrupter Switches with Single-Pole, Hookstick Operated Fuses with Bushing Wells for 200-Ampere Load-Break Elbows

Method of Operation: Manual, Automatic Source Transfer, SCADA Control, Shunt-Trip

Circuit Configurations: 20 one-line diagrams in 2, 4 and 6 compartment designs

Applicable Standards: C37.74, C57.12.28 and ANSI 386

Voltage Range: 15kV – 25kV (for 38kV, contact factory)

Current Ratings: 600 ampere continuous 3-phase load-break switches
200 ampere continuous 1-phase load-break elbows
Fusing to 200 amperes with current-limiting or power fuses

Switch 3-Phase
40ka asymmetrical 3-time fault-closing
100 load-break operations at 600 amperes
UL[®] Listed – available to 600A at 15kV and 25kV
1000 mechanical operations

Optional Features:

Key Interlocks	Base Spacers
Stainless Steel Enclosure	Copper Bus
Stainless Steel Switches	Fuse Storage
Cable Supports	Special Colors
Provisions for Fault Indicators	Indicators
1200 Amp Switches	
Metering Transformers	
Designs engineered to customer requirements	

Users: Utility, Industrial, Military, Universities, Correctional, Hospitals, WWT Facilities



Pad-Mounted Air-Insulated Vacuum Switchgear – Type PAV

Description: Three-Phase, Group-Operated Vacuum Load Interrupters and Three-Phase Group-Operated Vacuum Fault Interrupters.

Method of Operation: Local / Manual Operation is Standard. Remote / SCADA Operation is Optional.

Circuit Configurations: Multiple switching and protection arrangements in 2 and 4 compartment designs.

Applicable Standards: C37.74, C57.12.28, C37.60, ANSI/IEEE-386

Voltage Application: 15kV Class (15.5kV maximum)

Current Ratings: Vacuum Switch (FVS) per C37.74

Continuous	630 Amps
Load Switching	630 Amps
Short-Time Withstand	(3 Seconds) 12.5kA Sym.
Peak Withstand	32.5kA
Fault Close	20kA RMS ASYM
Mechanical Operations (Close-Open).....	116 Operations

Vacuum Fault Interrupter (FVE) per 37.60

Interrupting Amps, RMS Symmetrical.....	12.5kA
Short Circuit Interrupting Amps, RMS Asymmetrical.....	20kA
Peak Withstand Current, Amps	32.5kA
Fault Duty Operations (Full C37.60 Duty Cycle)	116 Operations

Standard Features:

- Line -side** - Manually operated (Open and close) 3-phase 630A vacuum switches (Type FVS), with integral visible isolation blades, providing full 95kV BIL rated isolation.
- Load-side** - CT powered relayed (standard) and manually operated (open and close) 3-phase 630A vacuum fault interrupters (Type FVI), with integral visible isolation blades providing full 95kV VIL rated isolation.
- Power Requirements** - No external power or battery is required to open or trip the vacuum bottles. No external power or battery is required to respond to and clear a fault.
- "Trip Free" Operation** - Allows the interrupter to begin the trip-to-open sequence immediately if closed into a fault.
- Load Tap Fuses Eliminated** - Vacuum fault interrupters replace fuses on the load taps.
- Three-Phase Load-Side Fault Interruption** - Eliminates "single-phasing" of three-phase loads.
- Vacuum Bottle Technology Provides Thousands of Operations** - VFI tested to 2000 mechanical operations, per C37.60, but the vacuum bottle poles are rated for up to 30,000 mechanical operations.
- Configurations** - All standard 15kV 2-compartment and 4-compartment dead-front configurations are available.
- Footprint** - Matches conventional PSE dead-front switchgear. Base adapters are available for installation on existing live-front pads or foundations.

Optional Features:

- SEL Relays** (internally or externally supplies 120V power supply required)
- Motor operators** located internally for remote / SCADA operation.
- Provisions for Fault Indicators Key Interlocks
- Stainless Steel Enclosures Base Spacers and Adapters
- Copper Bus Parallel bushings and bushing wells
- Special Colors

Typical Users: Utilities, Commercial / Industrial, Governmental, Distributed Generation Facilities, Smart-Grid System Applications.



Source Side with 600A Bushings
(Type PAV-9 Shown)



Load Side with 200A Bushing Wells
(Type PAV-9 Shown)

Air-Insulated Live-Front / Dead-Front Pad-Mounted Switchgear – Type PLD

Description: Three-Phase, Group-Operated Load-Interrupter Switches and Single-Pole, Hookstick Operated Fuses with Bushing Wells for 200-Ampere Load-Break Elbows

Method of Operation: Manual, Automatic Source Transfer, SCADA Control, Shunt-Trip

Circuit Configurations: A variety of one-line diagrams

Applicable Standards: C37.74, C57.12.28 and ANSI 386

Voltage Range: 15kV

Current Ratings: 600A and 1200A continuous 3-phase load-break switches
200 ampere continuous 1-phase load-break elbows
Fusing to 200 amperes with current-limiting or power fuses

Switch 3-Phase
40ka asymmetrical 3-time fault closing
61ka asymmetrical 1-time fault closing
100 load-break operations at 600 amperes
UL[®] Recognized – 600A and 1200A 15kV switches
1000 mechanical operations

Optional Features: Key Interlocks
Stainless Steel Enclosure
Stainless Steel Switches
Special Colors
Copper Bus
Fuse Storage
Base Spacers
Cable Supports
Provisions for Fault Indicators
Designs engineered to customer requirements

Users: Utility, Industrial, Military, Universities, Correctional



Pad-Mounted Capacitor Banks

Description: Three-phase capacitor bank with or without controller
Single-Pole vacuum interrupters for switching
current limiting fuses for fault protection

Method of Operation: Manual or with Controller for Automatic Operation

Applicable Standards: C57.12.28, ANSI 386, Capacitors Switches to C37.66

Circuit Configurations: Per customer specification

Voltage Range: 15kV and 25kV

Current Ratings: 200 ampere continuous; 12,000 amperes rms symmetrical fault interrupting

BL: 95,V and 125kV

Capacitors: Size to 3600kvar as specified by customer
Voltage as specified by customer

Switching Components: Vacuum Capacitor Switch

Protection Components: Current-Limiting Fuses selected by customer
Reactors for in-rush restraint

Control Power: Voltage transformer

Optional Features: Remote Control Kit Pad-Mounted
Stainless Steel Enclosure Substation Mounting
Surge Arresters Custom Relaying
Integral Load Interrupterswith Emergency Switching to 800 kvar
Designs engineered to customer requirements

Users: Industrial, Government, Utility



Fused Tap Dead-Front Pad-Mounted Switchgear – Type FTDF

Description:	Single-Phase and Three-Phase Fused Taps with and without Integral Single-Pole Load-Interrupters Combined with 200-Ampere Bushing Wells
Method of Operation:	Manual, Single-Pole
Circuit Configurations:	8 Standard one-line diagrams and 8 designs
Applicable Standards:	C37.74, C57.12.28 and ANSI 386
Voltage Range:	15kV – 25kV
Current Ratings:	200 and 600 ampere continuous with 200-ampere, Single-phase integral load-break interrupters for switching with fuses 200 ampere continuous 1-phase load-break elbows Fusing to 200 amperes with current-limiting or power fuses
Optional Features:	Key Interlocks Stainless Steel Enclosure Special Colors Copper Bus Mimic Bus Dead-front access to fuses
Users:	Utility, Military, Universities, Correctional



A single-phase FTDF model is pictured above.



A typical three-phase FTDF Model is pictured above.

Primary Metering – Type PMDF Dead-Front and Type PMLF Live-Front

Description:	Three-Phase Primary Metering Compartments
Method of Operation:	Type PMDF Accommodates Single-Pole Switching with Elbows Type PMLF Accommodates Conventional, Stress-Cone Terminators
Circuit Configurations:	Per Specifications
Applicable Standards:	C37.74, C57.12.28 and ANSI 386
Voltage Range:	15kV – 25kV
Current Ratings:	200 ampere continuous 1-phase load-break elbows
Optional Features:	Stainless Steel Enclosure Copper Bus Special Colors 200 Ampere Bushing Wells 600 Ampere Bushings Mimic Bus Indoor and Outdoor Metering Transformers Designs engineered to customer requirements
Users:	Utility, Military, Universities, Correctional



Wall-Mounted Fuses

Description:	Single-Phase and Three-Phase Fused Taps with and without Integral Single-Pole Load-Interrupters in a Wall-Mounted Enclosure
Method of Operation:	Manual, Single-Pole
Circuit Configurations:	Two Standard One-Line Diagrams and Custom Designs
Applicable Standards:	C37.74, C57.12.28 and ANSI 386
Voltage Range:	15kV – 25kV
Current Ratings:	200 ampere continuous 1-phase load-break elbows Fusing to 200 amperes with current-limiting or power fuses
Optional Features:	Stainless Steel Enclosure Special Colors 200 Ampere Bushing Wells Knockouts for conduit
Users:	Utility, Military, Universities, Correctional



Wall-Mounted Switches

Description:	Three-Phase, Group-Operated Load-Interrupter Switches in a Wall-Mounted Enclosure
Method of Operation:	Manual, Automatic Source Transfer, SCADA Control, Shunt-Trip
Circuit Configurations:	One Standard One-Line Diagram and Custom Designs
Applicable Standards:	C37.74, C57.12.28 and ANSI 386
Voltage Range:	5kV – 25kV
Current Ratings:	600 Amperes Accommodates 600 Ampere Elbows 200 Amperes Accommodates 200 Ampere Load-break Elbows Switch 3-Phase 40ka asymmetrical 3-time fault-closing 61ka asymmetrical 1-time fault closing 100 load-break operations at 600 amperes UL* Recognized – 600A, 1200A, 5kV, 15kV 1000 mechanical operations
Optional Features:	Key Interlocks 600 Ampere Bushings Special Colors 200 Ampere Bushing Wells Stainless Steel Enclosure Copper Bus Stainless Steel Switches Motor Operators Remote Control
Users:	Utility, Military, Universities, Correctional



Substations

Description:	Three-phase portable substations for temporary, permanent or emergency power distribution application requirements integrating high-voltage, transformer and low-voltage sections	
Method of Operation:	Manual, Automatic Source Transfer, SCADA Control, Shunt-Trip	
Circuit Configurations:	Engineered to customer requirements as a turn-key design	
Applicable Standards:	C37.74, C37.20.3, C37.20.4, C37.57 and C37.58	
Voltage Range:	4.16kV through 138kV high-voltage sections 120v, 240, 480, 600v secondary sections	
Current Ratings:	600 amperes and 1200 amperes	
BIL:	Based on system voltage requirements	
Transformers:	Dry-type through 10MVA at 38kV, Liquid-filled as customer specified	
Switching Components:	Load-break Switches, Vacuum Circuit Breakers	
Protection Components:	Fuses, Vacuum Circuit Breakers	
Optional Features:	Skid Mounted Trailer Mounted Caterpillar Treads Rail Wheels	Metering Requirements Monitoring Requirements Relaying Requirements Customer Specific Requirements
Users:	Utility, Industrial, Military, Correctional Facilities, WWT Facilities, Universities	



Distribution Vacuum Fault Interrupter

Description:	Three-phase vacuum fault interrupters for automatic reclosing on circuits to establish that fault is not permanent	
Method of Operation:	Automatic tripping of vacuum circuit breakers	
Circuit Configurations:	Per customer specification	
Applicable Standards:	C37.60	
Voltage Range:	15kV – 25kV	
Current Ratings:	600 and 1200 amperes continuous; 12,000 amperes rms symmetrical fault interrupting.	
	Also available:	15kV 1000A Continuous 20kA Interrupting 27kV 800A Continuous 16kA Interrupting
BIL:	95kV to 125kV	
Transformers:	Voltage Transformer for Control Power	
Switching Components:	Vacuum Circuit Breakers	
Protection Components:	Vacuum Circuit Breakers	
Optional Features:	Various Trip Settings Pad-Mounted Substation Mounting Visible Disconnect	Remote Control Kit Stainless Steel Enclosure Surge Arresters
Users:	Industrial, Government, Utility	



Switchgear Components

Description:	Load-break interrupter switches; Fuse mountings; Insulators; Bushings and bushing wells; Micro-processor controls; Motor operators, Vacuum circuit breakers, etc.
Method of Operation:	Manual, Automatic Source Transfer, SCADA Control
Circuit Configurations:	Customer Specified
Applicable Standards:	C37.57, C37.58, C37.20.3; ANSI 386
Voltage Range:	4.16kV – 38kV
Current Ratings:	200, 600 and 1200 amperes
BIL:	60kV through 200kV
Switching Components:	Auto-jet® II Load-Interrupter Switches, Vacuum Load-Break Switches, Vacuum Circuit Breakers
Protection Components:	Vacuum Circuit Breakers, Current-Limiting Fuses, Power Fuses
Optional Features:	Per specification requirements
Users:	Original Equipment Manufacturers

