Compact, compartmentalized and reliable.

HVL/cc™ Medium Voltage Metal-Enclosed Switchgear

Make the most of your energy™

by Schneider Electric
Cost-saving flexibility. Safety-focused design. High reliability. Low maintenance. If you’ve been searching the metal-enclosed switchgear market for these performance advantages, you know that they are difficult to find. Fortunately, that has changed, thanks to the advanced design of the HVL/cc medium voltage metal-enclosed switchgear.

HVL/cc switchgear from Schneider Electric gives you clear and impressive performance advantages in the 2.4 kV - 38 kV range, with ANSI and CSA ratings that far surpass anything in the market and provide a wide range of applications.

HVL/cc switchgear applications

2.4 kV - 38 kV switching, control and overload protection are ideal for the following applications:

- Petrochemical plants
- Oil platforms
- Hospitals
- Industrial facilities
Compact footprint

Smallest footprint in the industry

2.4 kV - 17.5 kV
Standard dimensions:
Optional widths: 20 in.
(1200 A switch – 29.5 in.)

25.8 kV - 38 kV
Standard dimensions:
Optional widths: 39.37 in.
Improve reliability and performance

Reliability and performance are the primary goals of switchgear in any switching, control or protective application. We’ve taken these goals further with HVL/cc medium voltage metal-enclosed switchgear. Exclusive operational features offer a higher level of system protection while incorporating innovative design features to reduce costly maintenance. The major differentiating features of HVL/cc switchgear include:

- Compact size (approximately one-quarter the size of traditional medium voltage metal-enclosed switchgear) – ideal for retrofit applications requiring increased load
- Compartmentalized construction – the fuse/cable compartment is isolated from the main bus, while the main switch contacts are housed in a sealed interrupter
- Fault-making grounding switch (optional) – prevent access to “hot” fuse/cable compartment with mechanical interlock
- Sealed interrupter
  - Class 1 Div 2 certified for hazardous locations
  - Eliminate airborne contamination
  - Extend switch life
  - Contain contact arcs with sealed switch enclosure
- Low maintenance – save time and expense with maintenance-free main contacts and ground switch contacts

No other medium voltage metal-enclosed switchgear on the market offers these advantages. When you make the comparison based on installation simplicity, performance and total cost of ownership, HVL/cc switchgear is the clear choice for system protection and reliability.
Design flexibility

HVL/cc switchgear is designed to set new standards of excellence with its compartmentalization, reduced maintenance requirements and application versatility. HVL/cc switchgear’s compact size reduces space requirements by nearly 75% in most applications. Benefits include:

- Front access – eliminate the need for rear service space
- Compact footprint – fits easily through standard doorways for retrofit applications
- Modular construction – flexibility for customized configurations
- Top or bottom cable entry – enhances installation flexibility
- Transition capability – provides transitions to transformers, Masterclad® metal-clad switchgear, Visi-Vac circuit interrupters and Motorpact™ motor control centers, without increasing footprint

Schneider Electric understands that the cost for switchgear includes more than the equipment. It also includes the cost of installation, modifications and future expansion. That’s why the design of HVL/cc switchgear addresses the total cost of ownership, giving you more flexibility and more performance.

Helping to encourage reduced risk

Design features of HVL/cc medium voltage metal-enclosed switchgear help to prevent operator error and reduce risks in several ways:

- Compartmentalization – five isolated compartments for the switch, bus, fuse/cable, mechanism and optional low voltage and control components; protects from inadvertent access to main bus compartment when accessing fuse/cable compartment
- Grounded metal barriers enclose all live parts
- Mechanical interlock prevents access to fuse/cable compartment unless switch is open
- Operator (manual or motor operated) and padlock covers for main switch and grounding switch
- Two viewing ports provide visual switch position – open, closed, or grounded
- Live-line indication (open switch, circuit energized, back-fed circuit, blown fuse)
- Animated mimic bus on operating shaft provides direct and positive indication of switch contact position
- Load discharge switch-to-ground load side of the fuse – available to dissipate static discharge if used with main grounding switch

Preventing “hot” access

HVL/cc switchgear features an industry exclusive, fault-making grounding switch. The mechanical interlock system prevents access until the switch is open and grounded to ensure workers do not risk coming into contact with live fuses and cables. The fault-making grounding switch reduces installation expense by eliminating the need for grounding rails and cables. All the worker needs to do is close the switch. This fault-making grounding device is rated 40 kA.
The sealed interrupter switch on HVL/cc switchgear provides significant maintenance savings while ensuring long-term reliability. Many other features of the HVL/cc switchgear have been designed to dramatically reduce maintenance costs as well. These include:

- Rugged 11-gauge steel construction
- Square D® TGIC polyester powder paint system, toughest in the industry
- Maintenance-free main switch contacts
- Direct drive mechanism
- Shunt trip/overload relay
- Long-life switch: 100 full load operations; 1,000 mechanical operations (ANSI requires 30 full load and 500 mechanical)
- Infrared viewing port (optional) allows heat-scanning of fuse/cable or main bus compartments

Reliability guided the design of HVL/cc switchgear. As a result, you benefit from lower maintenance requirements and innovative features that make necessary maintenance or service modifications much easier and faster. More uptime means reduced expense, which further contributes to the value of HVL/cc switchgear.
Sealed for life

Sealed interruption is another exclusive feature of the HVL/cc switchgear. Encased in an epoxy enclosure, this double-break interrupter switch answers several essential application needs:

- Sealed switch enclosure contains contact arcing from switch contacts (all interruption takes place within the sealed enclosure), a critical concern in gaseous environments – Class 1 Div 2 certified
- Prevents switch contamination, especially important in dusty environments
- Eliminates maintenance on main and ground switch contacts

The enclosure maintains a low volume of SF6 gas at a pressure of 5.8 PSI (22 PSI at 25/38 kV). Because the switch is sealed for life, it never requires refilling. The sealed interruption feature also eliminates the need for maintenance on main switch contacts. Both the main and ground switch contacts can be viewed through the two viewing windows on the mechanism compartment.

Transparent Ready® web-enabled power and control

HVL/cc switchgear with PowerLogic® circuit monitors and Web-enabled Ethernet communication devices are part of the Square D Transparent Ready power equipment family.

When specified as Transparent Ready, the power equipment is provided with a factory configured “plug and play” communications system that allows authorized personnel to access equipment status and monitoring information through a standard Web browser.

The PowerLogic series 4000 circuit monitor (CM4000) features all basic and advanced metering functions, while providing a 0.04% typical accuracy rate.

Standards

- ANSI
  - ANSI/IEEE C37.20.3 – metal-enclosed interrupter switchgear
  - ANSI/IEEE C37.20.4 – indoor AC medium-voltage switches used in metal-enclosed switchgear
  - ANSI/IEEE 24 – standard performance characteristics and dimensions for outdoor apparatus bushings
  - ANSI/IEEE 48 – standard test procedures and requirements for high-voltage alternating-current cable termination
  - ANSI Z55.1 – gray finishes for industrial apparatus and equipment
- UL listing of equipment, including service entrance per NEC® code
- NEMA Type 1 and 3R enclosures
- Canadian Standards
  - CAN/CSA C22.2 No. 31 switchgear assemblies
  - CAN/CSA C22.2 No. 193 high-voltage full-load interrupter switches
  - CSA approval through UL listing process (cUL)
- IEC 420 high-voltage alternating current switch-fuse combinations test Duties 4 and 5 (Fuselogic™ system)
Typical back-to-back lineup
- Back-to-back HVL/cc main bus up to 17.5 kV
- Available in 600 A or 1200 A tin-plated copper bus for lineups up to 17.5 kV
- Easily transitions with Masterclad® metal-clad switchgear and Visi-Vac circuit interupter mains

Bottom cable entry and exit
- Dual incoming main with single feeder, blown fuse tripping (Fuselogic system)
- Mechanical interlock main switch prevents paralleling of incoming lines and eliminates need for keylocks

Bottom cable entry with connection to transformer
- Duplex configuration with bottom cable entry and exit
- Mechanical interlock main switch prevents paralleling of incoming lines and eliminates need for keylocks
Available options

- Fuselogic system for blown/missing fuse indication (local or remote) and mechanical lockout feature to prevent reclosing the switch until three new fuses have been installed
  - Single phasing protection due to blown fuse tripping with Fuselogic system
  - Blown fuse indicating contact for remote indication (one common contact)
- Class 1 Div 2 certified (manually operated switches with non-striker pin fuses)
- Dual spring-stored energy mechanism type SEM for remote electrical capability
  - Duplex configuration with mechanical interlock prevents simultaneous closure of both switches
- Motor operator
- Fast/auto transfer configuration (main-main and main-tie-main)
  - Electrically interlocked
  - Mechanically interlocked
  - Operated from live line indicators
  - Protective relaying – ANSI 51, 46, 27, 59, 47
- Ground switch (fault close rated)
- Switch enclosure widths at all voltages
- Infrared inspection window

⇒ Optional Fuselogic system provides direct acting blown fuse single-phase protection.

Simplified bus design and reduced connections in compact duplex configurations dramatically reduce maintenance requirements.

⇒ Optional infrared inspection windows are ideal for installation in HVL/cc medium voltage metal-enclosed switchgear; the H.VIR Comet® infrared inspection window enables permanent access for electrical component inspection without disturbing operations. Specially developed for infrared inspections and distributed exclusively by Square D Services, the window is made of a glass-like material that is transparent for infrared rays. This product is a UL-recognized component for NEMA Type 3 equipment, and is available in 2 in., 3 in. and 4 in. diameter for either short-wave or long-wave transmission.

⇒ Optional grounding switch
- Medium-voltage access panel cannot be replaced until switch is returned to grounded position
- Interlock prevents switch from closing when panel is removed
- Dual spring stored energy mechanism type SEM provides remote electrical capability

1. Fault-making grounding device rated 40 kA
   - Fuse/cable compartment mechanically interlocked with open and grounded switches
   - Grounding switch can be opened with access panel removed to facilitate cable testing

2. Mimic bus diagram provides a clear visual indication of switch position – open, closed, or grounded

3. Easily accessible switch operating port

4. Switch position easily identified through viewing ports
### Equipment ratings without fusing

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Fuse rating</th>
<th>Number of fuses per phase</th>
<th>Bay width (in.)</th>
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</thead>
<tbody>
<tr>
<td>5.5 kV</td>
<td>10E to 450E</td>
<td>1</td>
<td>14.75</td>
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<tr>
<td></td>
<td>540E</td>
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<td>850E</td>
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</tr>
<tr>
<td></td>
<td>1100E</td>
<td>3</td>
<td>29.50</td>
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<tr>
<td>15.5 kV</td>
<td>10E to 200E</td>
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<tr>
<td></td>
<td>225E</td>
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<td>20.00</td>
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<tr>
<td></td>
<td>270E</td>
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<tr>
<td></td>
<td>315E</td>
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<td>425E</td>
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<td>475E</td>
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<td>17.5 kV</td>
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<td></td>
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<tr>
<td></td>
<td>270E</td>
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<td>25.8 kV</td>
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<td>140E</td>
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### Equipment ratings without fusing

<table>
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<tr>
<th>Switch (kV) – maximum design</th>
<th>4.76</th>
<th>17.5</th>
<th>17.5</th>
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<tr>
<td>B.I.L. (kV)</td>
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<td>95</td>
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<td>Frequency (Hz)</td>
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<td>Withstand (kV)</td>
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<td>Continuous current (A)</td>
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<td>1200</td>
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<td>Interrupting current (A)</td>
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<td>600</td>
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<td>Fault close (kA ASYM)</td>
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<td>Momentary current (kA SYM)</td>
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<td>Short time current (kA SYM)</td>
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<td>Electrical endurance (number of operations)</td>
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<td>100*</td>
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<td>Mechanical endurance (number of operations)</td>
<td>1000</td>
<td>1000</td>
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</table>

* All switches have a four-time fault close duty cycle
* 26 operations available for 1200 A

### Utility Approval

Schneider Electric maintains contact with most major utilities and understands what it takes to obtain utility approval in any geographic region. With our resources and expertise, we can build switchgear equipment that satisfies any local or regional requirements.
### Dimensions

#### Outdoor enclosure

![Floor plan](image)

#### Indoor enclosure

![Floor plan](image)

<table>
<thead>
<tr>
<th>Description</th>
<th>Amps</th>
<th>Height (h)</th>
<th>Width (w)</th>
<th>Depth (d)</th>
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<tr>
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<td></td>
<td>in.</td>
<td>mm</td>
<td>in.</td>
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<td>Interrupter section</td>
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<td>90.00</td>
<td>2286</td>
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<td></td>
<td>1200 A</td>
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<td>1200 A</td>
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<td>Interrupter section</td>
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</table>

* 4 in. base height added for bottom cable entry for cable size 350 MCM and above. Add this dimension to the total height shown. Refer to the HVL/cc catalog for complete cabling and dimensional information.
* With front panels [footprint 33.25 in. (845 mm) with panels removed]
* With front panels [footprint 55.12 in. (1400 mm) with panels removed]
* Dimensions listed are floor plan dimensions. Roof overhangs front and rear by 5.00 in. (127 mm), 10.00 in. (254 mm) total
* Dimensions listed are floor plan dimensions. Roof overhangs front and rear by 5.00 in. (127 mm), 10.00 in. (254 mm)

For additional information on HVL/cc medium voltage metal-enclosed switchgear, contact your local Square D field sales representative, or call 1-888-SQUARED.