

Medium Voltage Load Interrupter Switchgear

Descriptive Bulletin



ABB

Reliable, low maintenance and economical Load Interrupter Switchgear assemblies for medium voltage distribution applications

The ABB Load Interrupter Switchgear is reliable, low maintenance and economical for medium voltage distribution applications such as main switchgear, load switching center and unit substations.

Cost effective in utility, industrial and commercial applications where switching is infrequent, and the absence of quick reclosing and protective relaying functions eliminate the need for more expensive metal-clad switchgear with draw-out circuit breakers.

All major components of ABB Load Interrupter Switchgear including switches, operating mechanisms, fuses, and main bus, are integrated into a single assembly with coordinated ratings matched to specific system requirements.

Modular design supports standardized cubicle construction over a variety of possible arrangements for incoming lines, feeders and auxiliary equipment. A key feature of the modular approach is the almost unlimited application flexibility. Standard designs include both free-standing single frame and multi-frame construction. This approach not only provides simple, economical solutions for immediate application requirements, but it also provides easy expandability to meet the user's ever changing needs.



36" W x 60" D x 90" H

Application

- 5, 15, 27 and 38 kV voltage classes
- 600 or 1200 ampere continuous; 38 kV voltage class only available at 600 or 800 ampere continuous
- 40 or 61 kA short circuit ratings, see rating table for complete information
- Non-fused or fused with current limiting or expulsion fuses
- Manually or motor operated
- Indoor and outdoor enclosures
- Single frame cable connected or close coupled with transformer
- Multi-frame line-up with main bus
- Designs that include potheads, roof bushings, special terminators, lightning arresters, instrument transformers, meters, relays and other auxiliary equipment offered as options
- Custom built units that offer unlimited possibilities of electrical circuitry design
- Utility Metering Compartments (contact your local ABB representative for availability for your particular utility)



Design Features

- Inspection reinforced glass window allows easy observation of switch position and general condition
- Split front door with mechanical interlock to ensure switch position
- Provisions for user padlock
- Switch position indicator, open-closed
- Removable phase barriers for easy switch maintenance
- Horizontal isolation barrier between switch and fuse compartments
- Rear compartment space for cable termination
- Meters and instruments are safely isolated from high voltage equipment by a grounded steel barrier - optional
- Epoxy insulators; porcelain insulators offered as option
- Tin plated copper bus; silver plated offered as option
- Additional options include: lightning arrestors, voltage indicators, shunt trips, auxiliary contacts, blown fuse trip indicator

Interrupter Switch

ABB VersaRupter or NAL switches are offered. The ABB load break switch is compact, economical, flexible and easy to use. The load break switch utilizes ABB's unique arc puffer extinguishing design.

ABB load break switches are available with a choice of two standard mechanisms

- Three-phase gang operated quick-make, quick-break with Snap Action mechanism type K
- Three-phase gang operated quick-make, quick-break with Stored Energy mechanism type A

Switch live parts include heavy one-piece cast copper alloy contacts and terminals, which are silver-plated to conduct heat away from contact surfaces. Main blades are round edge copper bars, and compression springs on the blade members maintain high pressure contact with jaw-type stationary contact casting. With main blades open, interrupting blades are fully visible for inspection and maintenance.

The switch blades are operated through a stored energy spring operating mechanism, which provides uniform contact movement and mechanical power for positive action and fault closing, independent of switch-gear operator reaction time.

Manual opening and closing are provided through a dependable, operating handle system that connects the operating mechanism to the front of the switch enclosure for convenient and safe actuation by the operator.



The load break switch utilizes ABB's unique arc puffer extinguishing design.

Medium Voltage Load Interrupter Switchgear

Construction

The ABB Load Interrupter Switchgear meets or exceeds the following industry standards: ANSI/IEEE C37.20; ANSI C37.57 & C37.58; NEMA SG-5; CSA C22.31.

Four different metal enclosed enclosures are available:

- NEMA 1, indoor
- NEMA 1A, indoor with front door gasketing
- NEMA 2, drip proof
- NEMA 3R, outdoor

Front accessible only, or front and rear accessibility.

Each independent frame of switchgear is made of bolted sheet steel gauge according to CSA requirements. Each frame is adequately braced, vented and constructed to properly and safely function under normal operating or short circuit conditions.

The frame and panel surfaces are phosphate treated and painted with an oven-baked corrosion resistant epoxy enamel ANSI 61 light grey finish.



Close couple cable connection design

Bus System

The main bus is three-phase uninsulated tin plated or silver plated, appropriately sized and braced for the continuous and momentary current ratings of the switchgear. Main bus stand-off insulators and supports are rated for the appropriate system impulse level requirements. Insulated bus system is available as an option.

A copper ground bus with a short circuit rating equal to that of the integrated assembly is furnished, and extends throughout the full length of the switchgear. Ground connections are readily accessible for customer use and provided at each end of the line-up.

Fuses

Fuses shall be coordinated to meet the short circuit rating and continuous current ratings as specified in project data sheets or single line diagrams. Fuses are readily accessible and easily removed, and shall be retained in position by high pressure fuse clips to prevent slippage or displacement during operation.

Current limiting fuses, complete with indicator, facilitate identification of blown fuses. A blown fuse trip mechanism is available. Expulsion fuses, with or without operation indicators, are available.

All switchgear assemblies supplied with fuses come with a spare fuse pouch.



Main bus design with fuses

Medium Voltage Load Interrupter Switchgear



Provision only for type F2-E Kirk Keys.
 All L.O. locks mount on top of handle.
 All L.C. and L.O.C. locks mount on bottom of handle.

Ratings

Voltage				Current				
Nominal Rating System (kV)	Rated Maximum Voltage (kV)	Rated Impulse BIL (kV)	Low Freq. Withstand (kV)	Rated Continuous Current (A)	Load Interrupting Current (A)	Momentary Current RMO Asym. (kA)	Fault Closing Current RMS Asym. (kA)	2-sec Short Time Current Asym. (kA)
2.4-4.16	4.76	60	19	600	600	40	40	25
				600	600	61	61	40
				1200	1200	40	40	25
				1200	1200	61	61	40
6.9-13.8	15.0	95	36	600	600	40	40	25
				600	600	61	61	40
				1200	1200	40	40	25
				1200	1200	61	61	40
15.5-24.9	27.5	125	50	600	600	30	30	20
				1200	1200	30	30	20
25.0-36.0	36.0	170	80	600	600	40	40	25
				800	800	40	40	25

Number of operations without maintenance

Voltage				Current		Life Expectancy*	
Nominal Rating System (kV)	Rated Maximum Voltage (kV)	Rated Impulse BIL (kV)	Low Freq. Withstand (kV)	Rated Continuous Current (A)	Load Interrupting Current (A)	No-Load Mechanical Endurance	Load Current Endurance
2.4-4.16	4.76	60	19	600	600	500	50
				600	600	500	30
				1200	1200	500	50
				1200	1200	500	30
6.9-13.8	15.0	95	36	600	600	500	50
				600	600	500	30
				1200	1200	500	50
				1200	1200	500	30
15.5-24.9	27.5	125	50	600	600	500	50
				1200	1200	500	50
25.0-36.0	36.0	170	80	600	600	500	50
				800	800	500	50

*Operations data provided as guidance for inspection and maintenance.
 A visual inspection is recommended after the Load Break Switch opens on a fault.



ABB Inc.
8585 Trans-Canada Hwy
Saint-Laurent, Québec, CANADA
H4S 1Z6
Tel + 1 514 856 6266
Fax + 1 514 856 6286
www.abb.com/mediumvoltage