

Low Voltage Switchgear

"TYPE 2B"  
INSTRUMENT  
MODULE

Understanding the challenges.  
Engineering the solutions.



Oil and Gas



Healthcare



Industrial

**EATON**

*Powering Business Worldwide*



As a premier leader in power distribution equipment, Eaton offers a wide range of innovative, low voltage switchgear designs providing flexible solutions to optimize operational performance, enhance safety and save space.



### Rear access

Lower installation and maintenance costs, higher interrupting and withstand ratings, enhanced safety, higher quality, reliability and maintainability



Levering Magnum DS breaker through the door



Integrated HRG

- UL1558/891
- Up to 10,000A continuous current – horizontal main bus
- Up to 5,000A continuous current – vertical riser bus
- Short circuit withstand rating of 200,000 amperes with no fuses.
- Bus standard bracing is 100,000 amperes – optional 150,000
- 4-wire applications, 100% neutral
- Ground the full length of the switchgear assembly
- Optional safety shutters
- Rear cover or doors
- Control wire standard Type SIS insulated stranded copper.
- Integrated HRG optional (HRG can be stand alone or wall mount)
- MDN 4000A in 30" structure
  - 508 Vac—100 kAIC maximum short circuit
  - 635 Vac—65 kAIC maximum short circuit



### Front access

When floor space is limited, or room constraints dictate that equipment be mounted against a wall, why compromise on switchgear design?

Eaton's Magnum DS front-accessible switchgear combines the robustness of UL® 1558 low voltage switchgear with the flexibility of UL 891 switchboard design. The front-accessible switchgear offering allows mounting against a wall, or in other tight locations, where a standard rear-accessible switchgear lineup would not normally fit.

- UL 1558
- Up to 6,000A continuous current – horizontal main bus
- Up to 5,000A continuous current – vertical riser bus
- 100, 150 and 200 kA bus bracing designs
- 600 Vac class
- NEMA@1 indoor
- NEMA 3R outdoor, both aisle and aisleless enclosures
- Standard 40.20-inch switchgear depth
- Up to 4-high breaker arrangement
- Breaker sections are 18, 22 or 44 inches wide
- Cable compartments are 18, 22, 30 or 44 inches wide



### NRX integration

- 800A continuous current with 65KA short circuit and 42KA short time (30 cycle withstand) for UL 1558
- 1200A continuous current with 65KA short circuit for UL 891
- 24" enclosure – two 3P NRX breakers side by side

# Delivering consistent performance.

Eaton listens and learns from customers to understand the unique operational challenges across industries. This drives our pursuit for innovation and the application of our expertise to engineer low voltage switchgear solutions that consistently deliver on performance, safety and savings.



As a premier leader in power distribution equipment, Eaton offers a wide range of innovative, low voltage switchgear designs providing flexible solutions to optimize operational performance, enhance safety and save space.



### Rear access

Lower installation and maintenance costs, higher interrupting and withstand ratings, enhanced safety, higher quality, reliability and maintainability



Levering Magnum DS breaker through the door

- UL1558/891
- Up to 10,000A continuous current – horizontal main bus
- Up to 5,000A continuous current – vertical riser bus
- Short circuit withstand rating of 200,000 amperes with no fuses.
- Bus standard bracing is 100,000 amperes – optional 150,000
- 4-wire applications, 100% neutral
- Ground the full length of the switchgear assembly
- Optional safety shutters
- Rear cover or doors
- Control wire standard Type SIS insulated stranded copper.
- Integrated HRG optional (HRG can be stand alone or wall mount)
- MDN 4000A in 30" structure
  - 508 Vac—100 kAIC maximum short circuit
  - 635 Vac—65 kAIC maximum short circuit



Integrated HRG



### Front access

When floor space is limited, or room constraints dictate that equipment be mounted against a wall, why compromise on switchgear design?

Eaton's Magnum DS front-accessible switchgear combines the robustness of UL® 1558 low voltage switchgear with the flexibility of UL 891 switchboard design. The front-accessible switchgear offering allows mounting against a wall, or in other tight locations, where a standard rear-accessible switchgear lineup would not normally fit.

- UL 1558
- Up to 6,000A continuous current – horizontal main bus
- Up to 5,000A continuous current – vertical riser bus
- 100, 150 and 200 kA bus bracing designs
- 600 Vac class
- NEMA®1 indoor
- NEMA 3R outdoor, both aisle and aisleless enclosures
- Standard 40.20-inch switchgear depth
- Up to 4-high breaker arrangement
- Breaker sections are 18, 22 or 44 inches wide
- Cable compartments are 18, 22, 30 or 44 inches wide



### NRX integration

- 800A continuous current with 65KA short circuit and 42KA short time (30 cycle withstand) for UL 1558
- 1200A continuous current with 65KA short circuit for UL 891
- 24" enclosure – two 3P NRX breakers side by side

**Improved maintainability** with dedicated secondary terminals with separate access door and front accessible control wireway



Shown with plenum. Can be provided without plenum.

### ArcGard™ arc-resistant rear access

Arc faults can generate thermal energy as high as 35,000°F and a blast equivalent to 20.7 lbs of TNT. Arc-resistant gear is designed to safely redirect and contain these arcs should they occur, regardless of the originating location of the arc. ArcGard Magnum DS switchgear has been tested in all three compartments for a full 0.5 seconds, passing ANSI Type 2 and Type 2B standards at 100 kA at 508V and 85 kA at 635V.

- Short circuit withstand rating up to 85kAIC @ 635Vac max and up to 100kAIC @ 508Vac max
- Up to 10,000A continuous current – horizontal main bus
- Up to 5,000A continuous current – vertical riser bus
- Type 2 & 2B
- Plenum & direct venting available
- Clearance @ 10' floor-to-ceiling
- 60" minimum line-up width
- 72" – 90" structure depth
- Allowing drawout of breaker while maintaining type 2B approachability rating
- Venting system directs arc gasses to top of the enclosure
- Up to four-high breaker configuration
- NEMA 1 enclosure, with either top or bottom cable or bus duct entry



Type 2B secondary compartment

**Increased reliability** with modular design allows for reduced parts for both structures and breakers



Shown without plenum. Plenum and duct can be added upon request.

### ArcGard arc-resistant front access

Arc-resistant front-accessible switchgear from Eaton provides the robustness and strength of arc-resistant rear-accessible construction, but with the flexibility of an innovative front-accessible design. This unique gear design allows for mounting against a wall, while protecting operating and maintenance personnel from potentially dangerous arcing events.

- Short circuit withstand rating up to 85kAIC @ 635Vac max and up to 100kAIC @ 508Vac max
- Up to 6,000A continuous current – horizontal main bus
- Up to 5,000A continuous current – vertical riser bus
- Type 2 & 2B
- Plenum & direct venting available
- Clearance @ 10' floor-to-ceiling
- 66" minimum line-up width
- Fixed 54-inch switchgear depth
- Up to four-high breaker arrangement
- Breaker structures are 22 or 44 inches wide
- Cable compartments are 22, 30 or 44 inches wide
- NEMA®1 indoor

**Reduced installation cost** with front-accessible controls and wiring enables rapid installation and commissioning

**Increased safety** with complete enhanced performance suite of options



### Arc Quenching

Arc Quenching Switchgear detects and contains an arc fault in less than 4 milliseconds, drastically reducing the incident energy. It works by detecting the ignition of an arc inside the switchgear using the Eaton Arc Flash Relay and transferring it to the Arc Quenching Device. Arc Quenching Switchgear transfers the arc by creating a lower impedance arc, not a bolted fault, safely contained inside the Arc Quenching Device. This reduces the peak fault current by at least 25% and puts less stress on upstream equipment during an arc fault.

- Tested to ANSI/IEEE C37.20.7, Type 2B test guide in NEMA 1 construction
- Arc Quenching Device (AQD) is a UL Recognized Component per UL 2748
- Short circuit withstand rating up to 85 kA at 635 V ac
- Short-time withstand current rating, 85 kA for 30 cycles
- <4 ms arc quenching time
- >25% reduction in peak fault current
- >44% reduction in peak system stress
- Complete system self-supervision with health status communicated via Modbus and dry contacts
- Anti- nuisance trip technology
- Available in rear access and front access switchgear configurations
- Available in NEMA 1, NEMA 3R and traditional arc-resistant enclosure types
- Exceptional incident energy reduction
- Enhanced safety
- Advanced switchgear protection
- Dramatically reduced downtime

## Magnum DS Switchgear Accessories

Genuine Magnum DS switchgear accessories improve the reliability, safety and longevity of the switchgear.



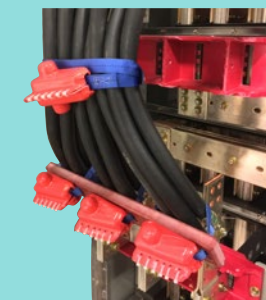
### Breaker test kit (MTK2000)

The MTK2000 trip unit test kit is used to test and verify the pickup levels and time delay settings of a breaker's trip unit. Scheduled testing of the circuit breaker's trip unit will help to ensure proper operation of the breaker and will lead to safer and more efficient performance.



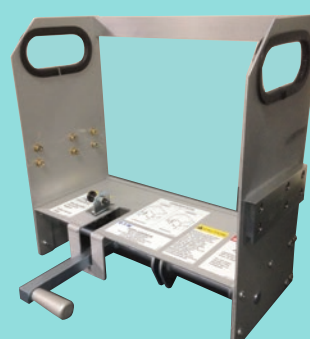
### Remote racking device

The MRR1000 permits the operator to open and close a breaker from up to 25 feet away during the rack-in or withdraw process, well beyond the arc flash boundary.



### Cable lashing device

The Cable Lashing Device can be used to secure cables faster, easier and more reliably when compared to the traditional rope lashing method.



### Magnum™ shutter module

The Magnum shutter module is used to test the operation of the shutters with the breaker removed. It also permits access to the bus stabs for inspection and testing.



# Automatic transfer and intelligent control packages

pre-engineered • flexible • smart



Low voltage switchgear elevation and one line view



Eaton's Magnum DS low voltage switchgear offers optional pre-engineered automatic transfer and intelligent control packages with features that can be modified to meet specific requirements. The packages are available on both standard and arc-resistant switchgear as well as both front and rear access equipment. Classified by the interface, the automatic transfer and intelligent control packages are as follows:

- Eaton ATC-900 controller
- Eaton PLC with Eaton touchscreen
- Power Xpert™ dashboard

## Features and benefits

### Eaton ATC-900 controller

This controller can be utilized for transfer in a lineup with Main-Main, Main-Generator or Generator-Generator application (no tie breaker present). This option will include a selector switch for Auto/Manual as well as generator start/stop/exercise.

### Eaton PLC with Eaton touchscreen

Using the Eaton PLC and Eaton touchscreen, Eaton can provide automatic Main-Tie-Main transfer to increase uptime and efficiency. The desired sequence of operation can be selected during project quotation.

### Power Xpert™ dashboard

The Power Xpert dashboard is an intelligent collection of views which allow users to configure

a switchgear assembly and continuously monitor and control various devices and parameters. The dashboard can be integral to the switchgear assembly or remotely mounted offering a monitoring and control option outside the arc flash zone. It provides features required to maintain a switchgear assembly such as:

- Remotely open/close circuit breakers through control mode
- Initiate a transfer scheme in a Main/Tie/Main switchgear for uninterrupted power supply
- Ability to configure/ monitor alarms for various devices
- Provides a rich interface to monitor parameters of all devices and study the trends of those parameters.

For more information, visit  
[www.eaton.com/lva](http://www.eaton.com/lva)  
or call your local Eaton sales office.

**Eaton**  
1000 Eaton Boulevard  
Cleveland, OH 44122  
United States  
Eaton.com

© 2018 Eaton  
All Rights Reserved  
Printed in USA  
Publication No. BR019001EN / 828  
January 2018

Eaton is a registered trademark.

All other trademarks are property of their respective owners.