

M-RING 36

SF6 Insulated Ring Main Unit
Metal-Enclosed (LSC2A)



according to

3B Energy can propose a huge number of Products related to Energy sector. We are active in the whole world of Power Transmission and Distribution. Medium Voltage switchgears, Medium Voltage switches, Low Voltage PC, Low Voltage MCCs with fix and withdrawable units, Transformers, Cabinets; 3B Energy can propose a wide range of Products for fulfilling any request and need.

3B Energy is very active and smart in assisting customers for finding Solutions related to Energy sector. We can support the customer during engineering phase of the plant, during purchasing steps, for the supply and after-sales services. 3B Energy is a real "turnkey" Solution provider; Package Substations, Transformer Substations, Mobile Cabinets; we can propose a complete solution set for letting the customer have one player only for his whole plant.

3B Energy can propose a complete and detailed list of Services which can cover each step of Engineering phase. Our technical staff is highly expert and professional and can support the customer starting from the base design of a single component till a complete apparatus for electrical application. We can design and project every component the customer may need: a single contact or a complete switching device, we can develop and engineer the technology for any product or application of Energy sector



M-RING 36

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GENERAL

M-RING 36 Series Ring Main Unit is an extendable SF6 gas insulated metal enclosed switchgear at rated voltage 40.5kV. All HV primary live parts are sealed in a gas tank welded by stainless steel plates of 3mm thick, compact in design and small size.

The whole switchgear is free from any external influence, ensuring its safe and reliable operation and maintenance-free. By plug-in type busbar extension, RMU can be combined freely and flexibly to have different solutions.

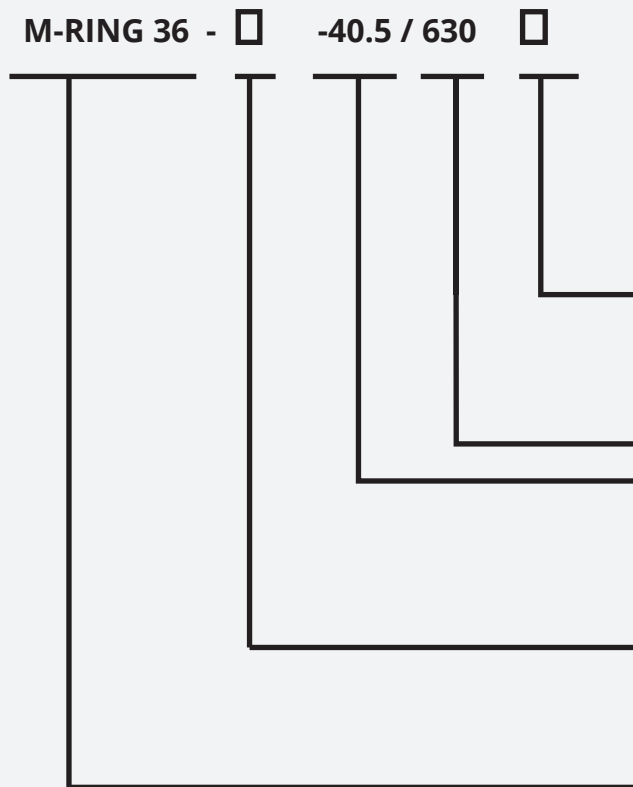
The product passed type tests, ensuring high reliability and safety.

M-RING 36 series Ring Main Unit can be used in switching station of power transmission and distribution system at 40.5kV, industrial and commercial areas building, station, wharf, etc. with cable feeder grid, having big power supply load density.

Ring Main Unit is easy to install, less maintenance, small area to cover, suitable for installation in the compact substations.

The load break switch panel or switch-fuse panel also can be used as a single panel.

Definition of product type



Cable position
 L: Cable in/out left
 LR: Cable in/out extendible
 ID: Extendible both sides
 None: Not extendible

Rated current: 630, 800A
 Rated voltage: 40.5 kV

Panel type
 K: LBS panel
 V: Vacuum circuit breaker panel
 T: Switch-fuse panel
 C: Bus lifting panel
 P: Power supply panel PT: PT panel
 Type

Standard

IEC62271-102 High voltage switchgear and control gear – Part 102: Alternating-current disconnectors and earthing switches

IEC60265-1 High voltage switches – Part1: Switches for rated voltages above 1 kV and less than 52 kV

IEC62271-100 High voltage switchgear and controlgear – Part 100: High voltage AC circuit-breakers

IEC62271-200 High voltage switchgear and controlgear – Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1kV and up to and including 52 kV

IEC62271-105 High voltage switchgear and controlgear – Part 105: high voltage switch-fuse combinations

Service condition

The switchgear is designed for the normal indoor service condition in conformity with IEC60694.

- a) Ambient temperature:
 - Maximum: +40°C
 - 12h-Average: ≤35°C
 - Minimum: -25°C
- b) Humidity
 - Relative humidity: Daily average ≤ 95%
 - Monthly average ≤ 90%
 - Vapour pressure: Daily average ≤2.2kPa
 - Monthly average ≤ 1.8kPa
- c) Altitude: ≤3000m
- d) Seismic intensity:<8 degree

Remarks: RMU is in compliance with IEC 60694. When application in special condition, please contact the manufacturer to find a customized solution.

If application in special severe environment, please consult the manufacturer.

If application at altitude more than 1000m above sea level where the electrical equipment is installed, please specify and the pressure will be adjusted when it is manufactured.

Technical Data for Ring Main Unit

No.	Description		Unit	LBS unit	Switch-fuse Unit	VCB Unit	
1	Rated voltage		kV	40.5	40.5	40.5	
2	Power frequency withstand voltage (1min)	Phase to phase/earth and vacuum contact	kV	95	95	95	
		Across isolating distance	kV	118	118	118	
3	Lighting impulse withstand voltage	Phase to phase/earth and vacuum contact	kV	185	185	185	
		Across isolating distance	kV	215	215	215	
4	Rated frequency		Hz	50/60	50/60	50/60	
5	Rated current		A	630/800	①	630/800	
6	Rated short circuit breaking current		kA		②	25	
7	Rated short time withstand current		kA	25		25	25
	Rated short circuit duration time		s	3		3	3
8	Rated peak value withstand current		kA	63		63	63
9	Rated short circuit making current(peak)		kA	63	②	63	63
10	Rated transfer current		A		1000		
11	Mechanical endurance		Ops	5000	5000	10000	
12	Electric life		Ops	E2		E2	
13	SF6 Rated pressure		kPa	30 (at 20°C, 101.3kPa)			
14	SF6 Annual leakage rate			≤0.02%			
15	Internal arc degree			20kA/1s , 25kA/0.5s			
16	Noise		dB	≤65			
17	Seismic intensity			≤8 degree			
18	Toxic and harmful substance			Conform to Regulation REACH of EU No. 1907/2006			
19	Protection degree	Gas tank		IP 67			
		Enclosure		IP 41			
20	Dimension(W×D×H)		mm	440×920×1780	470×920×1780	440×920×1780	

① Rated current of Switch-fuse panel depends on rating of fuse, <80A

② Rated current of Switch-fuse panel limited by fuse.

Mechanical data of VCB

No.	Description	Unit	Data	
1	Clearance between open contacts	mm	19±1	
2	Contacts' distance	mm	5±1	
3	Average closing speed (first 8mm)	m/s	1±0.2	
4	Average opening speed (last 8mm)	m/s	1.4~2.0 95/110	
5	Closing time	ms	30~60	
6	Opening time	ms	15~55	
7	Contacts' bounce at closing	ms	≤4	
8	Contacts' bounce at opening	mm	≤2	
9	Three-phase non-simultaneity	ms	≤2	
10	Charging time	s	≤15	
11	Rated operating sequence	O-0.3s-CO-180s-CO		
12	Operating voltage	V	AC 110/220	DC 24/48/110/220

Mechanical Data of three-position LBS

No.	Description	Unit	Data	
1	Clearance between open contactsof LBS	mm	88±2	
2	Clearance between open contactsof ES	mm	80±2	
3	Average closing speed of LBS	m/s	4~5.5	
4	Average opening speed of LBS	m/s	3~4.5	
5	Average closing speed of ES	m/s	4~5.5	
6	Closing simultaneity	ms	≤3	
7	Opening simultaneity	ms	≤5	
8	Manual operatingtorque	N·m	≤250	
9	Operating voltage	V	AC 110/220	DC 24/48/110/220

M-RING 36-K Load-break switch panel

Standard configuration

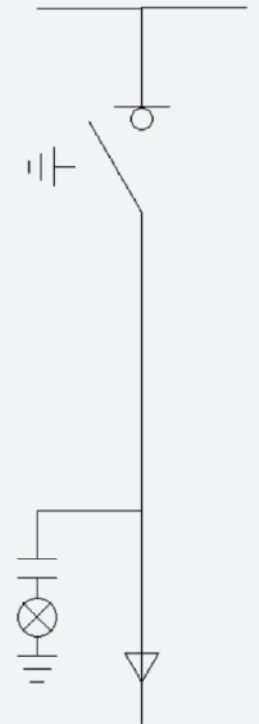
- ✓ Busbar 630/800A
- ✓ Three-position load break switch
 - Single spring operating mechanism with three-position independent shaft for LBS and ES
 - Three-position LBS mechanical interlock and its indicator.
- ✓ Cable bushing 630/800A, with sensor function, front mounted horizontally.
- ✓ Voltage indicator
- ✓ SF6 Gauge (only one in block version)
- ✓ Earth busbar
- ✓ Interlocks between lower front door and ES/operating shaft.
- ✓ Outline dimension (W×D×H):420×920×1780 mm

Optional Configuration

- ✓ Cable in/out extendible or extensible on both sides.
- ✓ Electrical mechanism for LBS DC 24/48/110/220V, AC110/220V
- ✓ Short-circuit and earth fault indicator
- ✓ Loop current transformer for metering and ammeter
- ✓ Lighting arrester or double cable connector on the place of cable input bushing
- ✓ Humidity controller and heater
- ✓ Auxiliary contacts

LBS position	2NO+2NC
ES position	1NO+1NC

Load break switch panel



M-RING 36-T Switch-fuse panel

Standard configuration

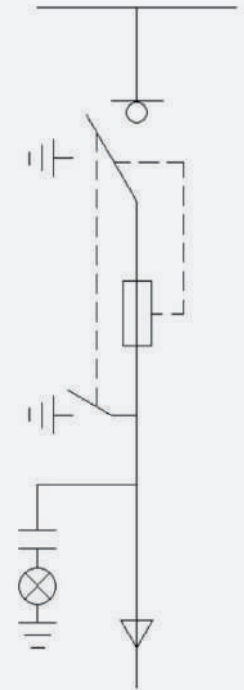
- ✓ Busbar 630/800A
- ✓ Three position load break switch with earthing switch connected to both ends of the fuse, mechanical interlocked
- ✓ Single-spring operating mechanism with three positions, independent shaft for LBS and ES.
- ✓ LBS and ES position indicator
- ✓ Fuse holder (without fuse)
- ✓ Fuse indicator
- ✓ Cable bushing 630/800A, with sensor function, front mounted horizontally.
- ✓ Voltage indicator
- ✓ SF6 Gauge (only one in block version)
- ✓ Earth busbar
- ✓ Interlocks between lower front door and ES/operating shaft.
- ✓ Outline dimension(W×D×H): 470×920×1780 mm

Optional Configuration

- ✓ Cable in/out extendible or Extensible on both side.
- ✓ Electrical mechanism for LBS - DC 24/48/110/220V, AC 110/220V
- ✓ Trip coil - DC 24/48/110/220V, AC 110/220V
- ✓ Short-circuit and earth fault indicator
- ✓ Loop current transformer for metering and ammeter
- ✓ Lighting arrester or double cable connector on the place of cable output bushing
- ✓ Humidity controller and heater
- ✓ Auxiliary contacts

LBS position	2NO+2NC
ES position	1NO+1NC

Switch-fuse panel



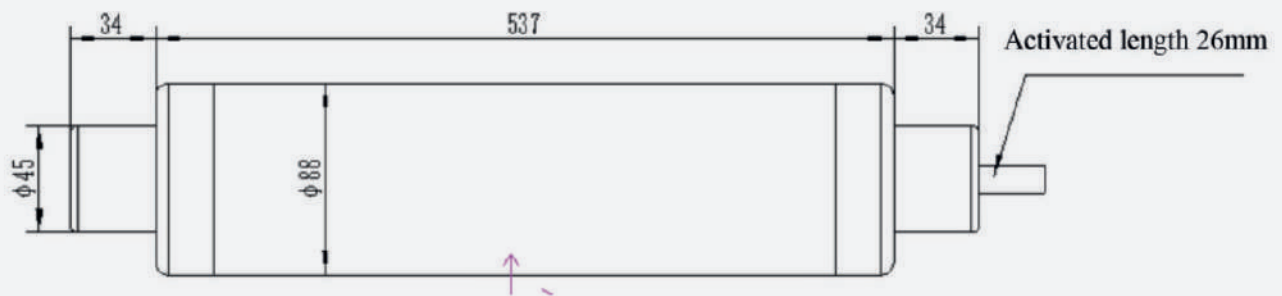
Fuse specification

GB type	IEC type	Rated voltage kV	Rated current A	Fuse rated current A								Rated breaking current kA
				3.15	6.3	10	16	20	31.5	40	50	
XRNT1 -40.5	SXQ -J	40.5	50	3.15	6.3	10	16	20	31.5	40	50	31.5
	SXY -J	40.5	80	50		63		71		80		

Standard configuration

Note:

- 1) Ambient temperature -25°C ~40°C
- 2) The form just for reference, please select it according to the fuse data provided by fuse suppliers.



Standard: GB/T15166.2; length of fuse-link: 40.5kV: $\phi 88 \times 537$

M-RING 36-V Vacuum circuit breaker panel (V1&V2)

Two configurations:

- ✓ M-RING 36-V1 panel with upstream disconnector
- ✓ M-RING 36-V2 panel with downstream disconnector

Standard configuration

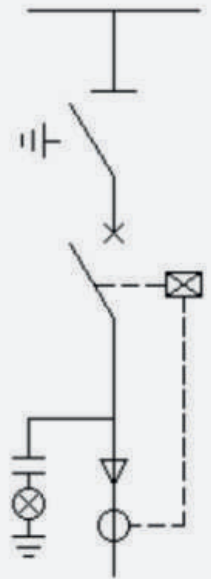
- ✓ Busbar 630/800A
- ✓ Three position disconnected earthing switch, circuit breaker pole
- ✓ Circuit spring operating mechanism
- ✓ Single-spring operating mechanism with three positions, independent shaft for DS and ES.
- ✓ Circuit breaker and three position DS mechanical interlock and position indicator
- ✓ Cable bushing 630/800A, with sensor function, front mounted horizontally.
- ✓ Voltage indicator
- ✓ SF6 Gauge (only one in block version)
- ✓ Earth busbar
- ✓ Interlocks between lower front door and ES/operating shaft.
- ✓ Interlock between circuit breaker operating mechanism and DS operating mechanism.
- ✓ Protection Relay
- ✓ Outline dimension (W×D×H)::420×920×1780mm

Optional Configuration

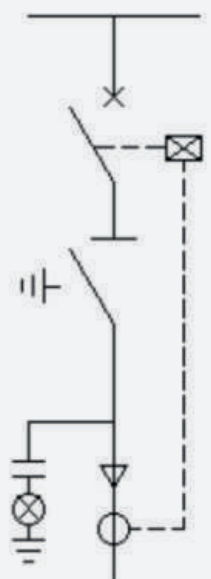
- ✓ Cable in/out extendible or Extensible on both side.
- ✓ Input electric earthing interlock (interlock earthing switch when bushing in charge)
- ✓ Circuit electric operating mechanism DC 24/48/110/220V, AC 110/220V
- ✓ Closing/Opening coil DC 24/48/110/220V, AC 110/220V
- ✓ Loop current transformer for metering and ammeter
- ✓ Lighting arrester or double cable connector on the place of cable input bushing
- ✓ Humidity controller and heater
- ✓ Auxiliary contacts

Circuit breaker position	2NO+2NC
DS position	2NO+2NC
ES position	1NO+1NC

VCB panel (V1)



VCB panel (V2)



M-RING 36-C Bus lifting panel

Standard configuration

- ✓ Busbar 630/800A
- ✓ Voltage indicator
- ✓ Electromagnetic lock
- ✓ Earth busbar
- ✓ Lower door interlock
- ✓ Outline dimension (W×D×H): 420×920×1780 mm

Bus lifting panel



M-RING 36-PT PT panel

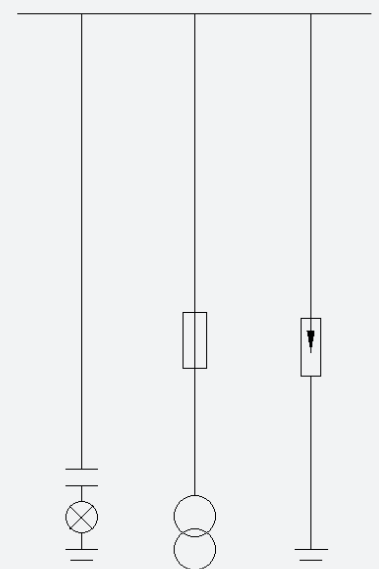
Standard Configuration

- ✓ Busbar 630/800A
- ✓ Power transformer
- ✓ High voltage current limited fuse
- ✓ Voltmeter
- ✓ Voltage indicator
- ✓ Outline dimension(W×D×H): 600×920×1780 mm

Optional Configuration

- ✓ Power transformer
- ✓ Disconnecter
- ✓ Lighting arrester
- ✓ Disconnecter
- ✓ Humidity controller and heater

PT panel



M-RING 36-P Power Supply Panel

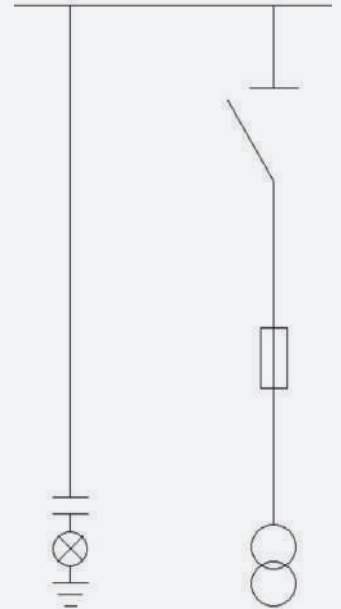
Standard configuration

- ✓ Busbar 630/800A
- ✓ Control transformer
- ✓ High voltage current limited fuse
- ✓ Voltmeter
- ✓ Charger module
- ✓ Battery set
- ✓ Voltage indicator
- ✓ Outline dimension (W×D×H): 600×920×1780 mm

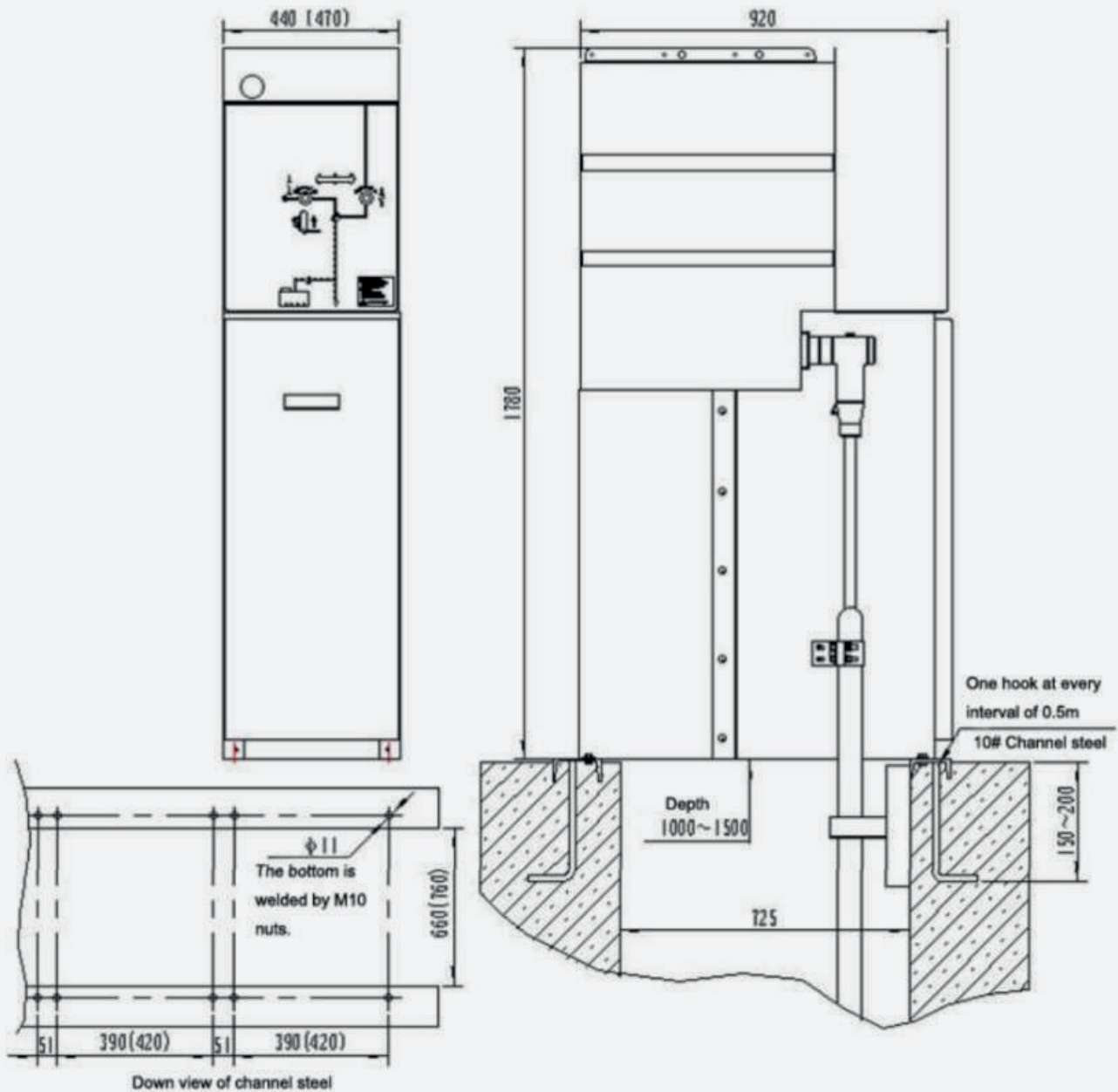
Optional Configuration

- ✓ Interlock between DS and lower door
- ✓ Lighting arrester
- ✓ Humidity controller and heater

Power supply panel



Outline Dimension and Installation Foundation





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