

Incoming or Outgoing, Fixed or Withdrawable Single Isolation Circuit Breaker up to 24 kV

Introduction

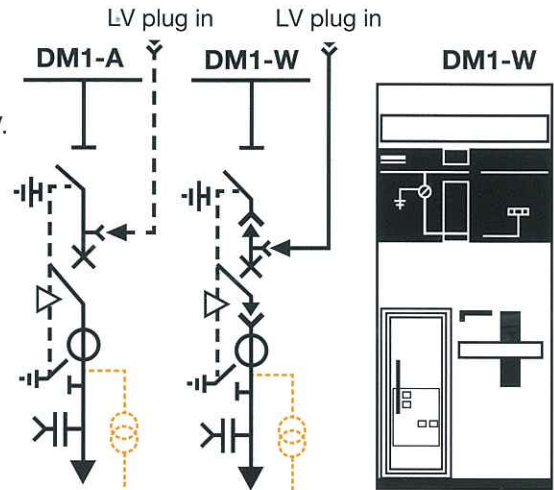
DM1-A & DM1-W are parts of SM6 product range and called as single section isolation circuit breaker. This modular unit is used for the MV section of MV/LV substation in secondary distribution system up to 24 kV.

Application :

DM1-A is single isolation circuit breaker unit with fixed breaker, normally used as incoming or outgoing cubicle.

DM1-W is withdrawable single isolation circuit breaker unit and it is also used for incoming or outgoing feeder.

This DM1-A or DM1-W is normally installed together in the system with other parts of SM6 product range such as IM, IMC, QM, QMC, CM, etc, in accordance with the design of a distribution system.



Characteristic :

Rated maximum Voltage (kV)	12		24	
Rated voltage (kVrms)	7.2	12	17.5	24
Rated insulation level				
- 50HZ for 1 min (kVrms)	20	28	38	50
- impulse 1.2/50 us (kVp)	60	75	95	125
Rated current				
- load break switch (A)	400/630		400/630	
- busbar (A)	630		630	
- Circuit breaker (A)	400/630		400/630	
Short time withstand current				
- for rated current 400 A (kA/1s)	12.5		12.5	
- for rated current 630 A (kA/1s)	12.5		12.5	
	16		16	
	20		20	

Basic Equipment :

- Fluarc SF 1 circuit breaker 630 A
- Three phase busbar 630 Amp.
- Disconnecter and earthing switch.
- RI circuit breaker operating mechanism.
- CS disconnecter operating mechanism.
- Enlarge low voltage compartment.
- Three current transformers.
- Auxiliary contacts on circuit breaker.
- CC earthing switch operating mechanism (only for DM1-W)
- Downstream earthing switch.
- Heater 50 W, 220 V.
- Voltage indicators.

Optional LV Control DM1-A

- DM 1-A fix LV cable connection
- DM 1-A plug in LV cable connection

Standard Recommendation

IEC standard :

IEC 60694, 62271-200, 60265-1, 62271-105, 60255, 62271-100, 62271-102

UTE standard :

NFC 13.100, 13.200, 64.130, 64.160

EDF specification :

HN 64-S-41, 64-S-43
SNI K-29-HB-01
K-30-HB-02

Colour :

White RAL 9002 Smooth
Gyer RAL 7030 Smooth (option)

Internal arc withstand :

- standard: 12.5 kA 1s, IAC: A-FL
- enhanced: 16 kA 1s, IAC: A-FLR & IAC: A-FL in accordance with IEC 62271-200

Protection index :

- classes: PI (insulating partition)
- loss of service continuity classes: LSC2A
- units: IP3X
- Cubicle: IK08

Electro-magnetic compatibility :

- relays: 4 kV withstand capacity, as per recommendation IEC 60801.4
- compartments:
 - electrical field:
 - 40 dB attenuation at 100 MHz
 - 20 dB attenuation at 200 MHz
 - magnetic field: 20 dB attenuation below 30 MHz.

Temperatures :

The cubicles must be stored and installed in a dry area free from dust and with limited temperature variations.

- for stocking: from -40°C to +70°C,
- for working: from -5°C to +40°C,
- other temperatures, consult us.

Optional Accessories :

For Cubicle :

- Auxiliary contacts on the disconnecter.
- Protection using sepam 1000+ programmable electronic units.
- Three voltage transformers
- Key type interlocks

For Circuit Breaker :

- Motor operating mechanism.
- Low energy MITOP or Undervoltage opening release.
- Opening and closing shunt trip.
- Operation counter.

Over all dimension	DM1-A	DM1-W
Width	750 mm	750 mm
Depth	1220 mm	1220 mm
Height	1600 mm	1600 mm
LV compartment (h')	450 mm	450 mm
Approximate weight	400 kg	400 kg
Cable connec. height (measure from floor)	400 mm	430 mm

Cabling

Through trenches

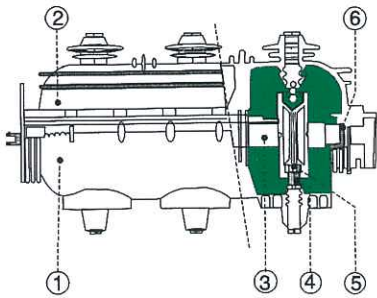
Type of cables : single core

X section (sqmm)	bending radius (mm)	depth of trench (mm)
50	370	400
70	400	430
95	440	470
120	470	500
150	500	550
185	540	670
240	590	730

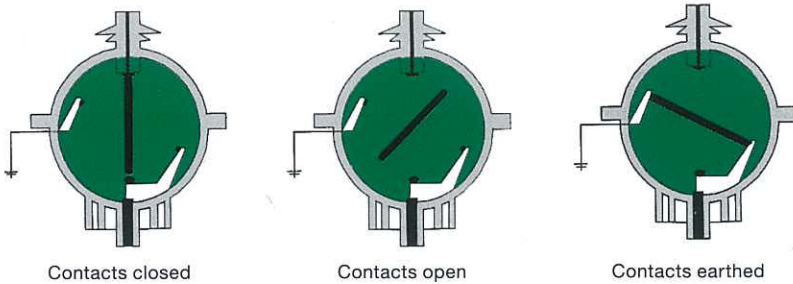
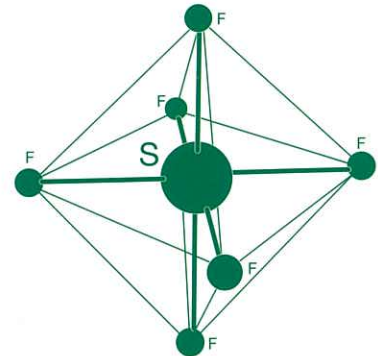
Cable entry or exit :

- Through left or right side
- rear or front with conduit

Load break switch or disconnecter and earthing switch :



- 1 enclosure
- 2 cover
- 3 operating shaft
- 4 fixed contact
- 5 moving contact
- 6 seal



SM6 load break switches and earthing switches use sulphur hexafluoride gas (SF6) for insulation and breaking. The active parts are placed in an insulated enclosure in accordance with the definition of IEC 56 / Appendix EE (1987 edition) for sealed pressure system. These devices offer remarkable characteristics

- long live service
- maintenance - free active parts
- high electrical endurance
- over - voltage levels very low
- safety operation

Current transformer for DM1-A and DM1-W units.

Type ARM3/N2F :

- double primary winding
- double secondary winding for measurement and protection.

Transformer ARM3/N2F

- characteristic according to IEC standard 60044-1

Short-time withstand current I_{th} (kA)

I _n (A)	10-20	20-40	25-50	50-100	75-150	100-200	200-400	300-600
I _{th} (kA)	5	12,5		14,5	16		25	
t (s)	1s		0.8s	1s				
measurement	5A	7,5VA class 0,5		15VA class 0,5		30VA class 0,5		
protection	5A	5VA 5P10			5VA 5P15		7,5VA 5P15	

Transformer VRQ2-n (phase-to-earth) 50 or 60 Hz

- characteristic according to IEC standard 60044-2

Rated voltage (kV)	24			
Primary voltage (kV)	10/√3	15/√3	15-20/√3	20/√3
Secondary voltage (V)	100/√3			
Thermal power (VA)	250			
Accuracy class	0.5			
Rated output for single primary winding (VA)	30	30		30
Rated output for double primary winding (VA)			30-50	

SF1 circuit breaker

The Fluarc SF1 circuit breaker is made up of three separate poles, mounted on a structure supporting operating mechanism. Each pole-unit houses all the active elements in an insulating enclosure filled with gas to a relative pressure of 0.5 bars (500hp). This system offers maximum operating reliability :

■ gas tightness

The enclosure filled with SF6 gas satisfies "sealed pressure system" requirement and seal tightness is always checked in the factory.

■ operating safety

As for switch-units, accidental over pressure are eliminated by the opening of the safety membrane.

■ breaking principle

The circuit breaker is based on the SF6 gas autocompression principle. The inherent qualities of SF6 and the **soft break** resulting from this technique reduce switching over-voltages.

■ precompression

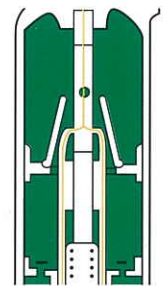
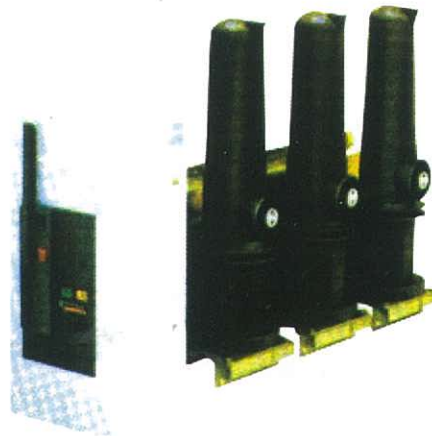
When the contacts begin to open, the piston slightly compresses the SF6 gas in the pressure chamber.

■ arcing period

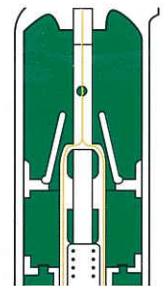
The arc then forms between the arcing contacts and the piston continues its downward movement. A small quantity of gas, directed by the insulating nozzle, is injected into the arc. The cooling of the arc is thus achieved through forced convection for the interruption of low currents, however, during the interruption of high currents, thermal expansion is responsible for the transfer of the hot gasses toward the cold parts of the pole unit. Toward current zero, the distance between the two arcing contracts is sufficient for final interruption of the current due to the dielectric properties of the SF6 gas.

■ sweeping over-stroke

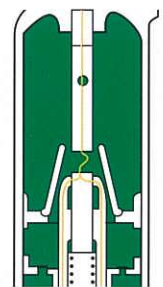
The moving parts finish their travel whereas the cold gas injection continues until the contacts are completely opened.



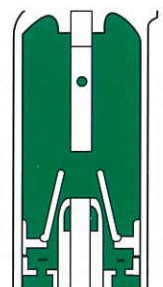
contacts closed



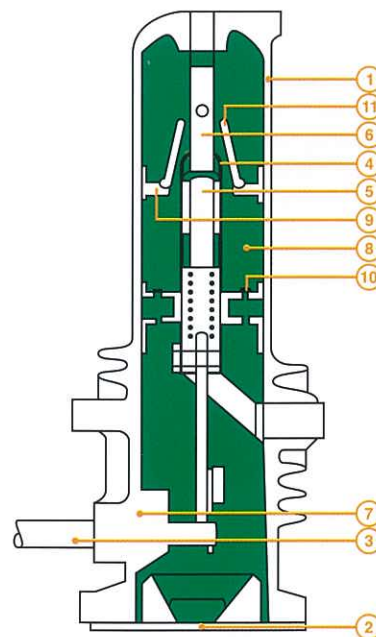
precompression



arcing period



contacts open



- 1 enclosure
- 2 bottom cover
- 3 operating shaft
- 4 main moving contact
- 5 moving arcing contact
- 6 fixed arcing contact
- 7 sealing system
- 8 compression chamber
- 9 moving piston
- 10 valves
- 11 insulating nozzle

PT. Schneider Indonesia

Jakarta
Ventura Building 7th fl.
Jl. R.A Kartini kav. 26, Cilandak, Jakarta 12430
Ph. (021) 7504406 (Hunting)
Fax. (021) 750 4415-16

Customer Service
Ph. (021) 750-4406 ext. 2381, 2384, 2389
(021) 750 4598
(021) 750 4612

Balikpapan
Komplek Ruko Balikpapan Baru Blok D 2/5
Jl. Bougenvill Raya, Balikpapan 76114
Ph. (0542) 876 772
Fax. (0542) 873 709

Bandung
Kompek Mal Setrasari Blok B 2/17
Jl. Prof Sutami, Bandung 40164
Ph. (022) 201 6122
Fax. (022) 201 9133

Batam
Batamindo Industrial Park, Jl. Beringin Blok 4,
Muka Kuning, Batam Island 29433
Ph. (0770) 611 133
Fax. (0770) 611 134

Cikarang (Factory)
East Jakarta Industrial Park (EJIP)
Plot 4B No. 1-2, Lemah Abang
Bekasi, 17550, West java
Ph. (021) 897 0203-8
Fax. (021) 897 0085, 897 0209

Website : www.schneider-electric.co.id
E-mail : customer.care@id.schneider-electric.com
Hotline : 500055

Lampung
Villa Citra I Blok F No. 10
Tanjung karang, Bandar Lampung
Ph./Fax. (0721) 250 152

Makassar
Fajar Graha Pena Building Makassar
Lt. 09 Kav. 904
Jl. Urip Sumohardjo No. 20
Makassar 90234
Ph. (0411) 420 760
Fax. (0411) 420 759

Medan
UNIPLAZA Building, East Tower, 3rd fl.
Lt. 09 Kav. 904
Jl. Letjend M.T. Haryono A-1
Medan 20231
Ph. (061) 457 9006, 455 5061
Fax. (061) 455 5153

Palembang
SUCOFINDO Building, 4th fl.
Jl. Jend Sudirman No. 774
Palembang 30129
Ph. (0711) 312 002
Fax. (0711) 319 669

Semarang
Grinatha Building 2nd fl. (Bank Jateng)
Jl. Pemuda 142, Semarang
Ph. (024) 356 0230, 356 0231
Fax. (024) 356 3313

Surabaya
Graha Pangeran Building 10th fl.-Unit 10 D
Jl. Jenderal A. Yani 286
Surabaya 60234
Ph. (031) 828 8333 (Hunting 6 Lines)
Fax. (031) 829 9901/02