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Eaton Ulusoy Product Families

EATON

Powering Business Worldwide

About

As a global power management company, Eaton helps customers worldwide manage the power needed for buildings, aircraft, trucks, cars, machinery and businesses. Eaton's innovative technologies help customers manage electrical, hydraulic and mechanical power more reliably, efficiently, safely and sustainably. We provide integrated solutions that help make energy, in all its forms, more practical and accessible. With 2019 sales of \$21.4 billion, Eaton has approximately 101,000 employees around the world and sells products in more than 175 countries. Powering business worldwide.

Eaton Ankara became part of Eaton through the acquisition of Ulusoy Electric which was founded as an engineering company in 1985. As an integrated manufacturing platform for a wide variety of medium voltage electrical equipment for MV electrical distribution networks and industrial plants, it has proven its power as a leader in industry and has been at the forefront of its own sector. Eaton Ankara has become one of the leading players in the electromechanical industry and has undertaken many successful projects by its proven achievements in the national and international markets, a wide range of high quality products, its sectorial innovations and service quality.

Eaton Ankara conducts its activities in an area of more than 83.000 m² (56.000 m² of which are indoors) at the Ankara ASO First Organised Industrial Zone, Temelli Anatolia Organised Industrial Zone and Indonesia Cikarang Organised Industrial Zone. With a staff of over 700 qualified employees and over 100 specialist engineers, it carries out all of its product design, development, and R&D activities on-site.



Production Facilities



Outer view



Inner view

Switchgear factory

Ankara 1. Organized Industrial Zone

24.600m² indoor area on a 29.260m² total area



Outer view



Inner view

Transformer / concrete substation factory

Ankara Anadolu Organized Industrial Zone

30.400m² indoor area on a 76.000m² total area



Outer view



Inner view

Indonesia assembly factory

Cikarang Organised Industrial Zone

3.000m² indoor area on a 4.000m² total area

Annual Production Capacities

HMH series switchgears

50.000 units



UMC series switchgears

3.000 units



URING series switchgears

12.000 units



UBET series substations

4.000 units



Distribution transformers

6.000 units



LBS & CB

6.000 units



Cable accessories

150.000 units



Product Overview

Air Insulated Switchgear

Metal Enclosed Modular Switchgear



HMH Series Metal Enclosed Modular Switchgears are designed for use in medium voltage secondary distribution systems of up to 36kV in kiosk-type or conventional substations. Manufactured in compliance with IEC 62271-100, 62271-102, 62271-105, 62271-200, 60265, 60129, 60694 standards. All type tests are completed in international accredited laboratories (KEMA, etc.) and routine tests are also carried out on-site. Air insulated metal enclosed modular switchgears can safely be commissioned and put in service in a very short time.

Type	HMH12	HMH24	HMH36
Rated voltage	12 kV	24 kV	36 kV
Network frequency withstand voltage 1min	28 kV	50 kV	70 kV
Clearance	32 kV	60 kV	80 kV
Lighting impulse withstand voltage (1,2/50 μs)	75 kV	125 kV	170 kV
Clearance	85 kV	145 kV	195 kV
Rated frequency	50/60 Hz	50/60 Hz	50/60 Hz
Rated current	30-1250 A	30-1250 A	30-1250 A
Rated short circuit withstand Current (1sec) (3sec)	6-20-25 kA	6-20-25 kA	6-20-25 kA
Rated short circuit closing current	50 kA-peak	40 kA-peak	40 kA-peak

2- UMC Series Metal Clad Switchgear



UMC Series Metal Clad Switchgears are produced in accordance with IEC 62271-200 and 62271-100 standards for use in primary distribution systems, industrial plants and infrastructure installations up to 36kV. MV Metal Clad switchgears are notable for their high current, power, short circuit withstanding and breaking capacities and withdrawable VCB and SF6 CB design. Metal Clad switchgears are opted for both national and international markets due to design flexibility compatible with different specifications.

Type	UMC 12	UMC 17	UMC 24	UMC 36
Rated voltage	12 kV	17 kV	24 kV	36 kV
Network frequency withstand voltage (50Hz)	28 kV	38 kV	50 kV	70 kV
Lighting impulse withstand voltage (1,2/50 μs)	75 kV	95 kV	125 kV	170 kV
Rated current	30/3150A	30/3150A	30/3150A	30/3150A
Short circuit current	31,5 kA t= 3 sn	25 kA t= 3 sn	25 kA t= 3 sn	31,5 kA t= 3 sn
Internal arc current	31,5 kA t= 1 sn	25 kA t= 1 sn	25 kA t= 1 sn	31,5 kA t= 1 sn
Internal arc class (IAC)	IAC-AFL IAC-AFLR	IAC-AFL IAC-AFLR	IAC-AFL IAC-AFLR	IAC-AFL IAC-AFLR
Board dimensions (mm) (Width x Height x Depth)	650/800x2000x1750	900x2000x2000	900x2000x2000	1200x2200x2450

Product Overview

Gas Insulated Switchgear



1- URING Series SF6 Gas Insulated Modular and Compact Switchgears/RMU

URING Series Complete SF6 Gas Insulated Metal Enclosed Modular and Compact Switchgears (RMU) with its increased functional properties and minimized dimensions can be used in today's advanced MV secondary distribution systems.

The RMUs suitable to use in SCADA systems, are operated with Puffer system (directing the SF6 gas directly on the arc). RMU offer a unique solution to the user with its remote opening closing property even without the motor provided that the mechanism is installed previously. The RMUs offer smart solutions to the user due to their compact dimensions and increased safety properties in a metal or concrete kiosk type substation in the MV secondary distribution systems.

Rated voltage	kV	12	24	36
Network frequency withstand voltage 1min	kV	28	50	70
Clearance	kV	32	60	80
Lighting impulse withstand voltage (1,2/50 μs)	kV	75	125	170
Clearance	kV	85	145	195
Rated current	A	630	630	630
Rated short circuit withstand Current	kA	21kA/3 sec	21kA/3 sec	16kA/3 sec
Peak short circuit current	kA/peak	52,5	52,5	40
Protection degree	Enclosure SF ₆ tank	IP3X IP68	IP3X IP68	IP3X IP68

Distribution Transformers

Distribution transformers are static electrical machines transforming electricity from MV to LV and performing secure distribution of power.



1- Oil Immersed Type Transformer

Oil Immersed Type Transformer is produced in accordance with national and international standards with a power range of 50kVA to 5 MVA and a maximum voltage level of 36kV. They are an integral part of the production expertise of the Ulusoy Compact Substation and produced according to IEC 60076 standards and also fulfilling the eco-friendly design criteria. Tests are completed in accredited laboratory on-site and delivered either separately or assembled in the substation.



2- Dry Type Transformer

Eaton offers high quality and performance Cast Resin Dry Type Transformers for several applications. Transformers can be used at high altitude and marine environment under hard conditions through their accordance with special and international standards. It provides general security for environment with its non-flammable, self-extinguished, toxic gas-free structure and low noise level.

Ulusoy Cast Resin Dry Type Transformers are humidity proof and suitable for operating in humid and extremely polluted environments. They are ideal transformers to work at -40°C and more than %95 humidity level.

Components



1- LBSH Series Load Break Switch

Ulusoy Load Break Switches are suitable for almost all metal enclosed switchgear designs. Unlike other load break switches available in the market, Ulusoy LBS works in vertical axis similar to circuit breaker. The active sections of the LBS are present in SF6 gas environment closed with sealed pressure system inside the epoxy resin frame. During its normal operation lifespan of 20 years, it does not require any gas refill or maintenance. The earthing switch which quickly closes when a short circuit occurred in SF6 gas environment and inside a resin frame. This feature of the load break switch offers an additional safety feature for the operating staff. Because of the mechanical and electrical interlocking systems between the LBS and the earthing switch, possibility of a wrong-maneuver is prevented.

Type	LBS-24	LBS-36
Rated voltage	12/24kV	36kV
Rated lightning impulse withstand voltage	75/125kV	170kV
Between isolating distance (open position between the contacts)	85/145kV	195kV
Rated power frequency with stand voltage(1min)	28/50kV	70kV
Between isolating distance (open position)	32/60kV	80kV
Rated frequency	50-60Hz	50-60Hz
Rated current	630-1250A*	630-1250A*

Type	LBS-24	LBS-36
Rated Short Circuit Current (1sec)	16-20kA	16-20kA
Rated Peak Short Circuit Current	40-50kA	40-50kA
Mechanical Class	M1	M1
Electrical Class	E3	E3
Protection Degree	IP68	IP68
Insulation Medium	SF6	SF6
Rated Fillin Level for Insulation	0.5 bar	0.5 bar

2- USFB Series SF6 Circuit Breaker



The circuit breaker consist of three pieces of independent poles which contains the fixed and moving contacts where the arc extinguishing process realizes and filled with SF6 gas by impermeability - guaranteed sealed system. Breaker mechanism works on the principle of releasing the stored energy of a spring. The mechanism can be operated motorized or manually by means of the leverage which comes with the breakers. The circuit breaker with re-closing feature offers the ability to make various mechanical and electrical interlocks by use of the switch disconnecting or load break switch.

Type	USFB 24R	USFB 36R
Rated voltage	24kV	36kV
Rated lightning impulse withstand voltage	125kV	170kV
Rated power frequency withstand voltage(1min)	50kV	70kV
Rated frequency	50-60Hz	50-60Hz
Rated current	630-1250A	630-1250A
Rated short circuit current (3 sec)	16-20kA	16-20kA
Rated peak short circuit current	40-50kA	40-50kA
Mechanical class	M2	M2
Electrical class	E2	E2
Insulation medium	SF6	SF6
Rated fillin level for insulation	1.6 bar - 2.0 bar	1.6 bar - 2.0 bar

3- RVU Series Vacuum Circuit Breaker



RVU Series 12-24 kV Vacuum Circuit Breaker is a three-phase AC indoor breaker with 12-24 kV rated voltage suitable for air insulated switchgear and can be applied in controlling and protecting electrical equipment in industrial and mineral enterprises, power plants and substations. Operation mechanism installed laterally. The product conforms to the IEC 62271-100 standard. RVU series provide safe and reliable performance. The embedded poles of RVU's have the technique of ventilation and convection. Besides the vacuum interrupter has low resistance and high number of short circuit breaking. These properties reduce the power consumption and the temperature rising due to the longtime running of circuit breaker.

Type	RVU 12	RVU 24
Rated Voltage	12kV	24kV
Power Freq. Withstand Test Voltage	28kV (1min)	50kV (1min)
Lightning Impulse Withstand	75kV peak	125kV peak
Rated Current	1250A	
Rated Short Circuit Current (3 sec)	16-20kA	16-20kA
Operating Sequence	0 300msec - CO-3min-CO	
DC Component Max	%40	
Cable Charging Breaking Current	31,5A	
System Neutral	Neutral earth or without earth	
Out of Phase Breaking	6,25kA	
Motor Supply Voltage	24-48-110-220VDC, 220VAC	
Trip Coils Supply Voltage	24-48-110-220VDC, 220VAC	
Mechanical Class	M2	
Working Temperature	min: -25°C max: +50°C	
Interruption Medium	Vacuum	
Standard	IEC 62271-100	

Cable Accessories

Ulusoy Electric, the first local MV cable termination manufacturer in Turkey, design and produce cable terminations for MV cable connections. Straight, L and T type terminations are manufactured of liquid silicon injection technology which is the most resistant raw article in the world in terms of MV cable terminations. All types have been tested separately in internationally accredited laboratories.



**MV Straight Type
Cable Termination**



**MV Screened Type
Cable Connectors**



**MV Joint Type
Cable Termination**



**LV & MV
Bushing Cover**