

www.eaton.com

Eaton Ankara Ulusoy Product Families

EATON

Powering Business Worldwide

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

Ulusoy Product Families and Annual Capacities

Ulusoy HMM series switchgear - **40.000 units**

Ulusoy UMC series switchgear - **1.800 units**

Ulusoy URING series switchgear - **12.000 units**

Distribution transformers - **6.600 units**

LBS & CB - **50.000 units**

Cable accessories - **112.000 units**

Ulusoy HMM Series

Metal Enclosed Switchgear

Ulusoy HMM series metal enclosed modular switchgear are medium voltage assemblies for use in secondary distribution systems, compact kiosk-type transformer substations, and industrial facilities. They are designed for indoor use.

All functional units can be installed easily side by side.

The switchgear is factory assembled and undergoes all routine type-approval tests. Units can be commissioned quickly and safely.



Technical Specification

Rated voltage	kV	12	24	36
Rated lightning impulse withstand voltage	kV	75	125	170
Rated network frequency withstand voltage (1min.)	kV	28	50	70
Rated frequency	Hz	50	50	50
Internal arc rating		AFL	AFL	AFL
Loss of service continuity class		LSC2A	LSC2A	LSC2A
Compartment class		PI	PI	PI
Rated short-term withstand current: earthing circuit	kA - 1 sec.	16	16	16
Rated short-term withstand current: main circuit	kA - 1 sec.	16	16	16
Compartment accessibility				
LV breaker compartment		accessible	accessible	accessible
Busbar compartment		inaccessible	inaccessible	inaccessible
Cable compartment		accessible	accessible	accessible
Degree of protection		IP3X	IP3X	IP3X
Installation		indoor	indoor	indoor
Operating temperature	°C	between -5 and +40	between -5 and +40	between -5 and +40
Main busbar system				
Rated current	A	630, 1250	630, 1250	630, 1250
Rated short-term withstand current	kA - 1 sec.	16	16	16
Rated peak withstand current	kA	40	40	40
Circuit breaker				
Rated current	A	630, 1250	630, 1250	630, 1250
Rated short-circuit breaking current	kA	16, 20	16, 20	16, 20
Rated short-circuit closing current	kA/tepe	40, 50	40, 50	40, 50
Rated short-circuit withstand current	kA/rms- 1 sn	16	16	16
Class		E1, M1, C2	E1, M1, C2	E1, M1, C2
Number of short-circuit current breakers		20	20	
Auxiliary voltage	V	AC 220 - DC 24/48/110	AC 220 - DC 24/48/110	AC 220 - DC 24/48/110
Mechanism (breaker)				
Rated process series	A	0 - 300 ms - CO - 3 min. - CO	0 - 300 ms - CO - 3 min. - CO	0 - 300 ms - CO - 3 min. - CO
Class		M1	M1	M1
Number of operating / no load		2.000	2.000	2.000

Ulusoy UMC Series Metal Clad Switchgear

Ulusoy 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 36 kV. 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.



Technical Specification

Type		UMC 12	UMC 12	UMC 24	UMC 36
Rated voltage	kV	12	17	24	36
Rated lightning impulse withstand voltage	kV	75	95	125	170
Rated network frequency withstand voltage (min)	kV	28	38	50	70
Rated frequency	Hz	50	50	50	50
Rated current		630 /3150 A	630 /3150 A	630 /3150 A	630 /3150 A
Internal arc current		31,5 kA t=1 sec	25 kA t=1 sec	25 kA t=1 sec	31,5 kA t=1 sec
Internal arc class (IAC)			IAC-AFL IAC-AFLR		
Protection class			IP3X		
Minimum ambience temperature			-5°C		
Maximum ambience temperature			+40°C		
Maximum moisture			%80		
Elevator			1000 m		
Board dimensions (mm) (weight x height x depth)		650/800x200x1750	900x2000x2000	900x2000x2000	1200x2000x2450
Paint			Electrostatic powdered paint (RAL 7035)		
Standards			IEC 62271-200 - 62271-100		
Earthing Switch					
Class			Class E2 (5 closure) IEC 62271-103		
Short Circuit Current	31,5 kA t= 3 sec	31,5 kA t= 3 sec	31,5 kA t= 3 sec	31,5 kA t= 3 sec	
Short Circuit Current (peak)	80 kA	80 kA	80 kA	80 kA	

Ulusoy URING Series

SF₆ Gas Insulated Modular and Compact Switchgears/RMU

Ulusoy 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.



Technical Specification

Type		L Module	F Module	C Module	M Module	LLF - 3 Way		LLC - 3 Way	
Rated voltage		24 kV - 36 kV	24 kV - 36 kV	24 kV - 36 kV	24 kV - 36 kV	24 kV - 36 kV		24 kV - 36 kV	
Rated current		630 A	200 A	630 A	630 A (ATR unit)	200/630 A		630 A	
Short-circuit withstand*	24 kV	21 kA/3 sec	-	21 kA/3 sec	16 kA/1 sec	21 kA/3 sec		21 kA/3 sec	
	36 kV	16 kA/1-3 sec	-	16 kA/1-3 sec	16 kA/1 sec	16 kA/1-3 sn		16 kA/1-3 sec	
		20 kA/1 sec		20 kA/1 sn	16 kA/1 sn			25 kA/1 sec	
Rated short-circuit opening current (r.m.s)*	24 kV	-	20 kA	21 kA	-	L	F	L	C
						-	20 kA	-	21 kA
	36 kV	-	16 kA	16/20/25 kA	-	16 kA		16/20/25 kA	
Rated short-circuit closing current (kA peak)*	24 kV	52,5 kA	50 kA	52,5 kA	-	L	F	L	C
						52,5 kA	50 kA	52,5 kA	52,5 kA
	36 kV	40 kA	40 kA	40/50/62,5 kA	-	L	F	L	C
						40 kA	40 kA	40 kA	40/50/62,5 kA
Internal arc*	24 kV	20 kA/1 sec AFL	20 kA/1 sec AFL	20 kA/1 sec AFL	20 kA/1 sec AFL	20 kA/1 sec AFL		20 kA/1 sec AFL	
	36 kV	16 kA/1 sec AFL	16 kA/1 sec AFL	16-20 kA/1 sec AFL	16 kA/1 sec AFL	16 kA/1 sec AFL		16-25 kA/1 sec AFL	
Power frequency withstand voltage (1 min/r.m.s)	24 kV	50-60 kV							
	36 kV	70-80 kV							
Lightning Impulse withstand (kV peak)	24 kV	125-145 kV							
	36 kV	170-195 kV							
Protection degree	Enclosure	IP 3X	IP 3X	IP 3X	IP 3X	IP 3X		IP 3X	
	SF ₆ tank	IP67	IP67	IP67		IP67		IP67	

* Please contact with the technical department.

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

Ulusoy Liquid Immersed Transformer

Eaton Ankara manufactures liquid immersed transformers in accordance with national/international standards and customer requirements with a power range from 25 kVA to 10 MVA and a maximum voltage level of 36 kV. Requests greater than 5000 kVA should be evaluated on a project basis. Our transformer product groups are manufactured and tested in our factory in accordance with IEC 60076 standards.

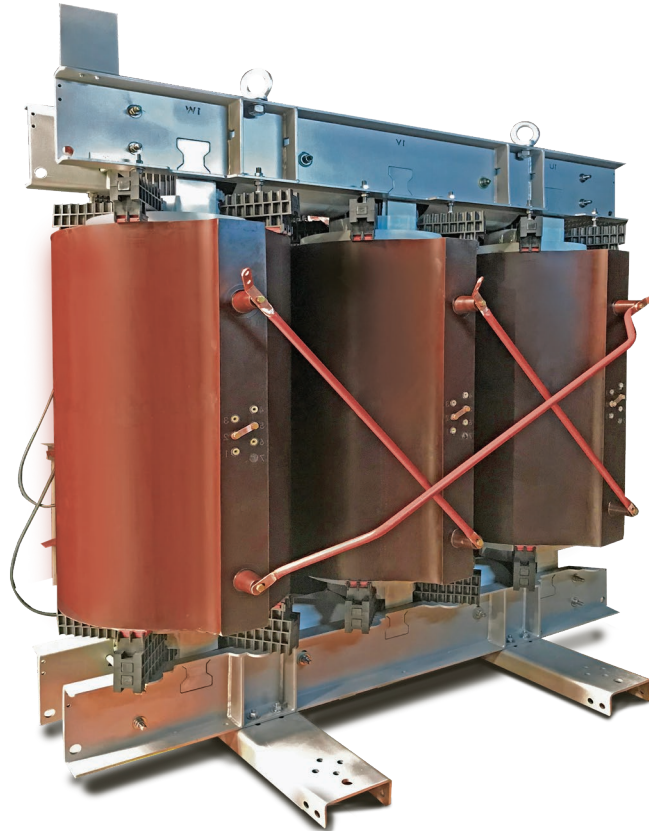
Eaton Ankara designs and manufactures customized transformers according to customer requirements and global standards using state-of-the-art machinery.



Ulusoy Dry Type Transformer

Eaton Ankara manufactures high-quality, high-performance dry type distribution transformers for various applications. Compliant with specific and international standards, these transformers can be used above sea level and in marine environments. They can also be used under demanding operating conditions. It provides general environmental safety with non-flammable liquids, self-extinguishing material, non-toxic gas emissions, low noise levels and low electromagnetic emissions.

Dry type distribution transformers are moisture-proof, making them suitable for operation in humid environments or where pollution is high. These transformers work in environments with over 95% humidity as well as at temperatures down to -25°C.

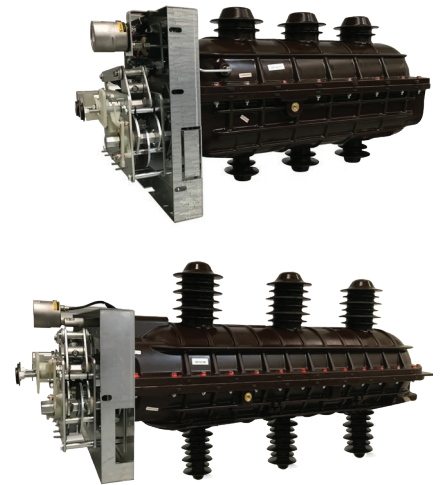


Ulusoy LBSH Series Load Break Switch (LBS)

Ulusoy LBS 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.

Technical Specification

Type		LBS 24	LBS 36
Rated voltage	kV	12/24	36
Rated lightning impulse withstand voltage	kV	75/125	170
Between isolating distance (open position between the contacts)	kV	85/145	195
Rated power frequency with stand voltage (1 min)	kV	28/50	70
Between isolating distance (open position)	kV	32/60	80
Rated frequency	Hz	50-60	50-60
Rated current		630-1250 A*	630-1250 A*
Rated short circuit current (1 sec)	kA	16-20	16-20
Rated short circuit current (peak)	kA	40-50	40-50
Mechanical class		M1	M1
Electrical class		E3	E3
Protection degree		IP68	IP68
Insulation medium		SF ₆	SF ₆
Rated fillin level for insulation		0.5 bar	0.5 bar



Ulusoy USFB Series SF₆ Circuit Breaker (CB)

Ulusoy USFB series circuit breakers are where arc extinguishing takes place. They consist of three independent poles containing fixed and movable contacts that are filled with sulfur hexafluoride in a sealed system that is guaranteed to be impermeable. The breaker mechanism operates by releasing accumulated energy. The mechanism can be operated using a motor or by levers that come with the breakers.

Ulusoy USFB series circuit breakers offer a repeat closing feature and allow various mechanical and electrical interlocks with load break switches or normal disconnectors to be used together. The USFB series is manufactured in accordance with the IEC 62271-100 standard.

Technical Specification

Type		USFB 24R	USFB 36R
Rated voltage	kV	24	36
Rated lightning impulse withstand voltage	kV	125	170
Rated power frequency with stand voltage (1min)	kV	50	70
Rated frequency	Hz	50-60	50-60
Rated current		630-1250 A	630-1250 A
Rated short circuit current (3 sec)	kA	16-20	16-20
Rated short circuit current (peak)	kA	40-50	40-50
Mechanical class		M2	M2
Electrical class		E2	E2
Insulation medium		SF ₆	SF ₆
Rated fillin level for insulation		1.6 - 2.0 bar	1.6 - 2.0 bar



Ulusoy RVU Series Vacuum Circuit Breaker (VCB)

Ulusoy RVU series vacuum circuit breakers feature a lateral operating mechanism and are designed for systems with a rated voltage of 12-24 kV. Air insulated switchgears are used for control and protection purposes in settings such as industrial enterprises, mining enterprises, and power generation/distribution facilities.

Evaporation occurs on the surfaces of the vacuum contacts inside the embedded poles due to the heat released during an arc fault. After the arc is extinguished, the metal vapor in the vacuum condenses on the contact surfaces. Contacts have low resistance and a high short-circuit breaking capacity. These features reduce power consumption and temperature increases over long-term operation. The RVU series is manufactured in accordance with the IEC 62271-100 standard.

Technical Specification

Type		RVU 12	RVU 24
Rated voltage	kV	12	24
Power frequency withstand test voltage (1 min)	kV	28	50
Lightning Impulse withstand (peak)	kV	75	125
Rated current		1250 A	
Rated short circuit current (3 sec)	kA	16-20	16-20
Operating sequence		0.300 m sec - CO-3 min-CO	
DC component max		%40	
Cable charging breaking current		31,5 A	
System neutral		Neutral earth or without earth	
Out of phase breaking		6,25 kA	
Motor supply voltage / Trip coils supply voltage		24-48-110-220VDC, 220VAC	
Mechanical class		M2	
Working Temperature		min: -25°C max: +50°C	
Interruption medium		Vacuum	
Standards		IEC 62271-100	



Ulusoy 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**