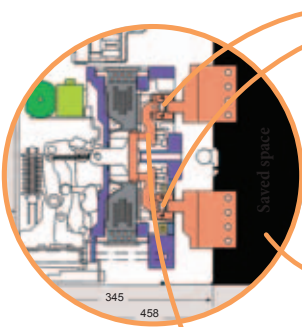


Air circuit breakers

Advantages of Air Circuit Breakers ETIPOWER

ETIPOWER



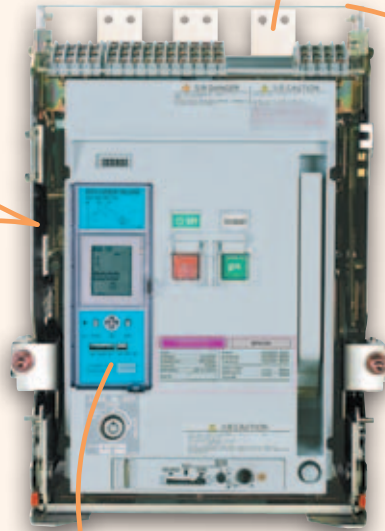
→ ETIPOWER is the world's first "Double Break" ACB, having two breaking contacts per phase, what means that the short time withstand rating (I_{cw} 1sec) is equal to I_{cs} for all models.

→ ETIPOWER ACBs have the world's smallest depth resulting in space saving in switchboards.



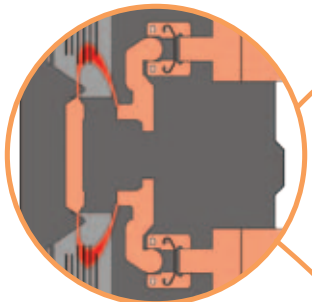
→ Three types of main circuit terminal arrangements are available:
 - vertical terminals,
 - horizontal terminals,
 - front connections.

Different types of terminal arrangements can be specified for the line and load sides.



→ The ETIPOWER ACB dissipates all arc energy within its unique "Double Break" arc chamber. The internal energy dissipation within the ACB allows the clearance distance of the ACB to nearby earthed metal to be zero. This will assist in minimizing switchboard height and costs.

"Double Break" system

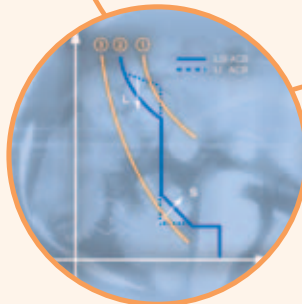


→ The unique "Double Break" main contact system ensures extremely fast interruption of short circuit currents and substantially reduces main contacts wear, what accordingly increase service life.



→ The fixed and moving main contacts can easily be replaced in the field (changing each pole takes around 15 minutes).

there are no clamp screws or flexible leads in the main circuit contact units, what improves the reliability in ON-OFF operation.



→ Our protection relays have LSI characteristics as standard.

This provides an adjustable time delay on overload (L) and also the I^2t ramp characteristic (S).

The settings of these characteristics allow a wide range of selectivity when grading with other protective devices.

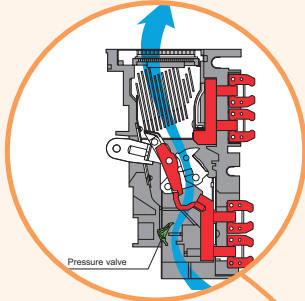


→ The ETIPOWER series is equipped with RMSD sensing over-current release (OCR) having a wide range of protection functions and capabilities.

- Type L: protection of industrial equipment and transformers;
- Type S: protection of generators;
- Type R: general circuit protection

Air Circuit Breakers

→ The EP6 ACB interrupts the current at two points on the line side while dissipating heat from contacts or terminals by efficient air convection through a pressure valve.



→ An ON-OFF button cover prevents inadvertent or unauthorized operation of the ON or OFF button. It can be locked with up to three padlocks.



→ The ON-OFF Cycle Counter is a mechanical 5-bit readout that shows the number of ON-OFF cycles the ACB has performed.

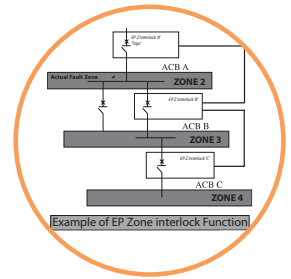


→ The key lock is available in two types: the lock-in ON type that locks the ACB in the closed position, and the lock-in OFF type that locks the ACB in the open position.

When the ACB is fitted with a key lock, the operator cannot operate the ACB unless using a matched key.



→ Using the position padlock lever prevents the breaker body from inadvertently being drawn out. The position padlock lever in the pulled-out position locks the breaker body in the CONNECTED, TEST, or ISOLATED position. Up to three padlocks can be installed.



→ In conventional discrimination systems, short time delays are used to allow a short-circuit current to be tripped by the circuit breaker nearest the fault. With the ETIPOWER Z Interlock system the breaker nearest the fault irrespective of the short time delay setting will trip first.



→ Double Opening and closing Coils provides extended control system redundancy to an ACB. It provides the end user with ultimate reliability on critical UPS circuits connected to critical loads.



→ The unique design of ETIPOWER ACBs allows for the earthing of either the busbar or the circuit of a low voltage system.



→ A door flange provides IP20 protection. For IP31 protection you have to specify the door flange with a gasket.

An IP cover provides an IP55 grade of protection (IEC 60529). Even if the breaker body is on the ISOLATED position, IP cover can still be fitted on the ACB.

Air Circuit Breakers ETIPOWER



Application - Air circuit breakers ETIPOWER are used for protection of distribution lines, generators and other electrical equipment from effects of overload and short-circuit currents.

Air circuit breakers ETIPOWER are available in 3 frame sizes from 800A to 6300A, with a voltage up to 690V:

- size 1: current from 800 to 2000A
- size 2: current 2500 to 3200A (Type SB at 4000A made in 2 sizes)
- size 3: current 4000A - 6300A

Sizes 1 and 2 have two versions, draw-out and fixed. There are many options for connecting and wide range of accessories.

Two types of level breaking capacity:

- Type S (standard) from 65kA to 100kA
- Type H (high breaking capacity) from 80kA to 120kA (optional)

technical specifications / Type		EP 208 S	EP 212 S	EP 216 S	EP 220 S	EP 325 S	EP 332 S	EP 440 SB	EP 650 S	EP 663 S	
Number of poles		3p / 4p	3p / 4p	3p / 4p	3p / 4p	3p / 4p	3p / 4p	3p / 4p	3p / 4p	3p / 4p	
Rated Current I_n (A)		800	1250	1600	2000	2500	3200	4000	5000	6300	
Neutral pole amperes frame (4pole) I_n (A)		800	1250	1600	2000	2500	3200	4000	5000	6300	
Rated operational voltage U_n (V)		690	690	690	690	690	690	690	690	690	
Rated breaking capacity, kA ($I_{cs}=I_{cu}$)	$U_n=690V$ AC	50	50	50	50	65	65	85	85	85	
	$U_n=440V$ AC	65	65	65	65	85	85	100	120	120	
Rated breaking capacity, kA (I_{cu})	$U_n=600V$ DC	40	40	40	40	40	40	40	40	40	
	$U_n=250V$ DC	40	40	40	40	40	40	40	40	40	
Rated short time withstand current, kA (I_{cw})	$t=1s$	65	65	65	65	85	85	100	120	120	
	$t=3s$	50	50	50	50	65	65	75	85	85	
Mechanical life	with maintenance	30000	30000	30000	25000	20000	20000	15000	10000	10000	
	without maintenance	15000	15000	15000	12000	10000	10000	8000	5000	5000	
Electrical life	without maintenance ($U_n=460V$ AC)	12000	12000	12000	10000	7000	7000	3000	1000	1000	
	($U_n=690V$ AC)	10000	10000	10000	7000	5000	5000	2500	500	500	
Total breaking time (s)		0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,05	0,05	
Type of Mounting		Fixed / Drawout						Drawout			
Total Fixed Weight (kg)		53/59	53/59	54/60	54/60	80/92	80/92	-/-	-/-	-/-	
Total Draw-Out Weight (kg)		73 / 86	73 / 86	76 / 90	79 / 94	105 / 125	105 / 125	126 / 158	200/260	220/285	
Outline Dimension (mm)											
Fixed Type		a	360 / 445	360 / 445	360 / 445	360 / 445	466 / 586	466 / 586	- / -	- / -	- / -
		b	460	460	460	460	460	460	-	-	-
		c	290	290	290	290	290	290	-	-	-
		d	75	75	75	75	75	75	-	-	-
Draw-out Type		a	354 / 439	354 / 439	354 / 439	354 / 439	460 / 580	460 / 580	460 / 580	799/1034	799/1034
		b	460	460	460	460	460	460	460	460	460
		c	345	345	345	345	345	345	345	380	380
		d	40	40	40	40	40	40	140	60	60

Air circuit breakers ETIPOWER are available with three types of OCRs (over-current release):

AGR-11: Standard OCR with adjustment dial serves as the current protection and overload ground fault protection, neutral protection and signalling overload. AGR-21 / 22B LCD Type provides protection & measurement of current (only) and has trip signal for each function, the signal is permanent. It has a possibility of communications on the M-bus protocol.

AGR-31B Enhanced OCR with backlit. It provides protection & measurement of current, voltage, Power etc... It has permanent trip signal for each function.

Standard Specification includes:

- Padlockable Mechanical Close & Open Buttons
- Mechanical Close & Open Indicators
- Mechanical Indication of spring Charged/Discharged State
- 4AB Auxiliary contacts
- Terminal Cover
- IP20 Door Flange
- Horizontal or Vertical Busbar Connections
- Spring Charged main Circuit Shutters
- Control Circuit Shutters
- Position Indicator
- Drawout Handle

Note: A full description and specifications of Air circuit breakers are in the catalogue ETIPOWER 2010.