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2020

Susol Super Solution

Compact ACB

Compact Air Circuit Breakers 1600A



LS ELECTRIC

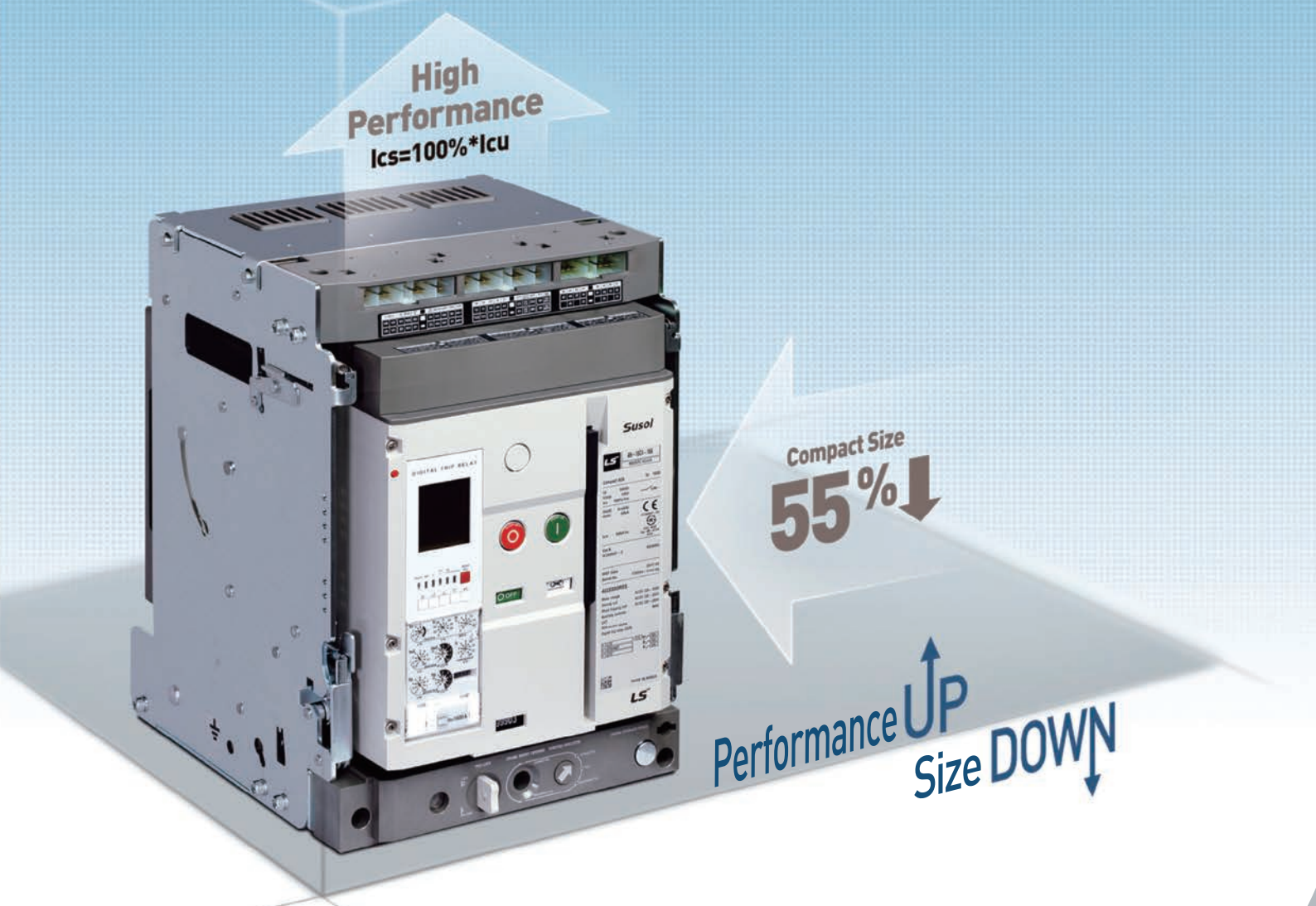
Compact ACB 1600A

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Change low voltage switchgears!

Another evolution of size,
cost and performance for
low voltage power circuit breakers!



Susol Super Solution
Compact ACB 1600A

- Cat.A (Current limiting type) 150kA/415V
- Cat.B (General type) 50kA/690V, Icw = 50kA/1sec (30kA/3sec)

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Compact ACB



AN – **16** **C** **3** **10** **J**

Category B	
AN	42kA/690V
AH	50kA/690V

AF	
08	800AF
16	1600AF

Phase array	
C	(N)RST
V	RST(N)

No. of pole	
3	3P
4	4P

Rated current	
00	Without OCR & CT
04	400A
⋮	⋮
16	1600A

Installation & Connection	
withdrawable type	
A	Automatic connection
J	Manual Connection
Fixed type	
H	Horizontal type
V	Vertical type
M	Upper-Horizontal / Lower-Vertical type
N	Upper-Vertical / Lower-Horizontal type
P	Plane type
Z	Plane spread type
R	Spread type
T	Plane vertical type
X	Cable Lug type

Category A	
AR	150kA/415V

AF	
08	800AF
10	1000AF

Rated current	
00	Without OCR & CT
04	400A
⋮	⋮
10	1000A

Circuit breaker ratings





Common characteristics								
Number of poles	(P)			3P/4P				
Frequency	(Hz)			50/60Hz				
Rated operational voltage	(V, Ue)			690V				
Rated insulation voltage	(V, Ui)			1000V				
Rated impulse withstand voltage	(kV, Uimp)			12kV				
Circuit breaker as per IEC60947-2								
Type				AN/AH/AR-C				
Description				AN-08C	AN-16C	AH-08C	AH-16C	AR-08C	AR-10C
Ampere Frame	(AF)			800	1600	800	1600	800	1000
Rated current (In Max.) at 40℃	(A)			400	-	400	-	400	-
	(A)			630	-	630	-	630	-
	(A)			800	800	800	800	800	800
	(A)			-	1000	-	1000	-	1000
	(A)			-	1250	-	1250	-	-
	(A)			-	1600	-	1600	-	-
Rated current of neutral pole	(A)			100%				
Rated breaking capacity (Icu)	(kA)	IEC60947-2	AC 800V [5]	-		40		-	
			AC 690V/600V/550V	42		50		-	
			AC 500V/480V/460V	42		50		130 [1]	
			AC 415V/380V/220V	50		60		150	
Rated service breaking capacity (Ics)	(kA,%×Icu)			100%				
Rated making capacity (Icm)	(kA)			88.2		105		17 [2]	
Rated Short-time capacity (Icw)	(kA)		1sec/3sec	42/25		50/30		10 [3]	
Operating time (t)	(ms)		Total breaking time	40					
			Closing time	80					
Common mechanical and electrical life cycle								
Life cycle	(time)		Mechanical	12,500				5,000	
			Electrical	6,000				3,000	
Common dimension and weight								
Weight	(kg)	Draw-out type (3P/4P)		22/26				
		Fixed type (3P/4P)		16/19.5				
Dimension	(mm)	Draw-out type	3P	W: 256 D: 269.5 [4] H: 364.3				
			4P	W: 326 D: 269.5 [4] H: 364.3				
		Fixed type	3P	W: 272.4 D: 198.5 [4] H: 322				
			4P	W: 342.4 D: 198.5 [4] H: 322				

1) 130kA/460V, 100kA/500V
2) at 500V
3) 0.5sec
4) Exclude terminal length
5) No DEKRA CB at AC 800V Icu (Secured test report for short circuit performance at KTC

Compact DSU



DH – **16** **C** **3** **00** **J**

DH
Switch-disconnector

AF	
08	800AF
10	1000AF
13	1250AF
16	1600AF

Phase array	
C	(N) RST
V	RST (N)

No. of pole	
3	3P
4	4P

Rated current	
00	Without OCR & CT

Installation & Connection	
withdrawable type	
A	Automatic connection
J	Manual Connection
Fixed type	
H	Horizontal type
V	Vertical type
M	Upper-Horizontal / Lower-Vertical type
N	Upper-Vertical / Lower-Horizontal type
P	Plane type
Z	Plane spread type
R	Spread type
T	Plane vertical type
X	Cable Lug type

Circuit breaker ratings





Common characteristics						
Number of poles	(P)		3P/4P			
Frequency	(Hz)		50/60Hz			
Rated operational voltage	(V, Ue)		690V			
Rated insulation voltage	(V, Ui)		1000V			
Rated impulse withstand voltage	(kV, Uimp)		12kV			
Circuit Breaker as per IEC60947-3						
Type			DH-C			
Description			DH-08C	DH-10C	DH-13C	DH-16C
Ampere Frame	(AF)		800	1000	1250	1600
Rated operational current at 40℃	(A, Ie)		800	1000	1250	1600
Rated current of neutral pole	(%)		100	100	100	100
Rated making capacity (Icm)	(kA)		105			
Rated Short-time capacity (Icw)	(kA)	1sec	50			
Operating time (t)	(ms)	Total breaking time	40			
		Closing time	80			
Common Mechanical and Electrical Life Cycle						
Life cycle	(time)	Mechanical	12,500			
		Electrical	5,000			
Common Demension and Weight						
Weight (3P/4P)	(kg)	Draw-out type (3P/4P)	22/26			
		Fixed type (3P/4P)	16/19.5			
Dimension (3P/4P)	(mm)	Draw-out type	H : 361.3. / D : 257 W (3P/4P)	255.4/326		
		Fixed type	H : 268, / D : 185.6 W (3P/4P)	209/279		

Ordering

Main body



Air circuit breaker
AN / AH
AR
DH Switch-disconnector

Ampere frame (CT Spec.)	
08	800AF
16	1600AF
08	800AF
10	1000AF
08	800AF
10	1000AF
13	1250AF
16	1600AF

Frame sizes & phase array	
C	Standard (N) RST
V	Reverse phase RST (N)
C	Standard (N) RST
V	Reverse phase RST (N)

Number of poles	
3	3P (C)
4	4P (C, V)
3	3P (C)
4	4P (C, V)

Rated current	
00	None
04	400A
06	630A
08	800A
10	1000A
13	1250A
16	1600A
00	None
04	400A
06	630A
08	800A
10	1000A
00	None

Installation & Connection	
withdrawable type	
A	Automatic connection
J	Manual connetion
Fixed type	
H	Horizontal type
V	Vertical type
M	Upper-Horizontal / Lower-Vertical type
N	Upper-Vertical / Lower-Horizontal type
P	Flat type
Z**	Flat spread type
R***	Spread type
T**	Flat vertical type
X**	Cable lug type

* Ampare frame of AR must be selected up to 1000AF.
* A rated current of AR must be selected up to 1000A.
* Installation method is common to all models
** When using Z, T and X type, please purchase adapter kit separately after ordering P type product (Refer to fixed adapter kit table)
*** When using R type, purchase purchase adapter kit separately after ordering H type product (Refer to fixed adapter kit table)

1. Fixed type Adaptor Kit

Number	Part Name	Product Name	How to install	Pole
62363471509	Terminal Kit Ass'y	SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD_FIXED,AN,AH,AR-C3	Z	3
62363471510		SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD_FIXED,AN.AH,AR-C4	Z	4
62363471511		SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD/VER_FIXED,AN,AH,AR-C3	T	3
62363471512		SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD/VER_FIXED,AN,AH,AR-C4	T	4
62363471513		SUB ASS'Y,ADAPTER KIT ASS'Y_LUG_FIXED,AN,AH,AR-C3	X	3
62363471514		SUB ASS'Y,ADAPTER KIT ASS'Y_LUG_FIXED,AN,AH,AR-C4	X	4
62363471515		SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD,AN,AH-C3	R	3
62363471516		SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD,AN.AH-C4	R	4

M1 D1 D1 FX NG0 U1 AL

Motor rated voltage	
MA	Without Motor
M1	AC/DC 100V~130V
M2	AC/DC 200V~250V
M3	DC 125V
M4	DC 24V~30V
M5	DC 48V~60V
M6	AC 380V~415V
M7	AC 440V~480V
M8	AC 48V

Closing coil rated voltage	
D0	Without Closing coil
D1	AC/DC 100V~130V
D2	AC/DC 200V~250V
D3	DC 125V
D4	DC 24V~30V
D5	DC 48V~60V
D6	AC 380V~480V
D7	AC 48V

Shunt coil rated voltage	
D0	Without Shunt coil
D1	AC/DC 100V~130V
D2	AC/DC 200V~250V
D3	DC 125V
D4	DC 24V~30V
D5	DC 48V~60V
D6	AC 380V~480V
D7	AC 48V

Aux.contact & charging types	
FX	Standard OFF-Charge 4C
FC	Standard ON-Charge 4C
LC	Standard ON-Charge 3C TCS
PX	Standard 4C with “OFF” charging type _ low-level contacts
PC	Standard 4C with “ON” charging type _ low-level contacts

* TCS (Trip Circuit Supervision)
* Auxiliary switch for micro load (Order No. 83011176209)

Trip relay
Refer to 21page

UVT coil rated voltage	
U0	Without UVT coil
U1	AC/DC 100V~130V
U2	AC/DC 200V~250V
U3	DC 125V
U4	DC 24V~30V
U5	DC 48V~60V
U6	AC 380V~480V
U7	AC 48V

* UVT Delay module is available over AC / DC 48V

Accessories

Code	Description	Option description
AL	AL1 + MRB	
A1	AL1 + MRB + RES(AC110~130V) *AC Only	
A2	AL1 + AL2 + MRB	
A3	AL1 + MRB + RES(DC 110~125V) *DC Only	
A4	AL1 + MRB + RES(AC 200~250V) *AC Only	
A5	AL1 + MRB + Auto Reset	
A6	AL1 + AL2 + MRB + Auto Reset	
A7	AL1 + MRB + RES(DC 110~125V) + Auto Reset *DC Only	
A8	AL1 + MRB + RES(AC 200~250V) + Auto Reset *AC Only	
A9	AL1 + MRB + RES(AC 110~130V) + Auto Reset *AC Only	
C	C	Counter
B	B	On/Off Button lock
M	MI	Mechanical interlock
D	DI or MOC	Door Interlock or MOC (Mechanism operated cell switch)
K	K1	Key Lock
K2	K2	Key Interlock Set
R	RCS	Ready to Close switch
H1	SHT2 Note 2)	AC/DC 100~130V, Double Shunt coil
H2		AC/DC 200~250V, Double Shunt coil
H3		DC 125V, Double Shunt coil
H4		DC 24~30V, Double Shunt coil
H5		DC 48~60V, Double Shunt coil
H6		AC 380~480V, Double Shunt coil
H7		AC 48V, Double Shunt coil

Note 1) * If mixed option is more than 5, it is separated by mixed option code.
2) UVT & SHT2 can be not applicable together.

E01	A4 (AL1 + MRB + RES(AC200~250V))+C(Counter)+B(ON/OFF Button Lock) +K(Key Lock)+R(Ready to close switch)+M(Mechanicl Interlock)
E02	AL (AL1 + MRB)+K(Key Lock(OFF Lock))+R(Ready to close switch)+D(Door Interlock or MOC)+H1(AC/DC 100V ~ 130V, Double Shunt Coil)
E03	C(Counter)+B(ON/OFF Button Lock)+K2(Key Interlock Set)+R(Ready to close switch)
E04	A4(AL1 + MRB + RES(AC200~250V))+B(ON/OFF Button Lock)+K(Key Lock(OFF Lock))+M(Mechanical Interlock)
E05	A1(AL1+MRB+RES110~130V)+B(ON/OFF Button Lock)+K(Key Lock(OFF Lock))+R(Ready to close switch)+M(Mechanical Interlock)
E06	A2(AL1+AL2+MRB)+C(Counter)+K(Key Lock(OFF Lock))+R(Ready to close switch)

Ordering

Cradle

AL – H16C 3 – J H E S

Air circuit breaker	
LS ACB Cradle	
AL	Bottom operating cradle

Type & Ampare frame	
H16C	AH 400~ 1600A

Number of poles	
3	3P
4	4P

Secondary connection type	
J	Manual connection
A	Auto connection

Installation & Connection	
H	Horizontal type
V	Vertical type
M	Upper-Horizontal/ Lower-Vertical type
N	Upper-Vertical/ Lower-Horizontal type
P**	Flat type
Z**	Flat spread type
R***	Spread type
T**	Flat vertical type
X**	Cable lug type

Arc cover	
S	with arc cover

Shtter	
E	without shutter
F	with shutter

Note1) The cradle of "AL-H" must be selected to use ACB of "AR" type.
** When using P, Z, T and X type, please purchase adapter kit separately after ordering P type product (Refer to fixed adapter kit table)
*** When using R type, purchase purchase adapter kit separately after ordering H type product (Refer to fixed adapter kit table)

2. Draw-out type Adaptor Kit (Cradle)

Number	Part Name	Product Name	How to install	Pole
62363471501	Terminal Kit Ass'y	SUB ASS'Y,ADAPTER KIT ASS'Y_FRONT,AN,AH-C3	P	3
62363471502		SUB ASS'Y,ADAPTER KIT ASS'Y_FRONT,AN,AH-C4	P	4
62363471503		SUB ASS'Y,ADAPTER KIT ASS'Y_FRONT_SPREAD,AN,AH-C3	Z	3
62363471504		SUB ASS'Y,ADAPTER KIT ASS'Y_FRONT_SPREAD,AN.AH-C4	Z	4
62363471505		SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD/VER,AN,AH-C3	T	3
62363471506		SUB ASS'Y,ADAPTER KIT ASS'Y_SPREAD/VER,AN,AH-C4	T	4
62363471507		SUB ASS'Y,ADAPTER KIT ASS'Y_LUG,AN,AH-C3	X	3
62363471508		SUB ASS'Y,ADAPTER KIT ASS'Y_LUG,AN,AH-C4	X	4

Various installation methods

Type	H	V	M	N	P
Form					
Type	**Z**	**R**	**T**	**X**	
Form					

Trip relay







Trip relay type		Communication & protection		Control voltage & frequency	
0	Without trip relay	G	Ground fault (Residual earth fault protection), No communication	0	Self-Power, 60Hz
N	Normal		* L,S,I,G configuration as standard (with LED indicators)	5	Self-Power, 50Hz
A	Ammeter	G	Ground fault (Residual earth fault protection), No communication	0	Self-Power, 60Hz
		Z	Gruond fault (Extermal CT, Earth leakage below 30A)	1	AC/DC 110V~250V, 60Hz
		E	Ground fault (Extermal CT, Earth leakage over 30A)	2	DC 24V~60V, 60Hz
		C	Comm. + Ground fault (Residual earth fault protection)	5	Self-Power, 50Hz
		K	Comm. + Ground fault (Extermal CT, Earth leakage below 30A)	6	AC/DC 110V~250V, 50Hz
		X	Comm. + Ground fault (Extermal CT, Earth leakage over 30A)	7	DC 24V~60V, 50Hz
			* Comm. And output contacts DO NOT work under self-power condition. (AC0, AK0, AX0, AC5, AK5, AX5) * Communication and output contacts for L,S,I,G do not work except OCR LED without control power supply. - AG0, AG5, AZ0, AZ5, AE0, AE5 * Z, K: External CT - LS ZCT applied (fault current 0.5~30A, 1600AF) * E, X: External CT - Private ZCT applied (faullt current >30A)		
P	Power meter	C	Comm. + Ground fault (Residual earth fault protection)	1	AC/DC 110V~250V, 60Hz
		K	Comm. + Ground fault (Extermal CT, Earth leakage below 30A)	2	DC 24V~60V, 60Hz
		X	Comm. + Ground fault (Extermal CT, Earth leakage over 30A)	6	AC/DC 110V~250V, 50Hz
			* Communication functions are normal. (Function unavailable without control power supply) * Applicable to generator protection purpose * Voltage module of P type or more is basic. * K: External CT - LS ZCT applied (fault current 0.5~30A, 1600AF) * X: External CT - Private ZCT applied (faullt current >30A)	7	DC 24V~60V, 50Hz
S	Supreme meter	C	Comm. + Ground fault (Residual earth fault protection)	1	AC/DC 110V~250V, 60Hz
		K	Comm. + Ground fault (Extermal CT, Earth leakage below 30A)	2	DC 24V~60V, 60Hz
		X	Comm. + Earth leakage (Extermal CT, Earth leakage over 30A)	6	AC/DC 110V~250V, 50Hz
			* Communication functions are normal. (Function unavailable without control power supply) * Applicable to generator protection purpose * Voltage module of P type or more is basic. * K: External CT - LS ZCT applied (fault current 0.5~30A, 1600AF) * X: External CT - Private ZCT applied (faullt current >30A)	7	DC 24V~60V, 50Hz