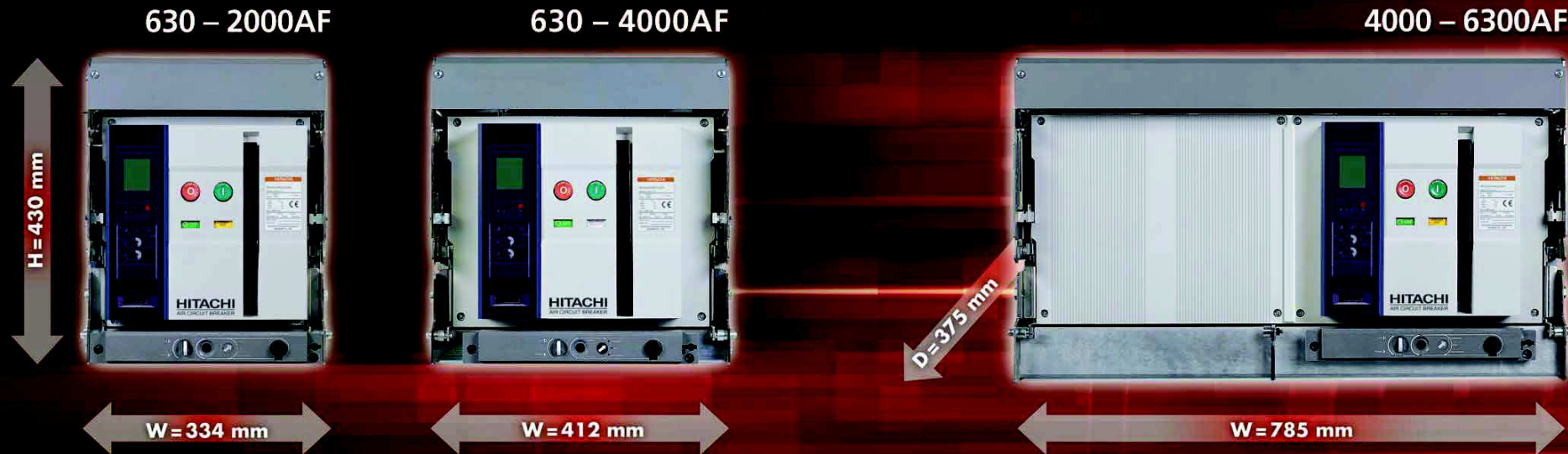


Hitachi Air Circuit Breakers AKH, AKS, AKN series



Full line-up & Compact

Up to 6300A, ACB provides fully lined-up 3 frame. For each frame, there is just one size, which is smaller and more compact. It makes it possible for you to design the optimized volume panel.



85kA 100kA 150kA

AKH-06 – 20D

06	630AF
08	800AF
10	1000AF
13	1250AF
16	1600AF
20	2000AF

I_{cu} = I_{cs} = 85kA/500Vac
W = 334(3p), 419(4p)mm

AKH-06 – 40E

06	630AF	20	2000AF
08	800AF	25	2500AF
10	1000AF	32	3200AF
13	1250AF	40	4000AF
16	1600AF		

I_{cu} = I_{cs} = 100kA/500Vac
W = 412(3p), 527(4p)mm

- The highest breaking capacity: 150kA (6300AF at 500VAC)
- 3 ampere frame sizes: 2000/4000/6300AF
- N phase current conducting capacity: 100%

AKH-40 – 63G

40	4000AF
50	5000AF
63	6300AF

I_{cu} = I_{cs} = 150kA/500Vac
W = 785(3p), 1015(4p)mm

Trip relay



N type

- L/S/I/G/Thermal
- Self Power
- RTC Timer mounted
- Fault information (LED)



A type

- L/S/I/G/Thermal
- ZSI
- Remote Reset
- Modbus/RS-485
- Profibus-DP
- Self Power
- AC/DC 100 – 250V
- DC 24 – 60V
- RTC Timer mounted
- Fault Recording (10EA)



P / S type

- L/S/I/G/Thermal (Continuous)
- US/OV/OF/RF/rP/Vun/Iun
- Measurement: V/A/W/Wh/F/PF
- Harmonics (63th), Waveform (S Type)
- ZSI
- Remote Reset
- Modbus/RS-485
- Profibus-DP
- AC/DC 100 – 250V
- DC 24 – 60V
- RTC Timer mounted
- Event Recording (256EA)
- Fault Recording (256EA)
- Fault Wave (S Type)

Trip relays series



- N Type (Normal)**
- Self-power + Current protection



- P Type (Power Meter)**
- A type + Power Meter + Voltage/Frequency/Unbalance protection

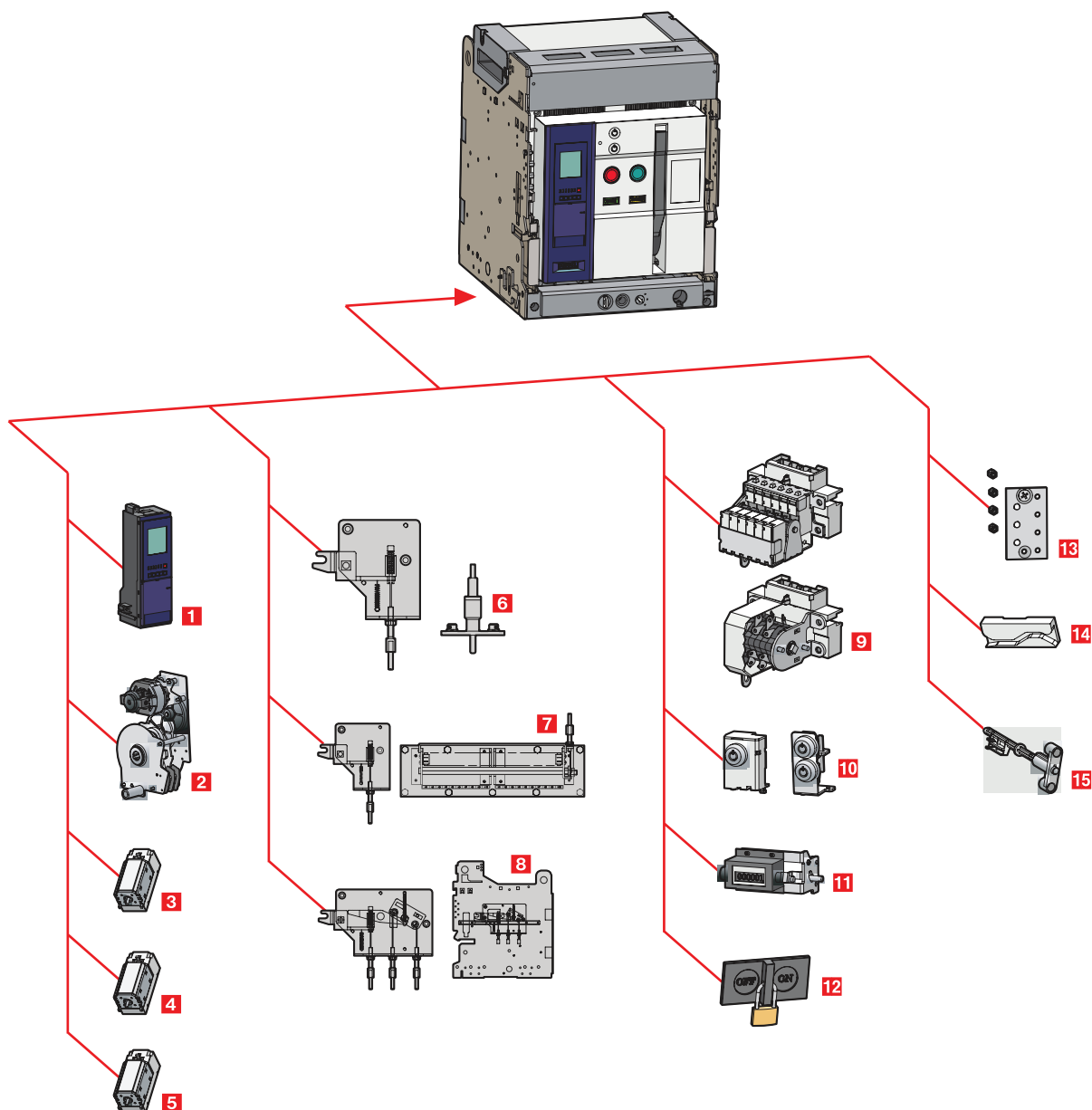


- A Type (Ammeter)**
- Current Meter + Current protection + DO control + Communication



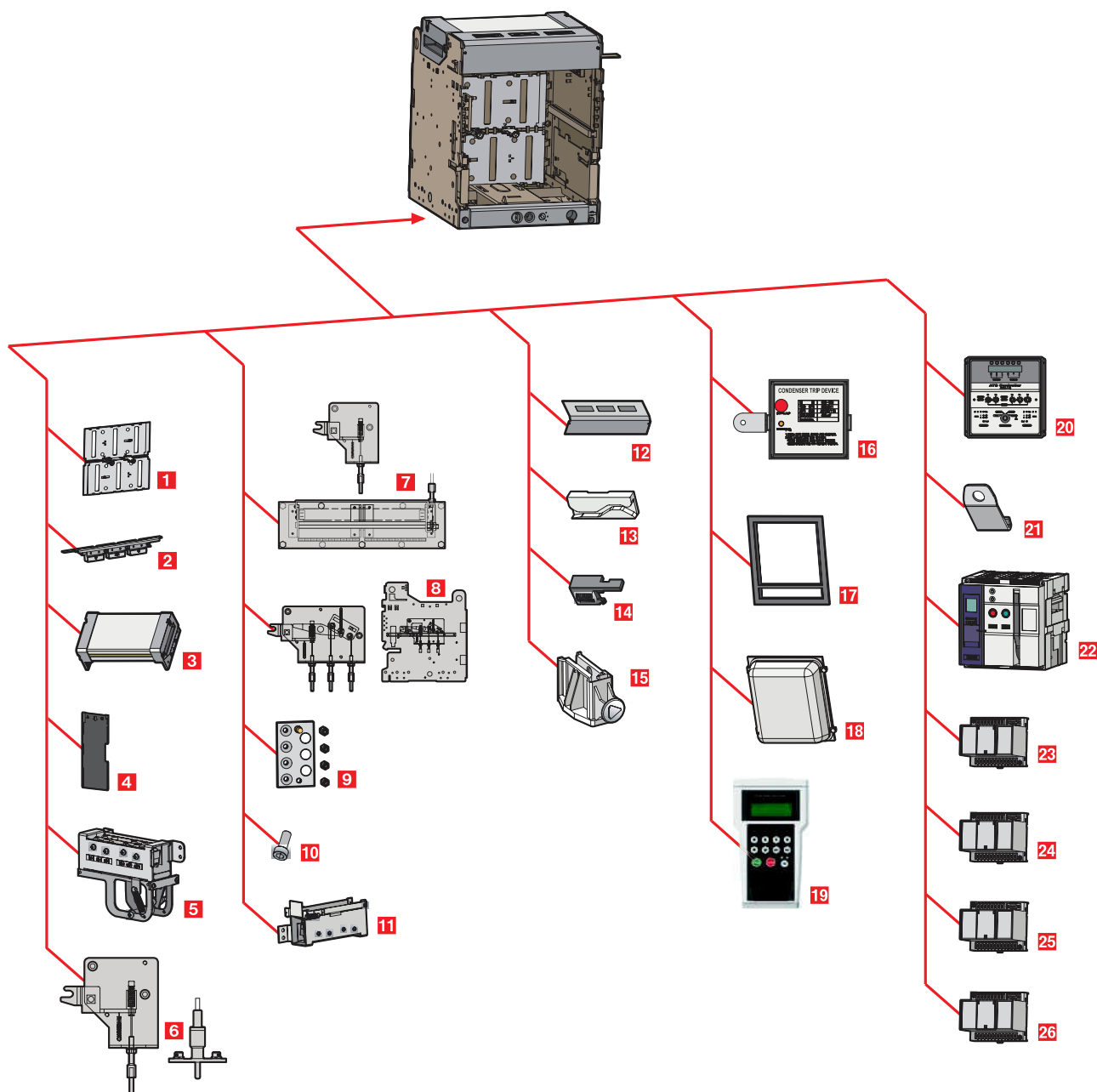
- S Type (Supreme)**
- P type + Harmonics analysis (63 th) + Fault wave recording

Accessories



ACB

- | | |
|--|---|
| 1 Trip relay (OCR) | 9 Auxiliary Switch (AX) |
| 2 Motor (M) | 10 Key Lock (K1), Double Key Lock (K3) |
| 3 Closing Coil (CC) | 11 Counter (C) |
| 4 Shunt Coil (SHT) | 12 On / Off Button Lock (B) |
| 5 Under Voltage Trip Device (UVT) | 13 Miss Insertion Preventing Device (MIP) |
| 6 Door Interlock (DI) | 14 Automatically Discharge Mechanism (ADM) |
| 7 MOC (Mechanically Operated Cell Switch) | 15 Manual Reset Button (MRB) |
| 8 Mechanical Interlock (MI) | |



Cradle

- 1** Safety Shutter (ST)
- 2** Manual Connector
- 3** Zero Arc Space (ZAS)
- 4** Insulation Barrier (IB)
- 5** Cell Switch (CEL)
- 6** Door Interlock (DI)
- 7** MOC (Mechanically Operated Cell Switch)

- 8** Mechanical Interlock (MI)
- 9** Miss Insertion Prevent Device (MIP)
- 10** Cradle Mounting Block (CMB)
- 11** Shorting "b" Contact (SBC)
- 12** Safety Control Cover (SC)
- 13** Automatically Discharge Mechanism (ADM)
- 14** Racking Interlock (RI)
- 15** Safety Shutter Lock (STL)

Others

- 16** Condenser Trip Device (CTD)
- 17** Door Frame (DF)
- 18** Dust Cover (DC)
- 19** OCR Tester (OT)
- 20** ATS Controller (ATS)
- 21** Lifting Hook (LH)
- 22** Dummy ACB
- 23** UVT Time Delay Controller (UDC)
- 24** Profibus-DP Communication module
- 25** Remote I/O
- 26** Temperature Alarm

Multiple connections

Various installation methods

Standard connection



Horizontal type



Vertical type



Front type

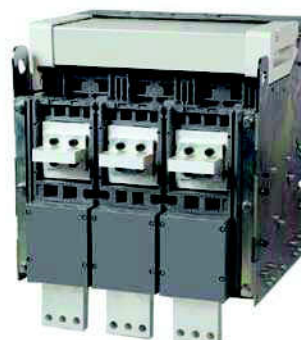
Mixed connection



Horizontal/Vertical type



Vertical/Horizontal type



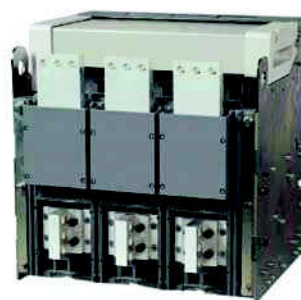
Horizontal/Front type



Vertical/Front type



Front/Horizontal type



Front/Vertical type

- Front connection type is available to be connected regardless of the depth of main circuit terminal, and it is suited for the panel required for limited installation space.
- The vertical and horizontal type terminal are module types which can easily compose the vertical and horizontal terminals by rotating 90°
Vertical and horizontal terminals are different each other for over 3200AF ACBs

Please refer to the rating lists (Page 18 – 21) because the installation method is various according to the rated current.

External configuration

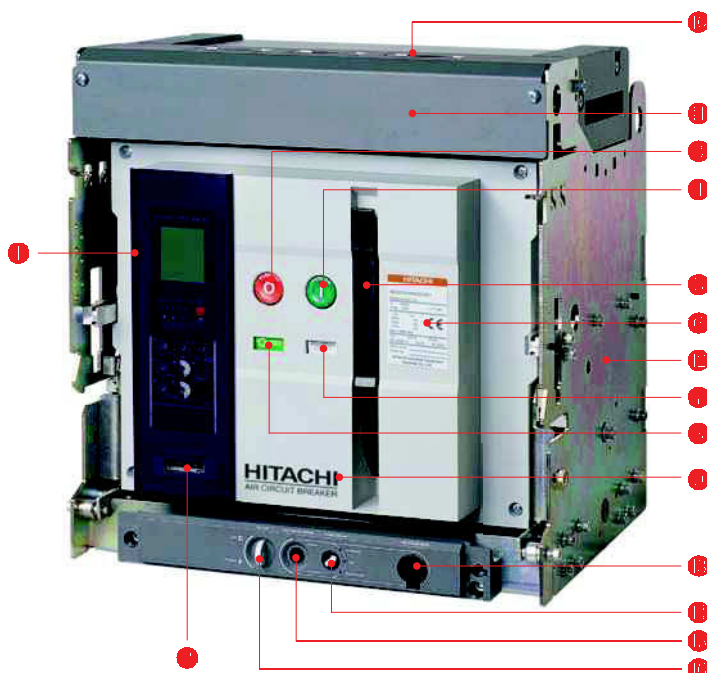
Fixed type ACB



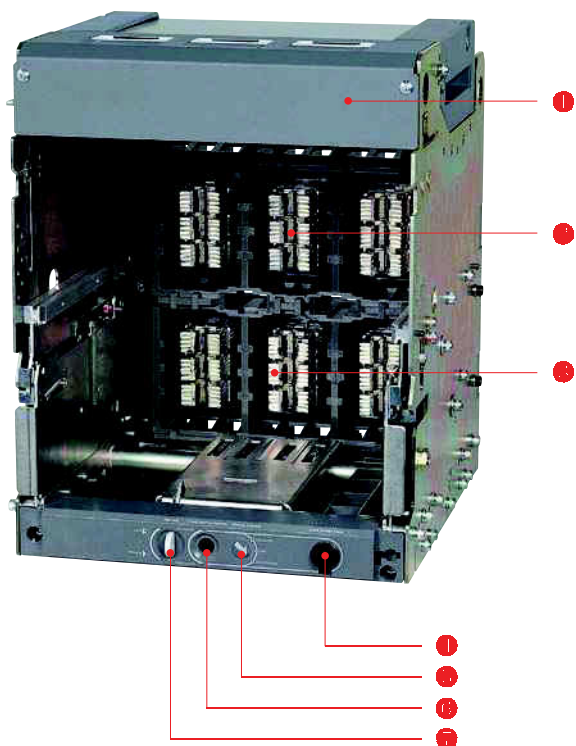
Terms

- ① Trip relay
- ② Counter
- ③ ON button
- ④ OFF button
- ⑤ Charge handle
- ⑥ Rated name plate
- ⑦ Charge/Discharge indicator
- ⑧ ON/OFF indicator
- ⑨ Corporation logo
- ⑩ Arc cover
- ⑪ Terminal cover
- ⑫ Cradle
- ⑬ Draw-out handle
- ⑭ Position indicator
- ⑮ Handle storage space
- ⑯ Pad lock button
- ⑰ Art chute
- ⑱ Control cover
- ⑲ Fixed type bracket

Draw-out ACB (Cradle)



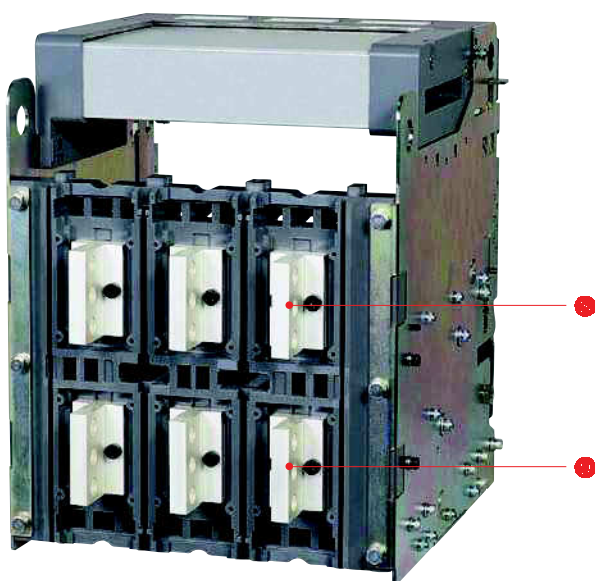
Cradle (Internal)



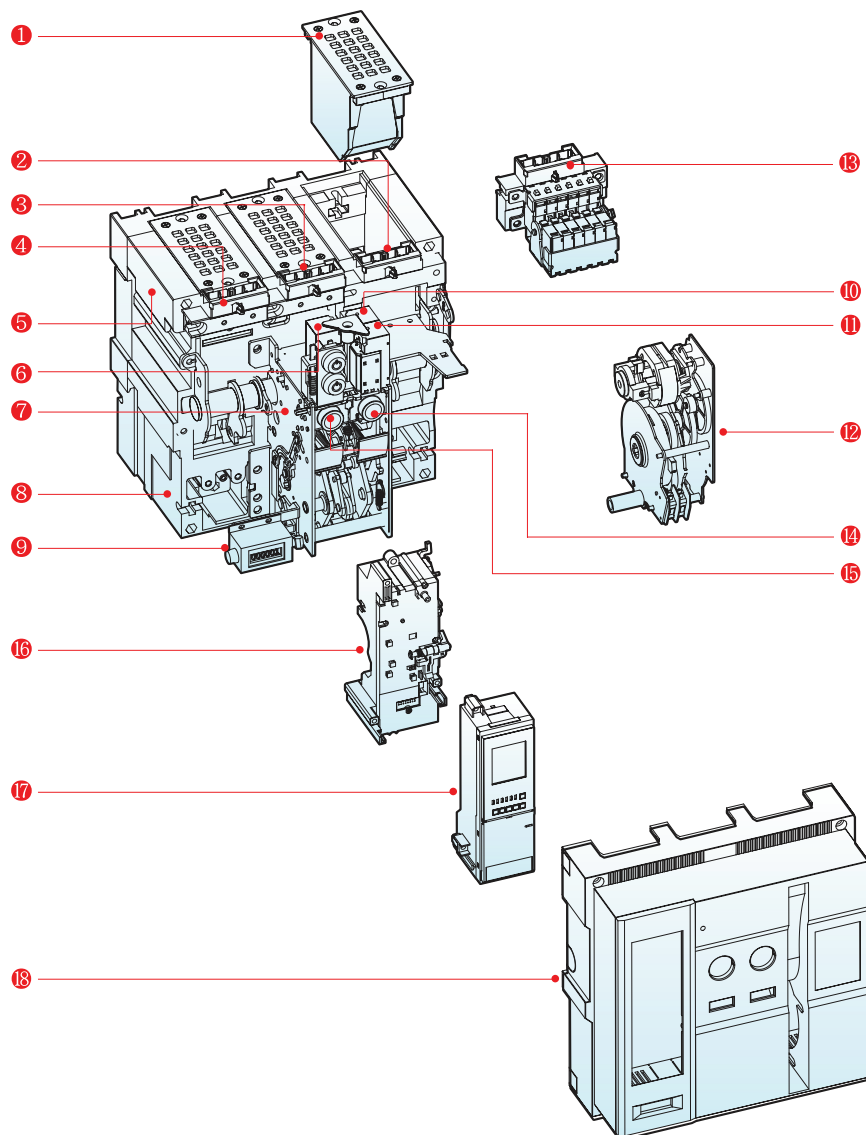
Terms

- ① Terminal cover of control circuit
- ② Cradle finger (Line side)
- ③ Cradle finger (Load side)
- ④ Draw-out handle
- ⑤ Position indicator
- ⑥ Handle storage space
- ⑦ Pad lock button
- ⑧ Connecting conductor (Line side)
- ⑨ Connecting conductor (Load side)

Cradle (Rear)

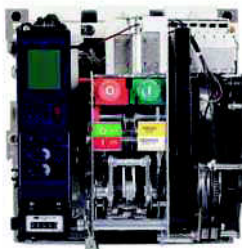


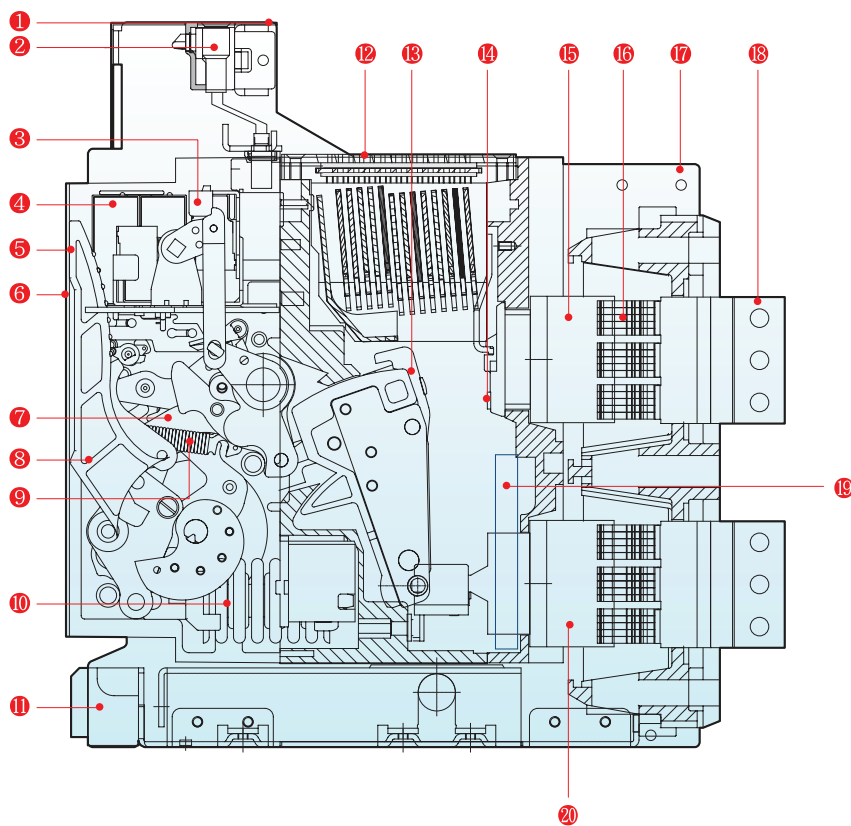
Internal configuration



Terms

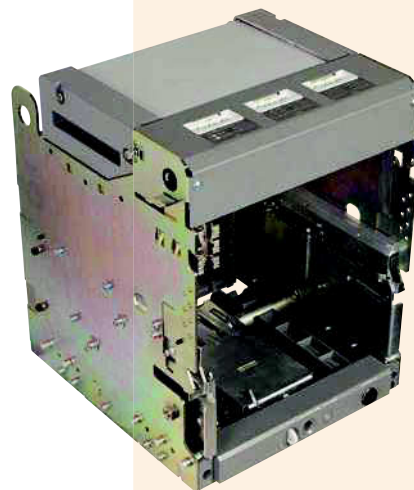
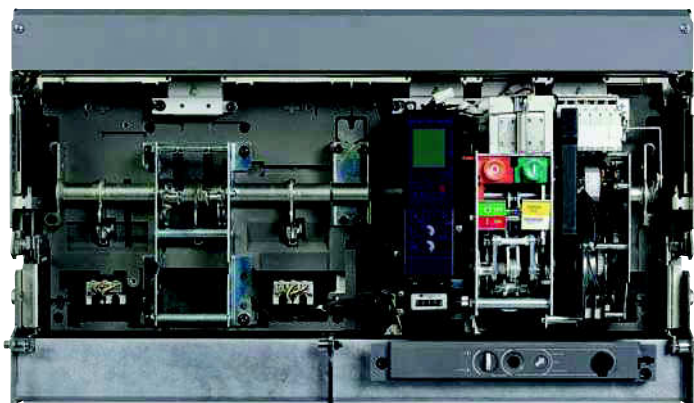
- ① Arc chute
- ② Aux. switch control terminal
- ③ Control power supply terminal
- ④ Trip relay control terminal
- ⑤ Carrying grip
- ⑥ Trip coil or UVT coil
- ⑦ Mechanism
- ⑧ Main body
- ⑨ Counter
- ⑩ Trip coil
- ⑪ Closing coil
- ⑫ Motor Ass'y
- ⑬ Aux. switch
- ⑭ ON button
- ⑮ OFF button
- ⑯ MTD base
- ⑰ Trip relay
- ⑱ Front cover





Terms

- ❶ Control circuit terminal block
- ❷ Control terminal
- ❸ Auxiliary switches
- ❹ Closing, Trip, UVT coil
- ❺ Trip relay
- ❻ Front cover
- ❼ Mechanism
- ❽ Charge handle
- ❾ Trip spring
- ❿ Closing spring
- ⓫ Draw-in/out device
- ⓬ Arc extinguishing part
- ⓭ Moving contact
- ⓮ Fixed contact
- ⓯ Conductor on line side
- ⓰ Cradle finger
- ⓱ Cradle
- ⓲ Connecting conductor
- ⓳ Power supply CT
- ⓴ Conductor on load side



Ordering

ACB & Accessories

AKH	10	D	3	10	J
Type	Ampere frame	Frame size & phase array	No. of pole	Rated current (CT Spec.)	Connections
AKH	-	3P/4P Standard type RST (N)	3 3P (D)	00 Without OCR & CT 02 200A 04 400A 06 630A 04 400A 06 630A 08 800A 10 1000A 13 1250A 16 1600A 20 2000A	Draw-out type J Manual connection A Automatic connection Fixed type H Horizontal type V Vertical type M Mixed type Line: Horizontal Load: Vertical N Mixed type Line: Vertical Load: Horizontal P Front type
AKH	06 630AF 08 830AF 10 1000AF 13 1250AF 16 1600AF 20 2000AF	D	4 4P (D, W)	06 630A 08 800A 10 1000A 13 1250A 16 1600A 20 2000A	
AKH	20 2000AF	E	3 3P (E)	06 630A 08 800A 10 1000A 13 1250A 16 1600A 20 2000A 25 2500A 32 3200A 40 4000A	
AKH	25 2500AF 32 3200AF 40 4000AF	X	4 4P (E, X)	06 630A 08 800A 10 1000A 13 1250A 16 1600A 20 2000A 25 2500A 32 3200A 40 4000A	
AKH	40 4000AF	F	3 3P (F)	40 4000A	
AKH	50 5000AF	Y	4 4P (F, Y)	50 5000A	
AKH	40 4000AF 50 5000AF 63 6300AF	G	3 3P (G)	40 4000A 50 5000A 63 6300A	
AKH	50 5000AF 63 6300AF	Z	4 4P (G, Z)	50 5000A 63 6300A	

M1	D1	D1	AX	NG0	U1	AL
Motor rated voltage	Shunt coil rated voltage	Shunt coil rated voltage	Trip relay	Closing coil rated voltage	Closing coil rated voltage	UVT coil rated voltage
MA Without Motor M1 AC/DC 100 – 130V M2 AC/DC 200 – 250V M3 DC 125V M4 DC 24 – 30V M5 DC 48 – 60V M6 AC 380 – 415V M7 AC 440 – 480V M8 AC 48V	D0 Without Shunt coil D1 AC/DC 100 – 130V D2 AC/DC 200 – 250V D3 DC 125V D4 DC 24 – 30V D5 DC 48 – 60V D6 AC 380 – 480V D7 AC 48V		Refer to 22 page	D0 Without Closing coil D1 AC/DC 100 – 130V D2 AC/DC 200 – 250V D3 DC 125V D4 DC 24 – 30V D5 DC 48 – 60V D6 AC 380 – 480V D7 AC 48V	AX Standard OFF-Charge 3a3b AC Standard ON-Charge 3a3b BX Standard OFF-Charge 5a5b BC Standard ON-Charge 5a5b HX High capacity OFF-Charge 5a5b HC High capacity ON-Charge 5a5b CC Standard ON-Charge 6a6b JC High capacity ON-Charge 6a6b	U0 Without UVT coil U1 AC/DC 100 – 130V U2 AC/DC 200 – 250V U3 DC 125V U4 DC 24 – 30V U5 DC 48 – 60V U6 AC 380 – 480V U7 AC 48V

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

Accessories		
AL	AL1 + MRB	Trip alarm contact 1a + Manual reset button
A2	AL1 + AL2 + MRB	Trip alarm contact 2a + Manual reset button
A3	AL1 + MRB + RES (AC/DC 100 – 130V)	Trip alarm contact 1a + Manual reset button + Remote reset switch
A4	AL1 + MRB + RES (AC/DC 200 – 250V)	Trip alarm contact 1a + Manual reset button + Remote reset switch
A5	AL1 + MRB + Auto reset	AL + Auto reset type
A6	AL1 + AL2 + MRB + Auto reset	A2 + Auto reset type
A7	AL1 + MRB + RES (AC/DC 100 – 130V) + Auto reset	A3 + Auto reset type
A8	AL1 + MRB + RES (AC/DC 200 – 250V) + Auto reset	A4 + Auto reset type
C	C	Counter
S	CS2	Charge switch communication
B	B	ON/OFF button lock
M	M1	Mechanical Interlock
D	DI or MOC	Door Interlock or Mechanical Operated Cell Switch
K	K1	Key Lock
K2	K2	Key Interlock set
K3	K3	Key Lock double
R	RCS	Ready to close switch
T	TM	Temperature Alarm
H 1)	SH12	Double Shut Coil

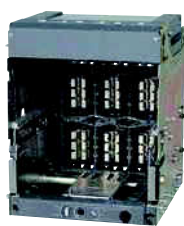
Note) 1. UVT and SH12 are alternative.

2. Other accessories should be ordered separately. (Refer to 48 page)

Ordering

Cradle

AL



N16D

Rated current & frmae	
H16D	AKH-06 – 16D
H20D	AKH-20D
H32E	AKH-20 – 32E
H40E	AKH-40E
H50G	AKH-40 – 50G
H63G	AKH-63G
N16D	AKN-06 – 16D
S20D	AKS-20D
S32E	AKS-20 – 32E
S40E	AKS-40E
S50F	AKS-40 – 50F
S50G	AKS-40 – 50G
S63G	AKS-63G

3

No. of pole	
3	3P
4	4P

J

Terminal connections	
J	Manual connection
A	Automatic connection

H

Connections	
H	Horizontal type
V	Vertical type
P	Front type
M	Mixed type Line: Horizontal Load: Vertical
N	Mixed type Line: Vertical Load: Horizontal

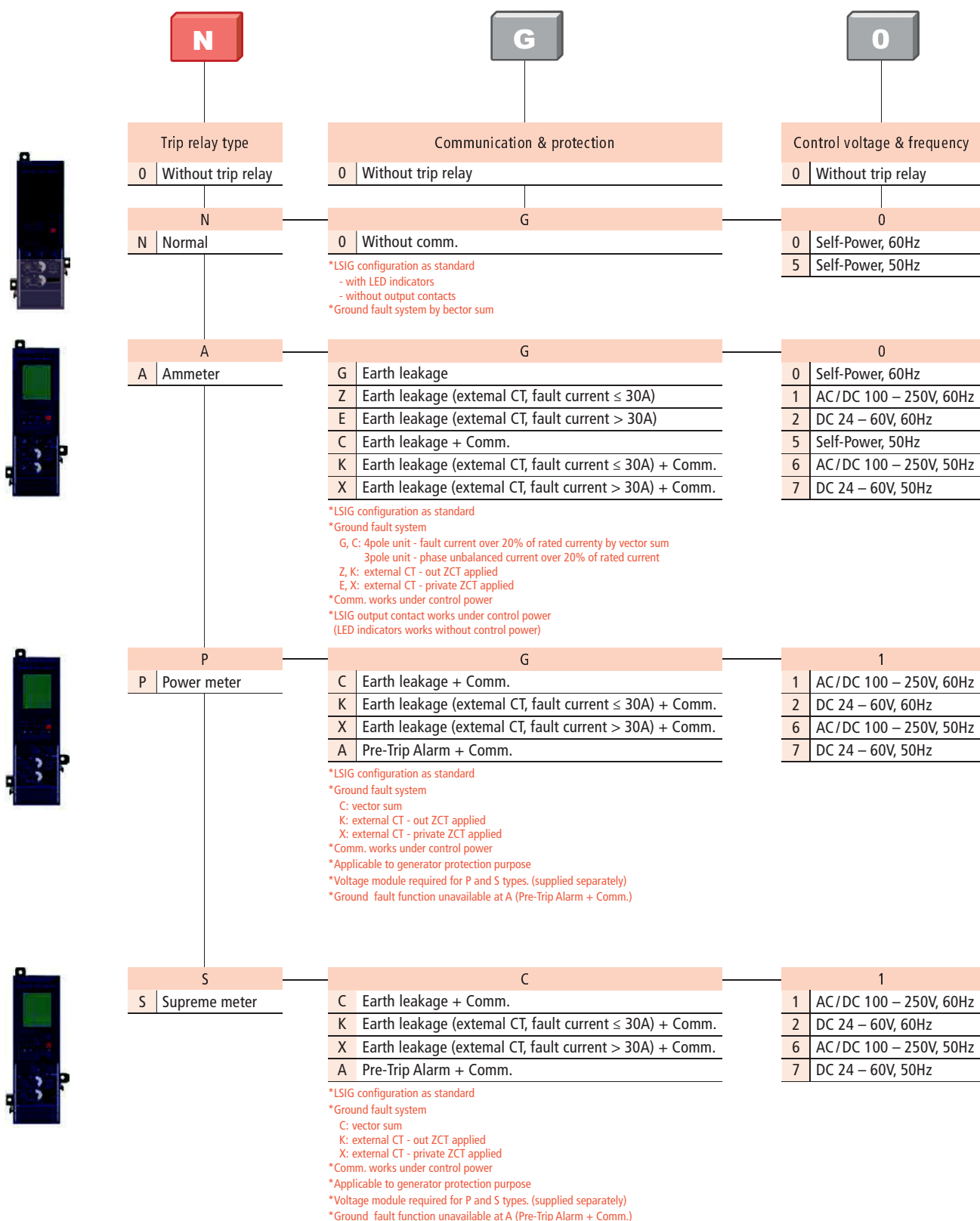
E

Safety shutter	
E	Without safety shutter
F	With safety shutter

N

Arc cover	
N	Without Arc cover
S	With Arc cover

Trip relay



Note) The function like Metering, Communication, ZSI, Remote Reset and DO control are not available only under Self-Power condition.

Rating



Type			AKH-06D	AKH-08D	AKH-10D	AKH-13D	AKH-16D	AKH-20D
Ampere frame	(AF)		630	800	1000	1250	1600	2000
Rated current (A)	(in max)	at 40°C	200 400 630	400 630 800	1000	1250	1600	2000
Setting current (A)*	Control trip relay (... x in max)		(0.4 – 1.0) x in max					
Rated current of neutral pole (A)			400 630	400 630 800	1000	1250	1600	2000
Rated insulation voltage (V)	(Ui)		1,000					
Rated operating voltage (V)	(Ue)		690					
Rated impulse withstand voltage (kV)	(Uimp)		12					
Frequency (Hz)			50/60					
Number of poles (P)			3, 4					
Rated breaking capacity (kA sym)		IEC 60947-2	220V/230V/380V/415V					
AC 50/60Hz	(Icu)	JISC 8201-2-1	460V/480V/500V					
			550V/600V/690V					
Rated service breaking capacity (kA)	(Ics)		...% x Icu					
Rated making capacity (kA peak)		IEC 60947-2	220V/230V/380V/415V					
AC 50/60Hz	(Icm)	JISC 8201-2-1	460V/480V/500V					
			550V/600V/690V					
Rated short-time			1 sec					
withstand current (kA)	(Icw)		2 sec					
			3 sec					
Operating time (ms)			Maximum total breaking time					
			Maximum closing time					
Life cycle (time)	Mechanical	Without maintenance	20,000					
		With maintenance	30,000					
	Electrical	Without maintenance	5,000					
		With maintenance	10,000					
Connections**	Draw-out / Fixed	Horizontal connection	●					
		Vertical connection	○					
		Front connection	○					
		Mixed connection	○					
Weight (kg) (3P/4P)	Draw-out type	Main body	Motor charging type					
		(With cradle)	63/74					
		Cradle only	61/72					
	Fixed type		29/32					
		Motor charging type	34/44					
		Manual charging type	32/42					
External dimensions (mm) (H x W x D)		Draw-out type	3P					
			4P					
		Fixed type	3P					
			4P					
Trip relay			N, A, P, S type					
Certificate & Approval			KEMA					

*Refer to trip relay specification. **●: Standard, ○: Option



AKH-06E	AKH-08E	AKH-10E	AKH-13E	AKH-16E	AKH-20E	AKH-25E	AKH-32E	AKH-40E
630	800	1000	1250	1600	2000	2500	3200	4000
630	800	1000	1250	1600	2000	2500	3200	4000
(0.4 – 1.0) x In max								
630	800	1000	1250	1600	2000	2500	3200	4000
1,000								
690								
12								
50/60								
3, 4								
100								
100								
85								
100%								
220								
220								
187								
85								
75								
65								
40								
80								
15,000								
20,000								
5,000								
10,000								
●								○
○								●
○								-
○								-
87/103								104/147
85/101								102/145
44/55								58/70
44/55								63/100
42/53								61/98
430 x 412 x 375								
430 x 527 x 375								
300 x 378 x 295								
300 x 493 x 295								
N, A, P, S type								
KEMA								

AKH-40G	AKH-50G	AKH-63G
4000	5000	6300
4000	5000	6300
(0.4 – 1.0) x In max		
4000	5000	6300
1,000		
690		
12		
50/60		
3, 4		
150		
150		
100		
100%		
330		
330		
220		
100		
100		
100		
40		
80		
10,000		
15,000		
2,000		
5,000		
○		
●		
-		
-		
181/223		186/230
179/221		184/228
97/117		102/124
98/123		103/130
96/121		101/128
460 x 785 x 375		
460 x 1,015 x 375		
300 x 751 x 295		
300 x 981 x 295		
N, A, P, S type		
KEMA		

Rating



Type			AKN-06D	AKN-08D	AKN-10D	AKN-13D	AKN-16D	AKS-20D
Ampere frame	(AF)		630	800	1000	1250	1600	2000
Rated current (A)	(in max)	at 40°C	200 400 630	400 630 800	1000	1250	1600	2000
Setting current (A)*	Control trip relay (... x in max)		(0.4 – 1.0) x in max					
Rated current of neutral pole (A)			400 630	400 630 800	1000	1250	1600	2000
Rated insulation voltage (V)	(Ui)		1,000					
Rated operating voltage (V)	(Ue)		690					
Rated impulse withstand voltage (kV)	(Uimp)		12					
Frequency (Hz)			50/60					
Number of poles (P)			3, 4					
Rated breaking capacity (kA sym)		IEC 60947-2	220V/230V/380V/415V					70
AC 50/60Hz	(Icu)	JISC 8201-2-1	460V/480V/500V					70
			550V/600V/690V					65
Rated service breaking capacity (kA)	(Ics)		...% x Icu					100%
Rated making capacity (kA peak)		IEC 60947-2	220V/230V/380V/415V					154
AC 50/60Hz	(Icm)	JISC 8201-2-1	460V/480V/500V					154
			550V/600V/690V					143
Rated short-time withstand current (kA)	(Icw)		1 sec	50	65			
			2 sec	42	55			
			3 sec	36	50			
Operating time (ms)		Maximum total breaking time	40					
		Maximum closing time	80					
Life cycle (time)	Mechanical	Without maintenance	20,000					
		With maintenance	30,000					
	Electrical	Without maintenance	5,000					
		With maintenance	10,000					
Connections**	Draw-out / Fixed	Horizontal connection	●					-
		Vertical connection	○					●
		Front connection	○					-
		Mixed connection	○					-
Weight (kg)	Draw-out type	Main body	Motor charging type					70/85
(3P/4P)		(With cradle)	Manual charging type					68/83
		Cradle only	29/32					33/40
	Fixed type	Motor charging type	34/44					38/47
		Manual charging type	32/42					36/45
External dimensions (mm)		Draw-out type	3P					
(H x W x D)			4P					
		Fixed type	3P					
			4P					
Trip relay			N, A, P type					
Certificate & Approval			KEMA					

*Refer to trip relay specification. **●: Standard, ○: Option





AKS-20E	AKS-25E	AKS-32E	AKS-40E
2000	2500	3200	4000
630, 800 1000, 1250 1600, 2000	2500	3200	4000
(0.4 – 1.0) x In max			
630, 800 1000, 1250 1600, 2000	2500	3200	4000
1,000			
690			
12			
50/60			
3, 4			
85			
85			
85			
100%			
187			
187			
187			
85			
75			
65			
40			
80			
15,000			
20,000			
5,000			
10,000			
●			○
○			●
○			-
○			-
87/103			104/147
85/101			102/145
44/50			58/70
44/55			63/100
42/53			61/98
430 x 412 x 375			
430 x 527 x 375			
300 x 378 x 295			
300 x 493 x 295			
N, A, P type			
KEMA			

AKS-40F	AKS-50F
4000	5000
4000	5000
(0.4 – 1.0) x In max	
4000	5000
1,000	
690	
12	
50/60	
3, 4	
100	
100	
85	
100%	
220	
220	
187	
85	
75	
65	
40	
80	
10,000	
15,000	
2,000	
5,000	
○	
●	
-	
-	
145/173	
143/171	
78/90	
76/94	
74/92	
460 x 629 x 375	
460 x 799 x 375	
300 x 597 x 295	
300 x 767 x 295	
N, A, P type	
KEMA	

AKS-40G	AKS-50G	AKS-63G
4000	5000	6300
4000	5000	6300
(0.4 – 1.0) x ln max		
4000	5000	6300
1,000		
690		
12		
50/60		
3, 4		
120		
120		
100		
100%		
264		
264		
220		
100		
90		
85		
40		
80		
10,000		
15,000		
2,000		
5,000		
○		
●		
-		
-		
181/223		186/230
179/221		184/228
97/117		102/124
98/123		103/130
96/121		101/128
460 x 785 x 375		
460 x 1,015 x 375		
300 x 751 x 295		
300 x 981 x 295		
N, A, P type		
KEMA		