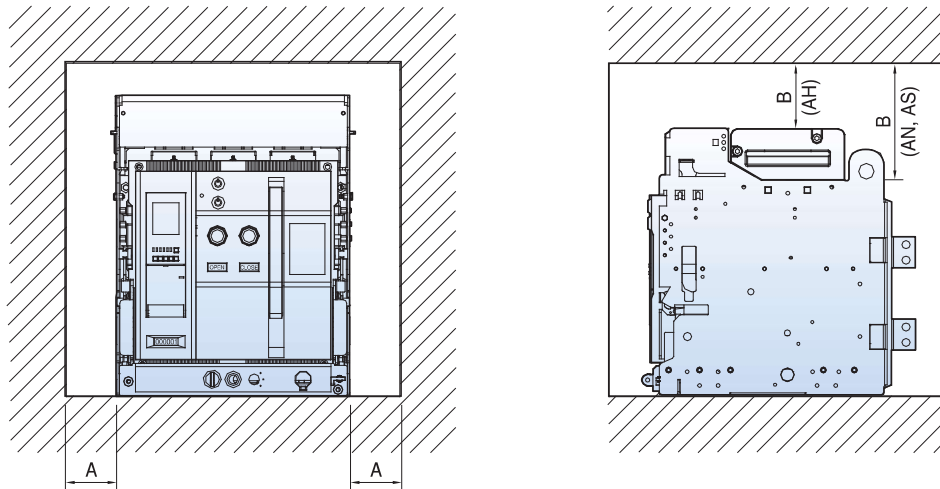


Technical information

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Insulation voltage

You should keep the isolation distance between ACB and panel as below table.

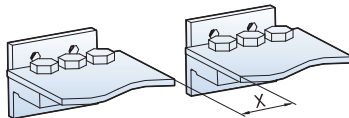


Type		A	B
Fixed	AN/AS	50	150
	AH	50	150
Draw out	AN/AS	50	150
	AH	50	0

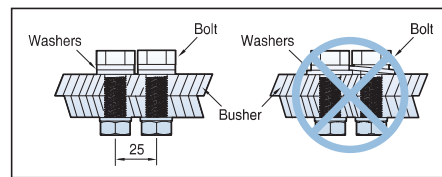
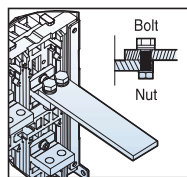
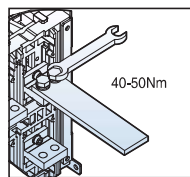
Note) When drawing the distribution panel, it is available to use regardless of the distance between ACB and the wall of the panel because Susol ACB(draw-in/out type) extinguishes the arc in the Arc Chute and Arc Cover clearly.

Minimum isolation distance

For the safety, all the electric charging parts need to be installed over minimum isolation distance.




Insulating voltage (Ui)	Minimum isolation distance (X min)
600V	8 mm
1000V	14 mm



Screw type	Tightening torque			
	Standard(kgf·cm)	Tolerance	Standard(N.m)	Tolerance
M8	135	±16	13.3	±1.6
M10	270	±32	26.5	±3.2
M12	480	±57	46.6	±5.6

Temperature derating

The table below indicates the maximum current rating, for each connection type, as a function of the ambient temperature around the circuit breaker and the busbars. Circuit breakers with mixed connections have the same derating as horizontally connected breakers. For ambient temperatures greater than 60°C, consult us. Temperature inside the switchboard around the circuit breaker and its connection: T(IEC 60947-2)

Frame	Rated current	ACB terminal	Applicable busbar size											
				Horizontal type					Vertical type					
				40°C	45°C	50°C	55°C	60°C	40°C	45°C	50°C	55°C	60°C	
1600AF AN-D AS-D AH-D	200A	15t×50×1EA	5t×50×1EA	200A	200A	200A	200A	200A	200A	200A	200A	200A	200A	
	400A			400A	400A	400A	400A	400A	400A	400A	400A	400A		
	630A		5t×50×2EA	630A	630A	630A	630A	630A	630A	630A	630A	630A	630A	
				10t×60×1EA	630A	630A	630A	630A	630A	630A	630A	630A	630A	630A
	800A		6t×50×2EA	800A	800A	800A	800A	800A	800A	800A	800A	800A	800A	
				10t×60×1EA	800A	800A	800A	800A	800A	800A	800A	800A	800A	800A
	1,000A		8t×50×2EA	1000A	1000A	1000A	1000A	1000A	1000A	1000A	1000A	1000A	1000A	
				6t×75×2EA	-	-	-	-	-	-	-	-	-	-
				8t×60×2EA	1250A	1250A	1250A	1250A	1250A	1250A	1250A	1250A	1250A	1250A
	1,250A		10t×50×2EA	1250A	1250A	1250A	1250A	1250A	1250A	1250A	1250A	1250A	1250A	
6t×75×3EA		-		-	-	-	-	-	-	-	-	-		
1,600A	10t×60×2EA	1600A	1600A	1520A	1480A	1420A	1600A	1600A	1580A	1550A	1500A			
		8t×60×3EA	1600A	1600A	1520A	1480A	1420A	1600A	1600A	1580A	1550A	1500A		
2000AF AS/AH-D	2,000A	15t×75×1EA	8t×75×3EA	-	-	-	-	-	2000A	2000A	1940A	1860A	1780A	
			10t×100×2EA	-	-	-	-	-	2000A	2000A	1940A	1860A	1780A	
3200AF AS-E AH-E	630A	20t×75×1EA	5t×50×2EA	630A	630A	630A	630A	630A	630A	630A	630A	630A	630A	
			10t×60×1EA	630A	630A	630A	630A	630A	630A	630A	630A	630A	630A	
	800A		6t×50×2EA	800A	800A	800A	800A	800A	800A	800A	800A	800A	800A	
			10t×60×1EA	800A	800A	800A	800A	800A	800A	800A	800A	800A	800A	
	1,000A		8t×50×2EA	1000A	1000A	1000A	1000A	1000A	1000A	1000A	1000A	1000A	1000A	
			6t×75×2EA	-	-	-	-	-	-	-	-	-	-	
			8t×60×2EA	1250A	1250A	1250A	1250A	1250A	1250A	1250A	1250A	1250A	1250A	
	1,250A		10t×50×2EA	1250A	1250A	1250A	1250A	1250A	1250A	1250A	1250A	1250A	1250A	
			6t×75×3EA	-	-	-	-	-	-	-	-	-	-	
	1,600A		10t×60×2EA	1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A	
8t×60×3EA		1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A	1600A			
2,000A	8t×75×3EA	2000A	2000A	2000A	2000A	2000A	2000A	2000A	2000A	2000A	2000A			
	10t×100×2EA	-	-	-	-	-	-	-	-	-	-			
2,500A	10t×75×3EA	2500A	2500A	2500A	2400A	2300A	2500A	2500A	2500A	2500A	2400A			
	8t×75×4EA	2500A	2500A	2500A	2400A	2300A	2500A	2500A	2500A	2500A	2400A			
3,200A	10t×100×3EA	-	-	-	-	-	3200A	3200A	3120A	3050A	2950A			
	10t×75×4EA	3200A	3200A	3100A	3000A	2900A	3200A	3200A	3120A	3050A	2950A			
4000AF AS/AH-E	4,000A	10t×100×3EA	10t×100×4EA	-	-	-	-	-	4000A	4000A	3950A	3800A	3680A	
			10t×75×5EA	-	-	-	-	-	4000A	4000A	3950A	3800A	3680A	
5000AF AS-F	4,000A	20t×125×2EA	10t×100×4EA	4000A	4000A	3920A	3860A	3800A	4000A	4000A	3960A	3900A	3880A	
	5,000A		10t×125×4EA	5000A	5000A	4900A	4800A	4700A	5000A	5000A	4950A	4900A	4850A	
6300AF AS-G AH-G	4,000A	20t×125×2EA	10t×100×4EA	4000A	4000A	4000A	4000A	4000A	4000A	4000A	4000A	4000A	4000A	
	5,000A		10t×125×4EA	5000A	5000A	4900A	4820A	4750A	5000A	5000A	4950A	4870A	4850A	
	6,300A	20t×150×2EA	10t×150×4EA	6300A	6300A	6170A	6040A	5900A	6300A	6300A	6220A	6160A	6100A	

Operating conditions

Ambient temperature

ACB devices can operate under the following temperature conditions

- The electrical and mechanical characteristics are stipulated for an ambient temperature of -5°C to +40°C
- The average temperature should be within + 35°C
- Reduce the continuous conducting current when the temperature is over 45°C (refer to temperature derating)
- Storage condition : -20°C to + 60°C is recommended.

Altitude

Susol ACB is designed for operation at altitudes under 2000m. At altitudes higher than 2000m, emitting heat is lowered and operating voltage, continuous current capacity, and breaking capacity will be reduced. Durability of the insulation is also reduced according to the atmosphere pressure.

According to the below table, change the ratings upon a service condition.

Item	Altitude [m]	2000m	3000m	4000m	5000m
Withstand voltage [V]		3500	3150	2500	2100
Average insulating voltage [V]		1000	900	700	600
Max. using voltage [V]		690	590	520	460
Current compensation constant		1 × I _n	0.98 × I _n	0.96 × I _n	0.94 × I _n

Environment

Under clean air;

Maximum temperature + 40°C (relative humidity should be under 85%)

Maximum temperature + 20°C (relative humidity should be under 90%)

Do not apply under corrosive or ammonia gas circumstances

(H₂S ≤ 0,01ppm, SO₂ ≤ 0,01ppm, NH₃ ≤ a few ppm)

* Extreme atmosphere conditions

Under high temperature and/or high humidity, the insulation durability, electrical and mechanical features could be deteriorated. At this conditions, increasing corrosion-resistant dealing needs. Corrosion-resistant parts need under this conditions.

Internal resistance and power consumption (per pole)

AF	Rated current (A)	Fixed type		Draw-out type	
		Inner resistance (mΩ)	Power consumption (W/3Phase)	Inner resistance (mΩ)	Power consumption (W/3Phase)
AN-16D	630	0.02	24	0.04	48
	800	0.02	38	0.04	77
	1,000	0.02	60	0.04	120
	1,250	0.02	94	0.04	188
	1,600	0.02	154	0.04	307
AH/AS-20D	630	0.015	18	0.03	36
	800	0.015	29	0.03	58
	1,000	0.015	45	0.03	90
	1,250	0.015	70	0.03	141
	1,600	0.015	115	0.03	230
AH/AS-32E	2,000	0.013	156	0.027	324
	2,000	0.01	120	0.02	240
	2,500	0.01	188	0.02	375
	3,200	0.01	307	0.02	614
	AH/AS-40E	2,000	0.01	120	0.02
2,500		0.01	188	0.02	375
3,200		0.01	307	0.02	614
4,000		0.008	384	0.011	528
AS-50F	4,000	0.008	384	0.011	528
	5,000	0.008	600	0.011	825
AH/AS-63G	4,000	0.006	288	0.009	432
	5,000	0.006	450	0.009	675
	6,300	0.005	595	0.007	833

Note) 1. Above power consumption is whole power consumption for each Rated current, 50/60Hz, 3/4pole.
2. This is inner assistant value per 1 pole.

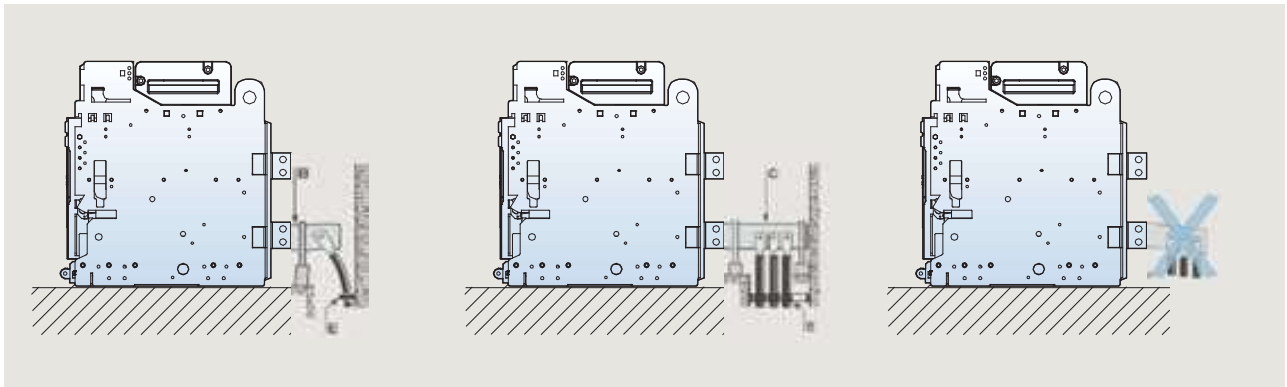
3. Power factor = 1.0

Installation recommendation

BUS-BAR Connection

Cables connections

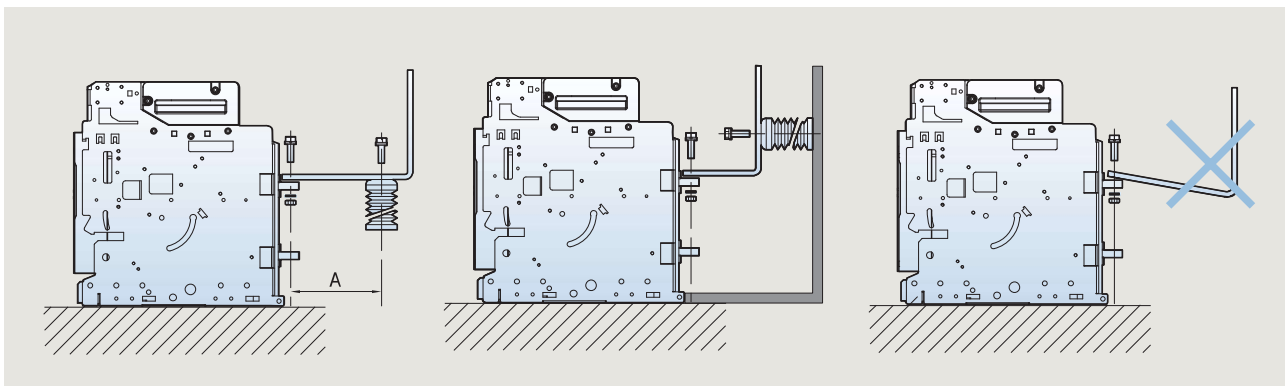
Make sure that no excessive mechanical force put on the rear terminals for cable connection, Extension terminal is fixed such as B, C and cable is to fixed to the frame such as E



Bus-bar connection

For busbar connection, connect access parts with a provided torque and fix with parallel installing the support not to apply terminal weight to circuit breaker.

In order to prevent the spread safety or secondary accidents, secure maximum safe distance A (Table 1) from the access area to withstand the electrical force during the short circuit faults.

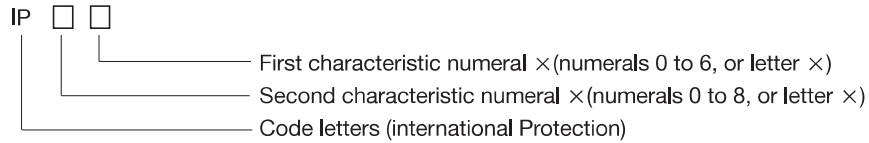


(Table 1) Maximum safe distance A

Short capacity (kA)	30	50	65	80	100	150
Length A (mm)	350	300	250	150	150	150

Installation recommendation

Protection degree provided by enclosures (IP Code) IEC 60529



First characteristic numeral

	Degree of protection	
	Brief description	Definition
0	Non-protected	-
1	Protected against solid foreign objects of 50mm Ø and greater	The object probe sphere of 50mm Ø, shall not fully penetrate
2	Protected against solid foreign objects of 12.5mm Ø and greater	The object probe sphere of 12.5mm Ø, shall not fully penetrate
3	Protected against solid foreign objects of 2.5mm Ø and greater	The object probe sphere of 2.5mm Ø, shall not penetrate at all
4	Protected against solid foreign objects of 1.0mm Ø and greater	The object probe of 1.0mm Ø, shall not penetrate at all
5	Dust-protected	Ingress of dust is not totally prevented, but dust shall not penetrate in a quantity to interfere with satisfactory operation of the apparatus or to impair safety
6	Dust-tight	No ingress of dust

Second characteristic numeral

	Degree of protection	
	Brief description	Definition
0	Non-protected	-
1	Protected against vertically falling water drops	Vertically falling drops shall have no harmful effects
2	Protected against vertically falling water drops when enclosure tilted up to 15°	Vertically falling drops shall have no harmful effects when the enclosure is tilted at any angle up to 15° on either side of the vertical
3	Protected against spraying water	Water sprayed at an angle up to 60° on either side of the vertical shall have no harmful effects
4	Protected against spraying water	Water splashed against the enclosure from any direction shall have no harmful effects
5	Protected against spraying jets	Water projected in powerful jets against the enclosure from any direction shall have no harmful effects
6	Protected against powerful water jets	Water projected in powerful jets against the enclosure from any direction shall have no harmful effects
7	Protected against the effects of temporary immersion in water	Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed in water under standardized conditions of pressure and time
8	Protected against the effects of continuous immersion in water	Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is continuously immersed in water under conditions which shall be agreed between manufacturer and user but which are more severe than for numeral 7

Derating table

ambient temperature outside of the switchboard: Ta (IEC 60439-1)

Switchboard composition (2300×800×900)												
Connection type		Model type AS/AH-06/08E, AN-06/08D					AS/AH-10E, AN-10D					
Model type		Model type AS/AH-06/08E, AN-06/08D					AS/AH-10E, AN-10D					
Busbar dimensions(mm)		2EA-50×6					2EA-50×8					
Ventilated switchboard(IP31) Area of outlet vents: 350cm ² Area of inlet vents: 350cm ²	Ta=35°C	4					800 ↓					
		3					800 ↓	800 ↓				1000
		2			800 ↓	800 ↓	800 ↓				1000	1000
		1	800 ↓	800 ↓	800 ↓	800 ↓	800 ↓	800 ↓	1000	1000	1000	1000
	Ta=45°C	4					800 ↓					
		3					800 ↓	800 ↓				1000
		2			800 ↓	800 ↓	800 ↓				1000	1000
		1	800 ↓	800 ↓	800 ↓	800 ↓	800 ↓	800 ↓	1000	1000	1000	1000
	Ta=55°C	4					800 ↓					
		3					800 ↓	800 ↓				1000
		2			800 ↓	800 ↓	800 ↓				1000	1000
		1	800 ↓	800 ↓	800 ↓	800 ↓	800 ↓	800 ↓	1000	1000	1000	1000
Non Ventilated switchboard(IP41/54) 	Ta=35°C	4					800 ↓					
		3					800 ↓	800 ↓				1000
		2			800 ↓	800 ↓	800 ↓				1000	1000
		1	800 ↓	800 ↓	800 ↓	800 ↓	800 ↓	800 ↓	1000	1000	1000	1000
	Ta=45°C	4					800 ↓					
		3					800 ↓	800 ↓				1000
		2			800 ↓	800 ↓	800 ↓				1000	1000
		1	800 ↓	800 ↓	800 ↓	800 ↓	800 ↓	800 ↓	1000	1000	1000	1000
	Ta=55°C	4					800 ↓					
		3					800 ↓	800 ↓				1000
		2			800 ↓	800 ↓	800 ↓				1000	1000
		1	800 ↓	800 ↓	800 ↓	800 ↓	800 ↓	800 ↓	1000	1000	1000	1000

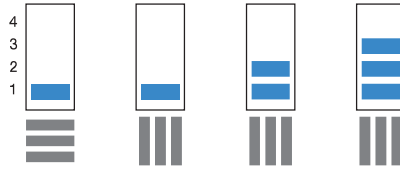
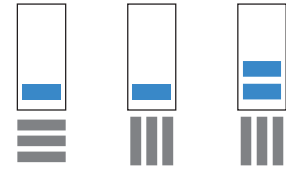


Technical information

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Installation recommendation

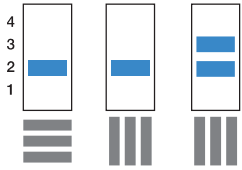
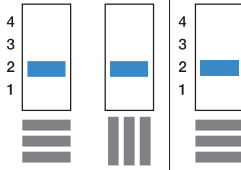
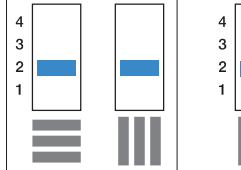
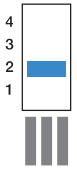


Derating table

ambient temperature outside of the switchboard: Ta (IEC 60439-1)

Switchboard composition (2300×800×900)									
Connection type									
Model type		AS/AH-13E, AN-13D				AS/AH-16E, AN-16D			
Busbar dimensions(mm)		2EA-75×6				2EA-60×10			
Ventilated switchboard(IP31)  Area of outlet vents: 350cm ² Area of inlet vents: 350cm ²	Ta=35°C	4							
		3				1250			
		2			1250	1250			1600
		1	1250	1250	1250	1250	1600	1600	1600
	Ta=45°C	4							
		3				1250			
		2			1250	1250			1600
		1	1250	1250	1250	1250	1600	1600	1600
	Ta=55°C	4							
		3				1250			
		2			1250	1250			1470
		1	1250	1250	1250	1250	1500	1600	1600
Non Ventilated switchboard(IP41/54) 	Ta=35°C	4							
		3				1250			
		2			1250	1250			1600
		1	1250	1250	1250	1250	1600	1600	1600
	Ta=45°C	4							
		3				1250			
		2			1250	1250			1500
		1	1250	1250	1250	1250	1480	1600	1600
	Ta=55°C	4							
		3				1250			
		2			1250	1250			1400
		1	1250	1250	1250	1250	1400	1520	1500

Derating table

ambient temperature outside of the switchboard: Ta (IEC 60439-1)

Switchboard compition (2300×800×900)										
Connection type										
Model type		AS/AH-20E,			AS/AH-25E		AS/AH-32E		AS/AH-40E	
Busbar dimensions(mm)		2EA-75×10			3EA-75×10		4EA-75×10		4EA-75×10	
Ventilated switchboard(IP31)  Area of outlet vents: 350cm ² Area of inlet vents: 350cm ²	Ta=35℃	4			2000					
		3			2000					
		2	2000	2000	2000	2400	2500	3100	3200	3750
		1								
	Ta=45℃	4								
		3			2000					
		2	2000	2000	2000	2300	2400	2900	3100	3550
		1								
	Ta=55℃	4								
		3			2000					
		2	2000	2000	2000	2200	2300	2700	2900	3300
		1								
Non Ventilated switchboard(IP41/54) 	Ta=35℃	4								
		3			2000					
		2	2000	2000	2000	2115	2275	2650	2850	3320
		1								
	Ta=45℃	4								
		3			1900					
		2	1900	1960	1960	2000	2150	2550	2700	3120
		1								
	Ta=55℃	4								
		3			1780					
		2	1800	1920	1920	1900	2020	2370	2530	2960
		1								

Technical information

Susol · Metasol

Installation recommendation

Derating table

ambient temperature outside of the switchboard: Ta (IEC 60439-1)

Switchboard composition (2300×800×900)												
Connection type												
Model type		AS-40F		AS-50F		AS/AH-40G		AS/AH-50G		AS/AH-63G		
Busbar dimensions(mm)		4EA-100×10		4EA-125×10		4EA-100×10		4EA-125×10		4EA-150×10		
Ventilated switchboard(IP31) Area of outlet vents: 500cm ² Area of inlet vents: 500cm ²	Ta=35°C	4										
		3										
		2	3900	4000	4750	4800	4000	4000	4750	5000	5850	
		1										
	Ta=45°C	4										
		3										
		2	3850	3900	4350	4650	4000	4000	4450	4850	5670	
		1										
	Ta=55°C	4										
		3										
		2	3800	3850	4200	4400	4000	4000	4200	4600	5350	
		1										
Non Ventilated switchboard(IP41/54) 	Ta=35°C	4										
		3										
		2	3800	3900	4200	4550	4000	4000	4400	4650	5290	
		1										
	Ta=45°C	4										
		3										
		2	3650	3800	3950	4250	4000	4000	4100	4400	5040	
		1										
	Ta=55°C	4										
		3										
		2	3550	3650	3700	4050	3900	3950	3850	4150	4730	
		1										