

**Susol** Super Solution

# Compact ACB 1600A



**LSIS**



## ***Contents***

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### **Compact ACB 1600A**

• Ratings	03
• Ordering	04
• Electrical diagram	06
• Accessories	08
• Structure	09
• Dimensions	10

# Compact ACB 1600A

## Main Characteristics

- Rated current : Cat.A ~1000A, (Ics: 150kA/415Vac Ics=100%\*Icu)  
Cat.B ~1600A
- Rated breaking time : 3 cycle
- Short time withstand current : 50kA/1sec (Cat.B)
- Mechanical life cycle(without maintenance) :  
12,500(Cat.B), 5,000(Cat.A)
- Cradle : Standard type(Bottom operating)
- Various operating(control) powers  
- DC 24/48V, AC/DC110V, DC125V, AC/DC220V, AC 380V
- Accessories  
- ACB: UVT, Ready to Close S/W, Remote reset coil(RES), Rating Plug, Manual Reset Button, Counter, ON/OFF Button Lock, Key Lock, etc.  
- Cradle: MOC(Mechanism Operating Cell s/w), Cell S/W(Cradle Position Cell s/w), Mechanical Interlock, Door Interlock, Position Keylock, Padlock/Position Lock, Safety Shutter, etc.

## Standards

- IEC 60947-2
- DEKRA CB & CCC Certificates  
(Test for the certificates is expected to be finished in Jun.)



## Ratings

Common Characteristics						
Number of poles		(P)	3P/4P			
Frequency		(Hz)	50/60Hz			
Rated operating 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-16C	AH-16C	AR-10C	
Ampere Frame		(AF)	1600	1600	1000	
Rated current (In Max.) at 40℃		(A)	400	400	400	
		(A)	630	630	630	
		(A)	800	800	800	
		(A)	1000	1000	1000	
		(A)	1250	1250	-	
		(A)	1600	1600	-	
Rated current of neutral pole		(A)	1600	1600	1000	
Rated breaking capacity (Icu)	(kA)	IEC60947-2	AC 690V/600V/550V	42	50	-
			AC 500V/480V		50	-
			AC 415V/380V/440V		50	-
			AC 415V/380V	50	66	150
			AC 240V/220V		66	150
Rated breaking capacity (Ics)		(kA, % × Icu)	100%			
Rated making capacity (Icm)		(kA)	88.2	105/138.6	-	
Rated Short-time capacity (Icw)		(kA)	1sec	42/50	50	-
Operating time (t)		(ms)	Total breaking time	40		
			Closing time	70		
Common Mechanical and Electrical Life Cycle						
Life cycle		(time)	Mechanical	12,500		5,000
			Electrical	6,000		3,000
Common Demension and Weight						
Weight (3P/4P)	(kg)	Draw-out type (3P/4P)	16/19.5	Cradle (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)	272.4/342.4		

## AN-16C3-10J

### M1

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

### D1

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

### D1

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

### FX

Auxiliary switch with charging type	
FX	Standard 4C with "OFF" charging type
FC	Standard 4C with "ON" charging type
SC	Standard 4C with "ON" charging type for TCS type

\* TCS : Tripping coil supervision

### NG0

0	Without trip relay
N	
OCR TYPE	
N	NORMAL

0	Without trip relay
G	
Communication & protection	
G	Ground fault (Residual earth fault protection), No Communication

\* L,S,I,G configuration as standard (with LED indicators)

0	Without trip relay
0	
Control voltage & frequency	
0	Self-Power, 60Hz
5	Self-Power, 50Hz

A	
OCR TYPE	
A	Ammeter

G	
Communication & protection	
G	Ground fault (Residual earth fault protection), No Communication
E	Earth Leakage(External CT), No Communication
C	Communication + Ground fault (Residual earth fault protection)
X	Communication + Earth Leakage(External CT)

\* 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

0	
Control voltage & frequency	
0	Self-Power, 60Hz
1	AC/DC 110V~220V, 60Hz
2	DC 24V~48V, 60Hz
5	Self-Power, 50Hz
6	AC/DC 110V~220V, 50Hz
7	DC 24V~48V, 50Hz

P	
OCR TYPE	
P	Power meter

G	
Communication & protection	
C	Communication + Ground fault (Residual earth fault protection)
X	Communication + Earth Leakage(External CT)

\* Communication functions are Normal.  
(Function unavailable without control power supply)  
\* Applicable to generator protection purpose  
\* Voltage module of P type or more is basic.

0	
Control voltage & frequency	
1	AC/DC 110V~220V, 60Hz
2	DC 24V~48V, 60Hz
6	AC/DC 110V~220V, 50Hz
7	DC 24V~48V, 50Hz

S	
OCR TYPE	
S	Supreme meter

G	
Communication & protection	
C	Communication + Ground fault (Residual earth fault protection)
X	Communication + Earth Leakage(External CT)

\* Communication functions are Normal.  
(Function unavailable without control power supply)  
\* Applicable to generator protection purpose  
\* Voltage module of P type or more is basic.

0	
Control voltage & frequency	
1	AC/DC 110V~220V, 60Hz
2	DC 24V~48V, 60Hz
6	AC/DC 110V~220V, 50Hz
7	DC 24V~48V, 50Hz

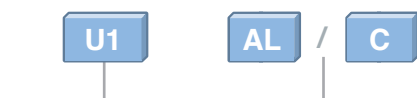
N	
OCR TYPE	
N	NORMAL

V	
Communication & protection	
V	Pre-Trip Alarm

\* Ground fault detection is basic. (Internal CT Vector Sum system)  
\* L,S,I,G configuration as standard (with LED indicators)

1	
Control voltage & frequency	
1	AC/DC 110V~220V, 60Hz
6	AC/DC 110V~220V, 50Hz





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

Option Table		
Character	Option name	
AL	AL1 + MRB	
A1	AL1 + MRB + RES(AC110~130V) * AC private use	
A3	AL1 + MRB + RES(DC110~125V) * DC private use	
A4	AL1 + MRB + RES(AC200~250V) ** AC private use	
A5	AL1 + MRB + Auto Reset	
A7	AL1 + MRB + RES(DC110~125V) + Auto Reset * DC private use	
A8	AL1 + MRB + RES(AC200~250V) + Auto Reset * AC private use	
A9	AL1 + MRB + RES(AC110~130V) + Auto Reset * AC private use	
C	C	COUNTER **AH only
B	B	On/Off Button lock
M	MI	Mechanical interlock **AH only
D	DI or MOC	Mechanism operated cell switch
K	K1	Key Lock
K2	K2	Key Interlock Set
R	RCS	Ready to Close switch
T	TM	Temperature Monitoring **AH only
H1	SHT2 (Note 1)	AC/DC 100V ~ 130V
H2		AC/DC 200V ~ 250V
H3		DC 125V
H4		DC 24V ~ 30V
H5		DC 48V ~ 60V
H6		AC 380V ~ 480V
H7		AC 48V

Note 1) UVT and SHT2 can not be selected together, Select one of two.

Note 2) Codes for over 5 optional accessories are composed separately

N01	A4 (AL1 + MRB + RES(AC200~250V))+C(Counter)+B(ON/OFF Button Lock)+K(Key Lock)+R(Ready to Close switch)+M(Mechanical Interlock)+E(Spring Auto Release)
N02	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)+E(Spring Auto Release)
N03	C(Counter)+B(ON/OFF Button Lock)+K2(Key Interlock Set)+R(Ready to Close switch)+T(Temperature Monitoring)
N04	A4(AL1 + MRB + RES(AC200~250V))+B(ON/OFF Button Lock)+K(Key Lock(OFF Lock))+M(Mechanical Interlock)+T(Temperature Monitoring)
N05	A1(AL1+MRB+RES110~130V)+B(ON/OFF Button Lock)+K(Key Lock(OFF Lock))+R(Ready to Close switch)+M(Mechanical Interlock)+T(Temperature Monitoring)+I(Interlock)+T(Temperature Monitoring)

AN/AH/AR

Automatic circuit breaker	
AN/AH	
AR	

16

Ampere Frame E(CT Spec.)	
-	-
08	800AF
16	1600AF
-	-
08	800AF
10	1000AF

C

Phasing	
• C : 800~1600AF 3/4P	
Standard (N)RST	
• V : 800~1600AF 4P	
Reversed RST(N)	

3

Poles	
• 3 : 3P(C)	
• 4 : 4P(C,V)	

10

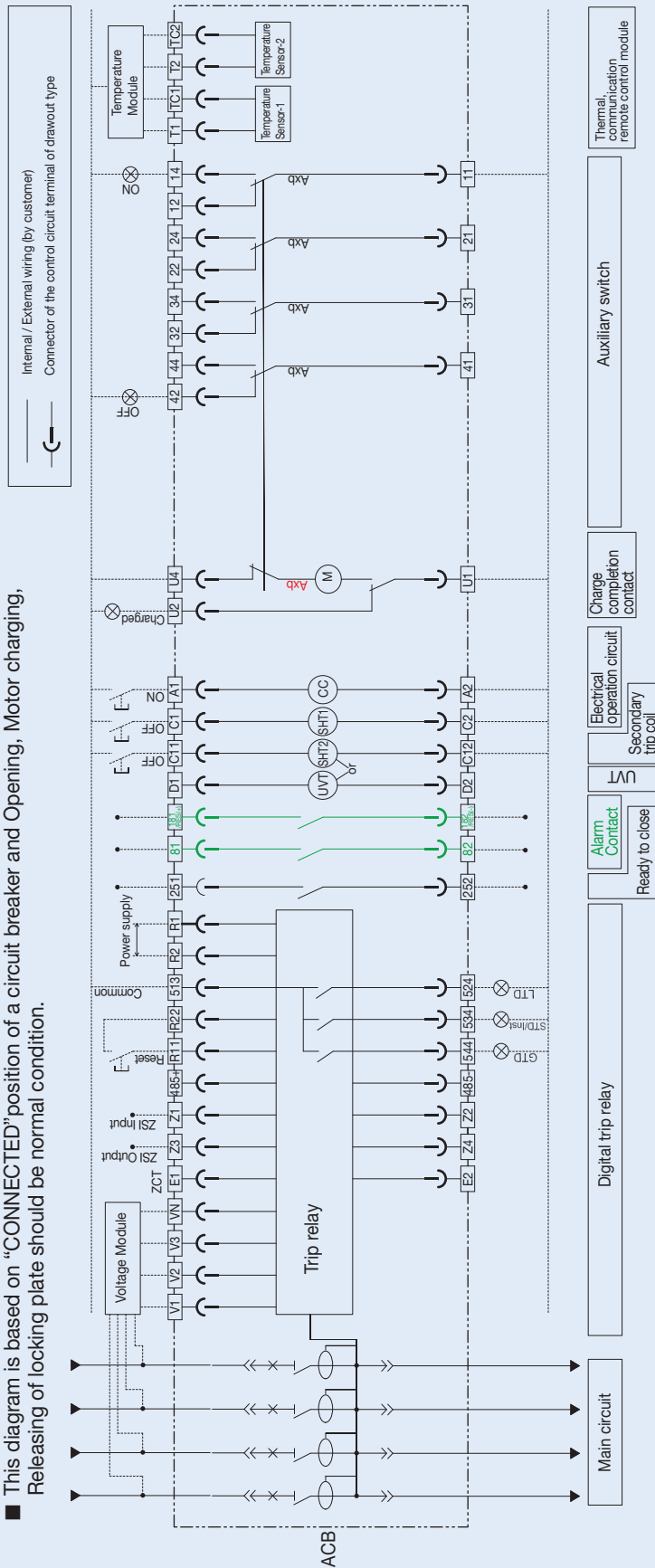
Rated current	
00	None
04	400A
06	630A
08	800A
10	1000A
13	1250A
16	1600A
00	None
04	400A
06	630A
08	800A
10	1000A

J

Connections	
Drawout	
A	Bottom operating (Auto Connect)
J	Bottom operating
S	Side operating (Auto Connect)
T	Side operating
Fixed	
H	Horizontal terminals
V	Vertical terminals
M	Horizontal for line, Vertical for load
N	Vertical for line, Horizontal for load
P	Front terminal
Z	Horizontal with spreaders
R	Vertical with spreaders
T	Front connection via vertical connection adapters fitted with cable-lug adapter
X	Cable Lug

\* 1) AR can be selected up to Ampere Frame 1000AF.  
\* 2) AR can be selected up to 1000AF(CT Spec.)

■ This diagram is based on "CONNECTED" position of a circuit breaker and Opening, Motor charging, Releasing of locking plate should be normal condition.



Terminal code description

11	12	~	41	42	Auxiliary switch "b" contact
11	14	~	41	44	Auxiliary switch "a" contact
U1	U2				Charge completion signal
U1	U4				Motor charging
A1	A2				Closing coil
C1	C2				Shunt trip
C11	C12				2nd shunt trip

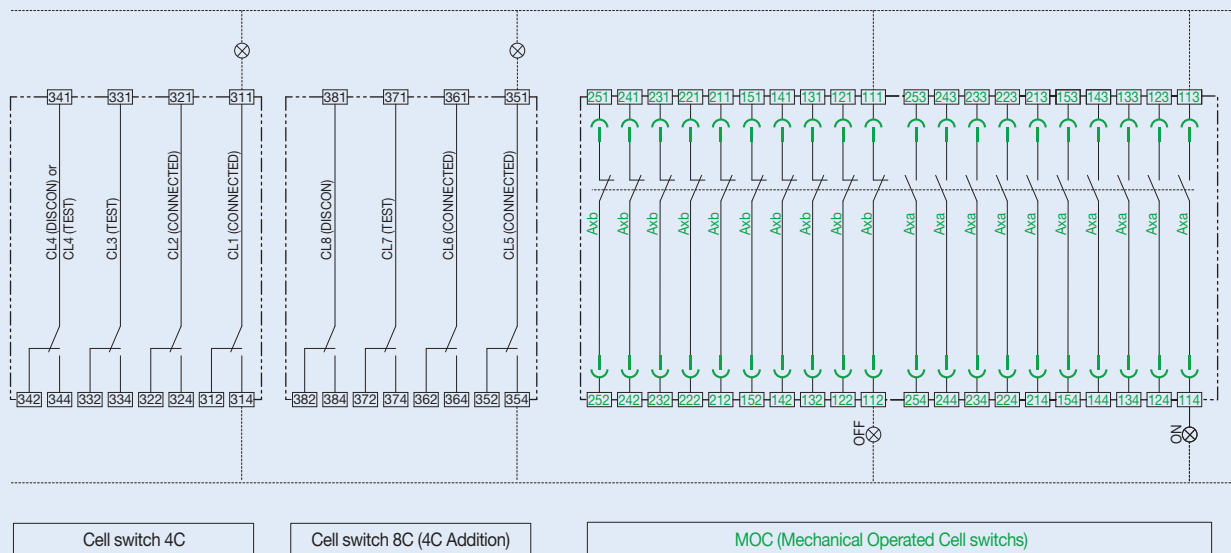
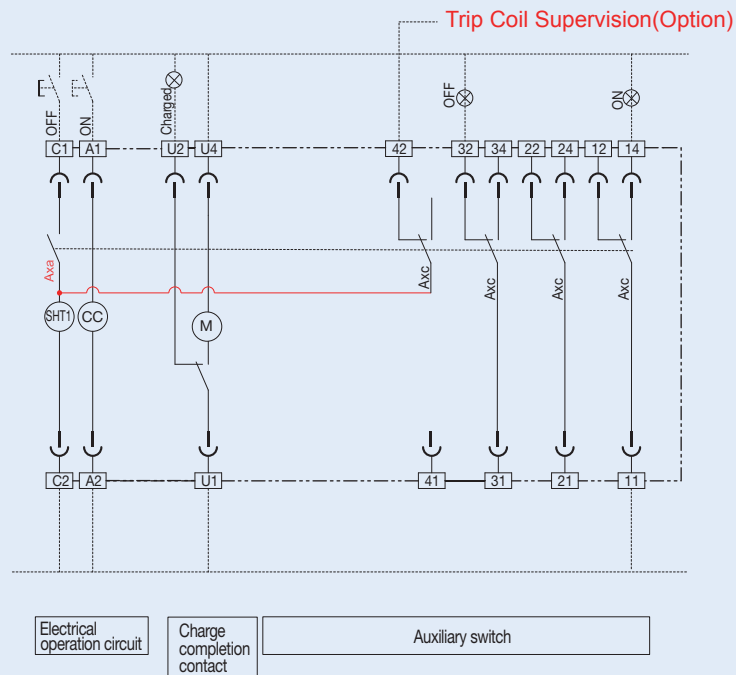
Accessory code description

Ax		Auxiliary switch
LTD		Long time delay trip indicator
STD/Inst		Short time delay/instantaneous
GTD		Ground fault trip indicator
CL1~CL4		Cell switch
(M)		Motor
(CC)		Closing coil
(SHT)		1st Shunt coil
(SHT2)		2nd Shunt coil
(UVT)		UVT coil

RS-485 communication	
485+ 485-	
Z1 Z2	ZSI input
Z3 Z4	ZSI output
E1 E2	ZCT
Voltage module	
VN ~ V3	
Temperature module	
TC1 TC2 ~ T1 T2	
Cell switch	
311 ~ 344	

For detail on auxiliary switches.

Note) 1. The diagram is shown with circuit de-energized, all devices open and charged and relays in normal position  
2. Relay is normal condition and charging type is "Off-Charging"  
3. The standard of auxiliary contact is 4C. The auxiliary switch in above diagram is composed of 4C. See 48 page for more detail on auxiliary switches.  
4. Option  
- Ready to close contact, Trip alarm contact, UVT coil, Fully charged contact, secondary trip coil  
- Temperature module, Voltage module, ZCT, ZSI  
5. Please consult us for the use of ZSI (Zone selective interlocking).  
6. Refer to the page 33 for the connection of Trip relay and the page 43 for UVT.  
7. For connecting RS-485 verify if the polarity is correct

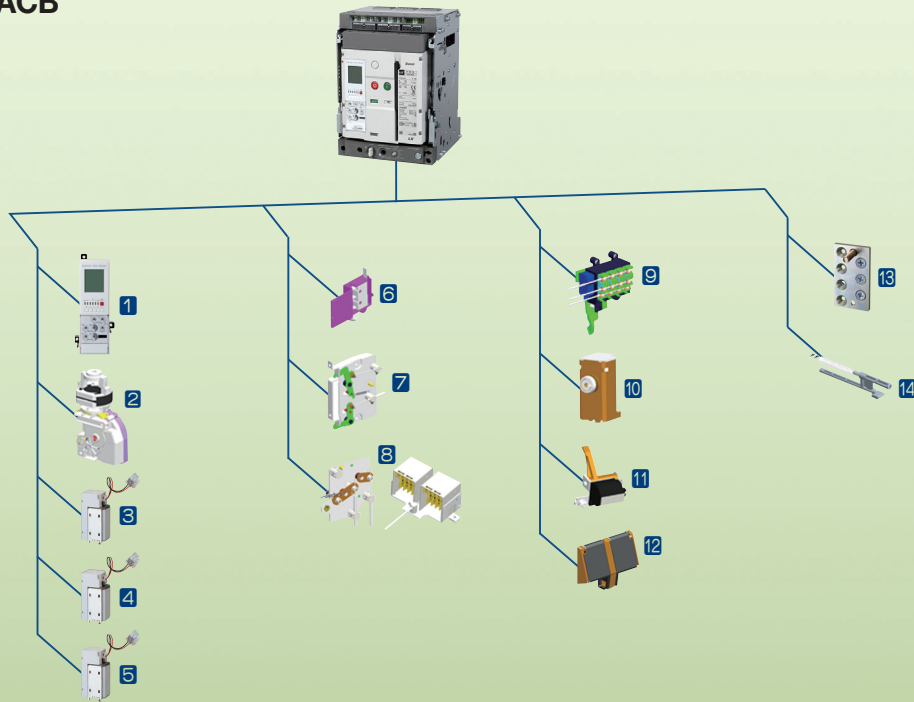


#### Terminal code description

311 ~ 382	Cell switch
111 ~ 254	MOC

Note) 8. Contact configuration for Cell Switch can be changeable if necessary

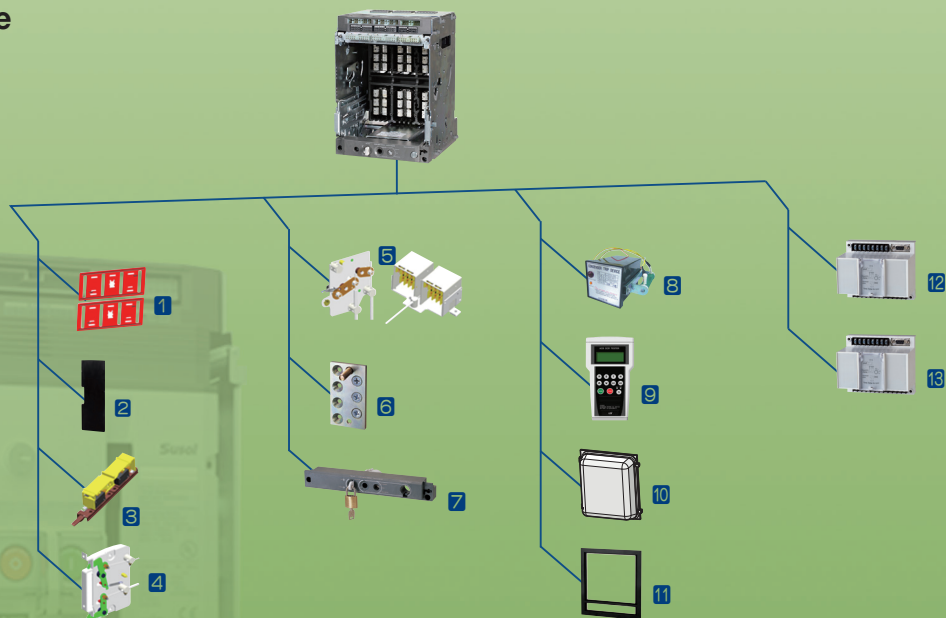
### ■ Main ACB



#### ACB

- |                    |                                    |                          |                                           |
|--------------------|------------------------------------|--------------------------|-------------------------------------------|
| 1 Trip Relay(OCR)  | 5 Under Voltage Trip Device(UVT)   | 9 Auxiliary Switch(AX)   | 13 Miss Insertion Preventing Device (MIP) |
| 2 Motor(M)         | 6 Ready to Close switch(RCS)       | 10 Key Lock(K1)          | 14 Manual Reset Button(MRB)               |
| 3 Closing Coil(CC) | 7 Door Interlock(DI)               | 11 Counter(C)            |                                           |
| 4 Shunt Coil(SHT)  | 8 Mechanical Operated Cell SW(MOC) | 12 ON/OFF Button Lock(B) |                                           |

### ■ Cradle

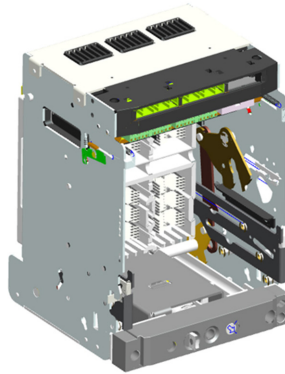


#### Cradle

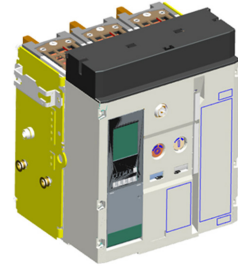
- |                          |                                         |                                   |                           |
|--------------------------|-----------------------------------------|-----------------------------------|---------------------------|
| 1 Safety Shutter(ST)     | 5 Mechanical Operated Cell SW(MOC)      | 9 OCR Tester(OT)                  | 13 Remote Close Open(RCO) |
| 2 Insulation Barrier(IB) | 6 Miss Insertion Prevent Device(MIP)    | 10 Dust Cover(DC)                 | 14 Lifting Hook(LH)       |
| 3 Cell SW(CEL)           | 7 Racking Interlock & Position Lock(RI) | 11 Door Frame(DF)                 |                           |
| 4 Door Interlock(DI)     | 8 Condensor Trip Device(CTD)            | 12 UVT Time Delay Controller(UDC) |                           |



Lower type cradle  
(Main-Type)



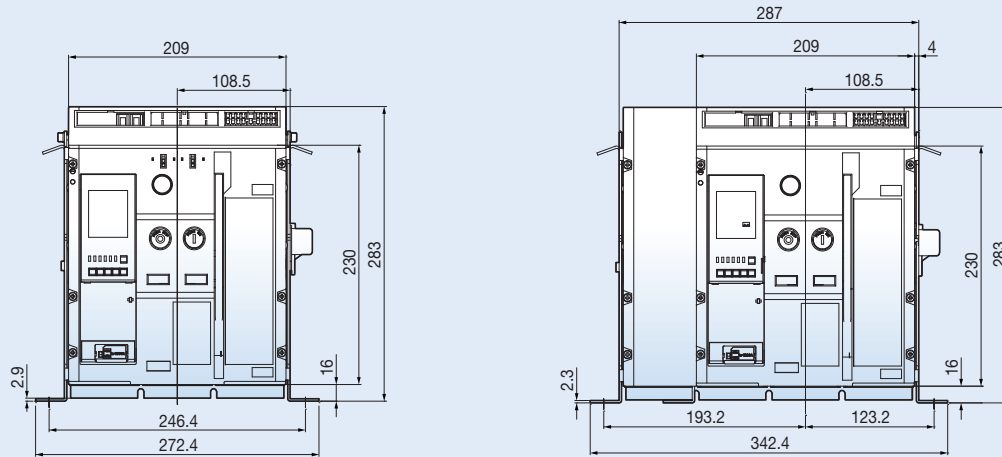
Side bracket (Lower type)



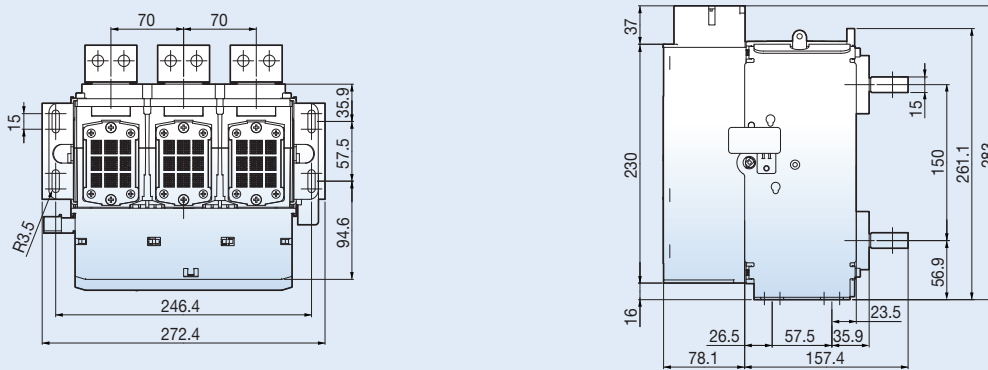
[ Compact ACB 1600A Cradle Structure ]

## Dimensions

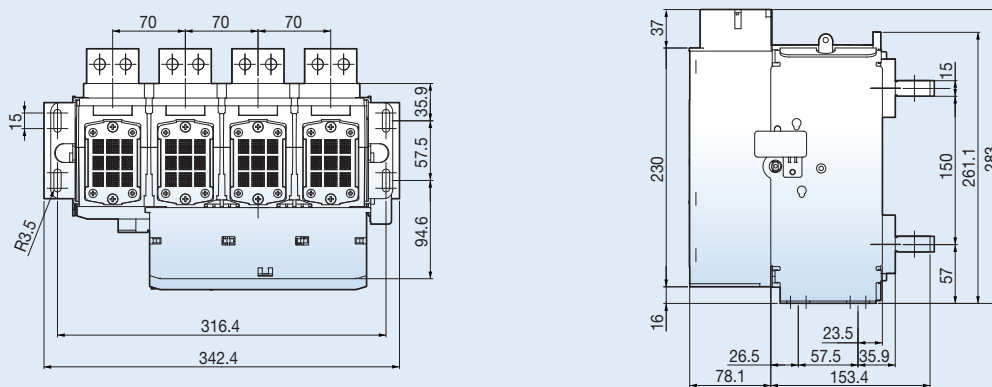
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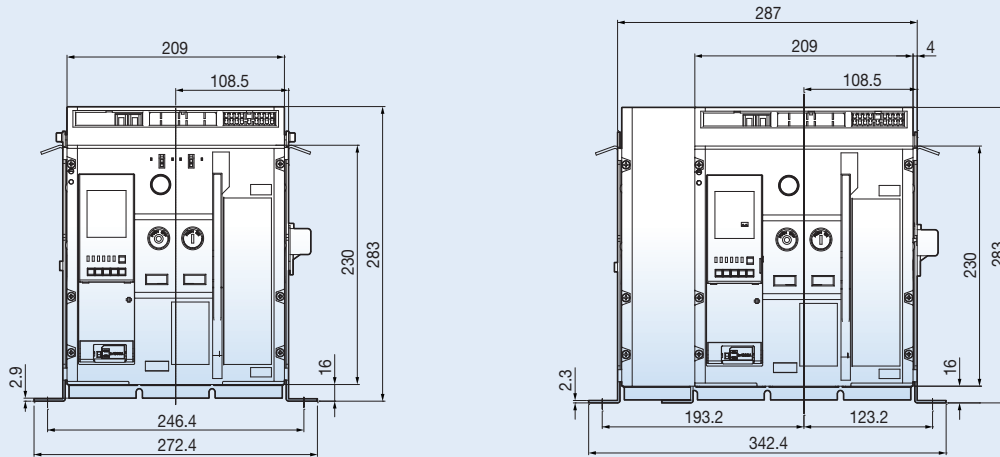
- Fixed Type(Horizontal type) AN/AH/AR-C 3P



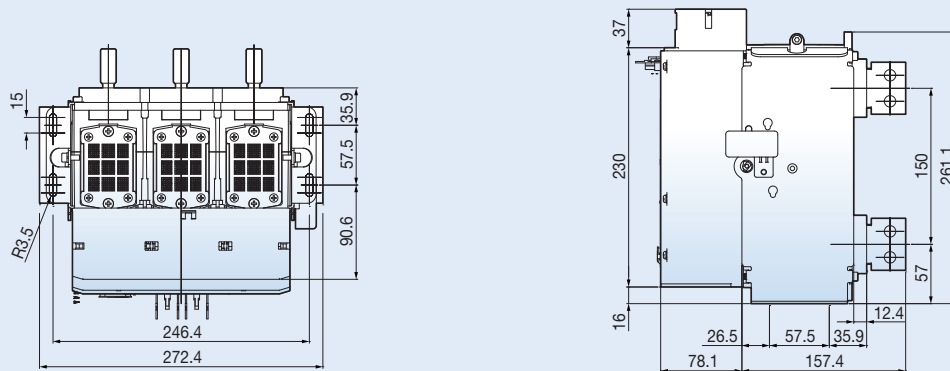
- Fixed Type(Horizontal type) AN/AH/AR-C 4P



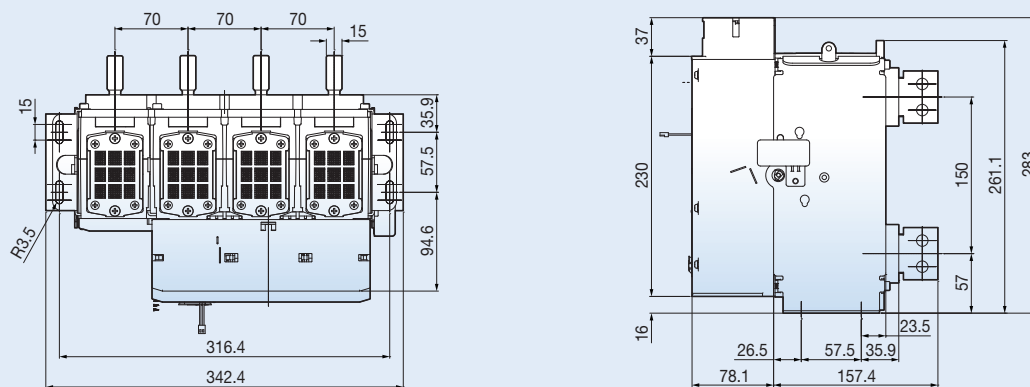
- Fixed Type(Front view) AN/AH/AR-C 3P/4P



- Fixed Type(Vertical Type) AN/AH/AR-C 3P

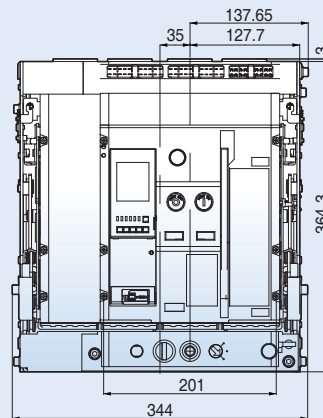
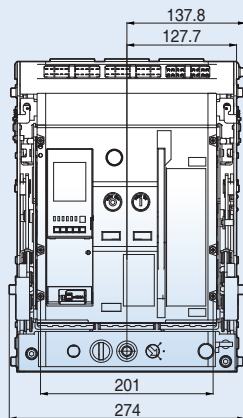


- Fixed Type(Vertical Type) AN/AH/AR-C 4P

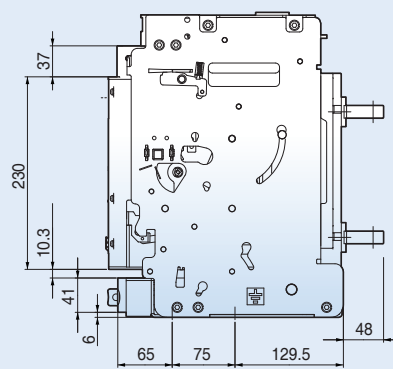
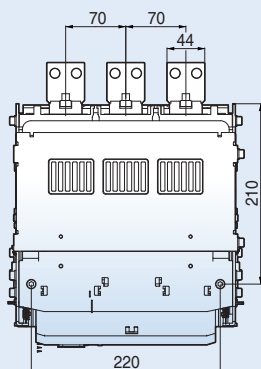


## Dimensions

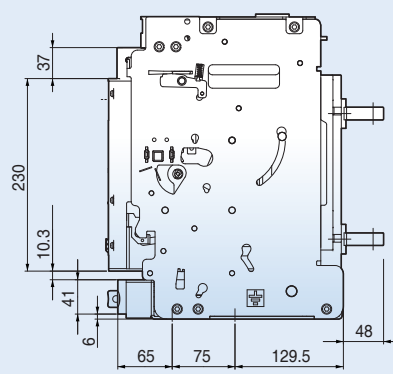
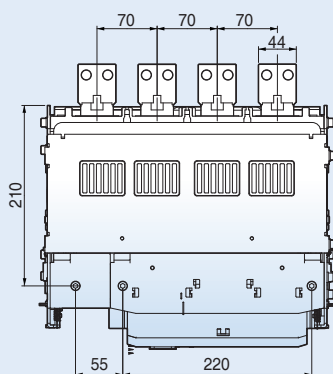
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- Draw-out Type(Horizontal type) AN/AH/AR-C 3P

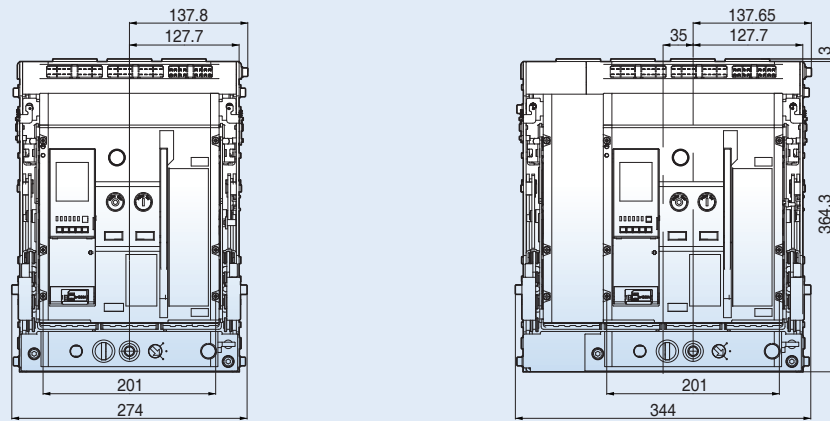


- Draw-out Type(Horizontal type) AN/AH/AR-C 4P

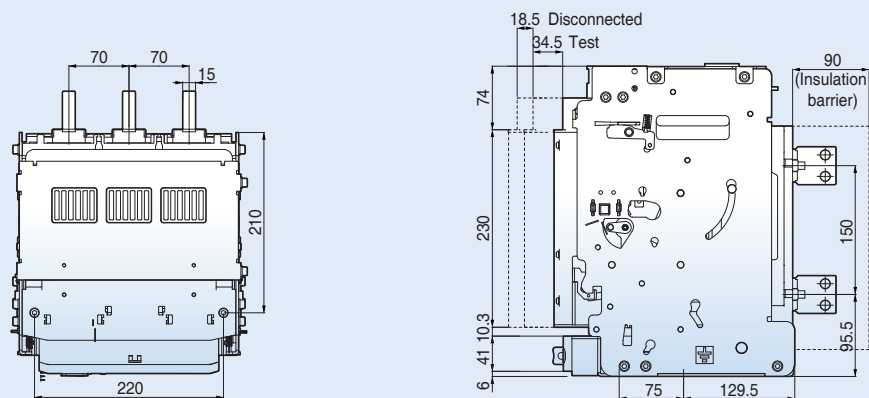




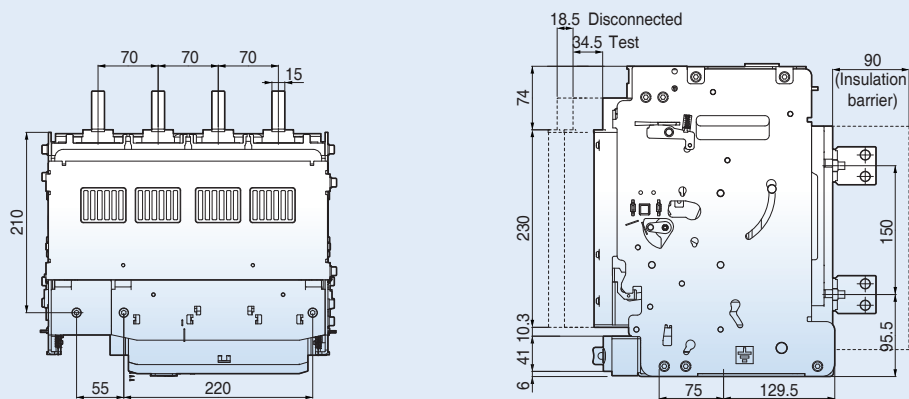
- Draw-out Type(Front view) AN/AH/AR-C 3P/4P



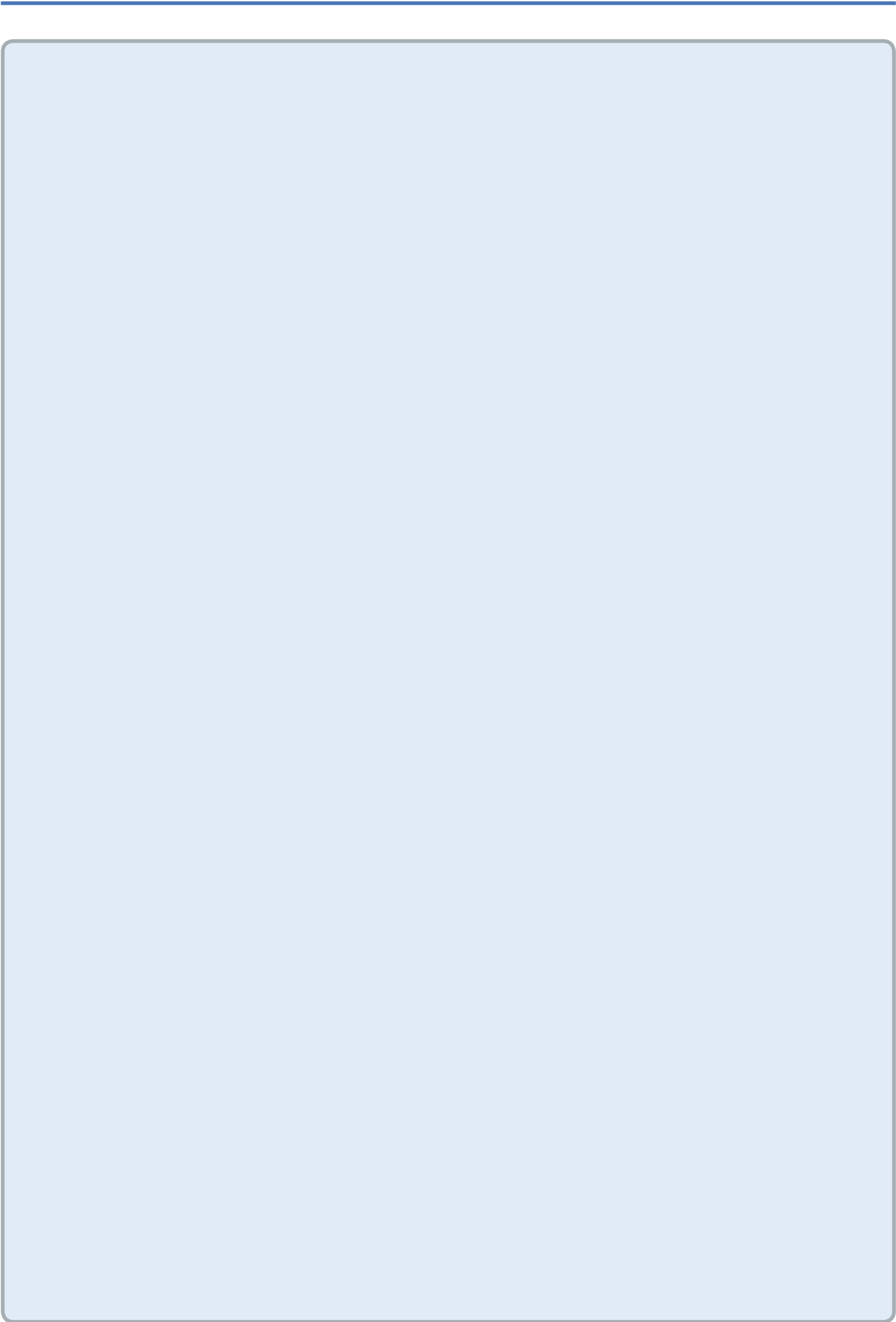
- Draw-out Type(Vertical Type) AN/AH/AR-C 3P



- Draw-out Type(Vertical Type) AN/AH/AR-C 4P









#### Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance.  
Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise concerned.



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