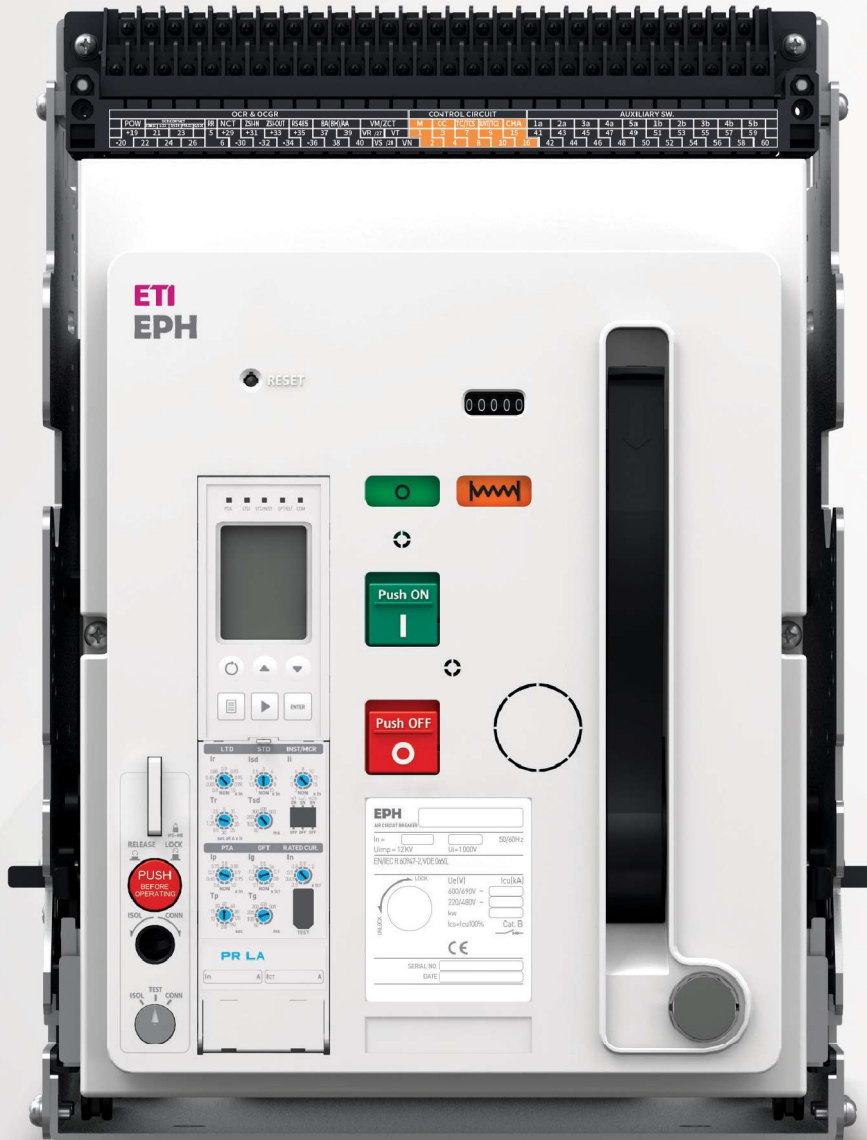


EPL, EPH Series

Air Circuit Breakers

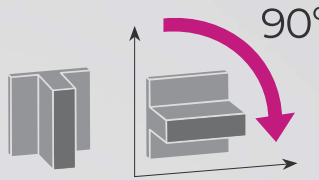
Maximized customer's range of selection and level of satisfaction with model dualization and compact size.



Characteristics

Multi

Bus bar terminal can be changed to horizontal/vertical



Vertical Type Horizontal Type


Retrofit



Customized Retrofit ACB can be Provided

New products can be developed to be compatible/installed according to the distance of cradle phase/pole/land and terminal size of the ACB that has been installed previously

Certifications



Maximum Breaking Capacity

150 kA (At 500 V, EPH D Frame)

Type per Rating

2 Frames, EPL 1600/3200 A

4 Frames, EPH 2000/4000/5000/6300 A

Rated Impulse Withstand Voltage (Uimp) : 12 kV

100 % N Phase Current Flow Capacity for all Types



A Frame [85 kA]

630 ~ 1600 A (EPL) / 630 ~ 2000 A (EPH)



B Frame [100 kA]

2000 ~ 3200 A (EPL) / 630 ~ 4000 A (EPH)



C Frame [100 kA]

3200 ~ 5000 A (EPH)



D Frame [150 kA]

4000 ~ 6300 A (EPH)

Overview and Characteristics

Air Circuit Breaker (ACB)

Capable of Responding to Various Customer Applications

HG Series air circuit breaker is equipped with high breaking capacity and highly functional OCR, making various customer applications on industrial building, computer center, device industries and others possible. With all models designed with 100 % n phase current flow capacity, the equipment is safely protected against abnormal phenomenon such as harmonics and others.

Equipped with Various Accessories and Highly Functional Protection Trip Relay (OCR)

Over Current Relay (Trip Relay)

Apart from the basic protection functions, OCR has reinforced power monitoring functions such as temperature monitoring, fault recording and storage etc., enabling stable power supply.

N Type

- Overcurrent Protection (L/S/I/G)
- World's First NFC Function Applied
- Fault Recording (10) and Waveform (4 Cycles, Check Via Communication) can be Transmitted to Mobile Phone App

A Type

- Overcurrent Protection (L/S/I/G)
- Self Power
- Individual Continuous Power Contact
- Fault Recording (256) and Waveform (4 Cycles, Check Via Communication)
- Communication (MODBUS), External Grounding CT/Earth Leakage ZCT can be used

P Type

- Overcurrent Protection (L/S/I/G)
- External Power
- Individual Continuous Power Contact
- Fault Recording (256) and Waveform (4 Cycles, Check Via Communication)
- Over-Voltage/Under-Voltage, Power, Power Factor, Energy Display

H Type

- L/S/I/G Functions
- External Power
- Individual Continuous Power Contact
- Fault Recording (256) and Waveform (4 Cycles, Check Via Communication)
- L/S/I/G Minute Current Adjustment
- Voltage/Current Harmonics (1 st ~ 63 th) Analysis
- View 3 Phase Waveform

Bus Bar Terminal can be Changed to Horizontal/Vertical

Connection method can be changed flexibly according to the customer's panel structure

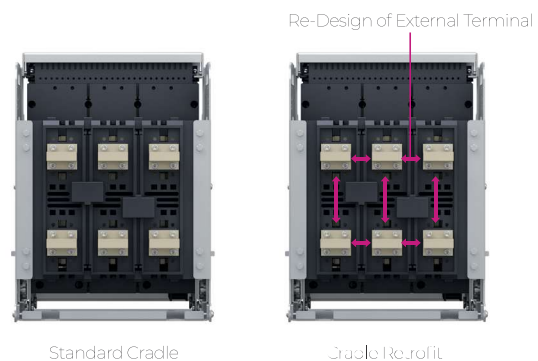
- EPL/EPH A frame 630 ~ 1600 A
- EPL/EPH B frame 630 ~ 3200 A

Convenient Maintenance by Attaching Draw-In/Out Device to the Body

Customized Retrofit ACB

New products can be developed to be compatible/installed according to the distance of cradle phase/pole/land and terminal size of the ACB that has been installed previously

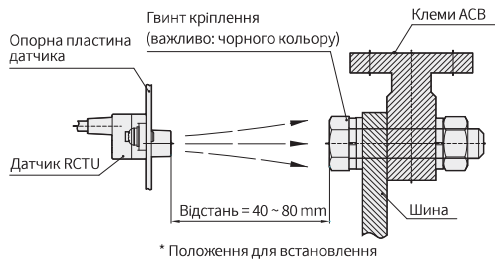
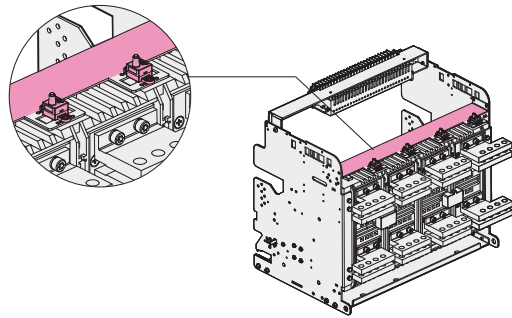
- Economic: No need for busbar and external box replacement, minimum construction period, uninterruptable replacement in case of body retrofit
- Stability: Lifespan can be extended through the latest relay performance and by providing breaking performance of high breaking product
- Compatibility: Stable usage through control terminal bar, bus bar structure and plug-in compatible devices
- Technical Support: Customer satisfaction through inspection of various accessories of old panels



Equipped with Temperature Sensor

Reliable high temperature measurement is possible following the sensor measurement of the heat source
(Range of measurement: -5 ~ 250 degrees)

Example of IR Sensor Application

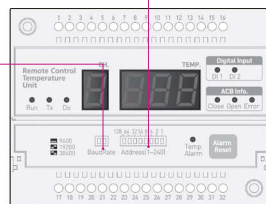


Address Setting : 1 ~ 240

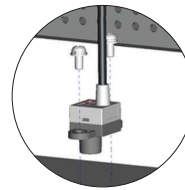


Baud Rate Setting

Set	Description
Off Off	9,600
Off On	19,200
On Off	38,400

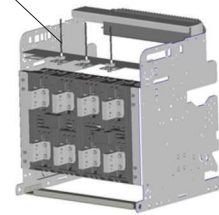


Installation of IR Sensor



Screw PH(+), PS/W M4 L8

When Installed Directly on ACB



3 m in Length

Matte Black Coating Applied on Measurement Point

- IR temperature sensor has to be installed with sufficient insulation distance from the point to be measured
- The recommended distance between the measurement point and temperature sensor is 50 ~ 80 mm.
- The measurement point has to be a surface without reflection due to the characteristics of the IR sensor and matte black painting is recommended for the measurement point.

Caution

1. The measurement value of the IR sensor differs depending on the reflection rate of the metal surface. Surfaces coated with matte black or surface with varnish excluding metallic varnish must be measured.
2. The size of measurement point differs depending on the D/S Ratio for the surface to be measured and the IR distance. This sensor has a ratio of 8:1.

Applied Standards and Certifications

EPL/EPH Series air circuit breaker has acquired testing/certifications from IEC 60947-1, 2 certified testing institute and can be installed and applied according to the usage environment and conditions permitted by the standards.

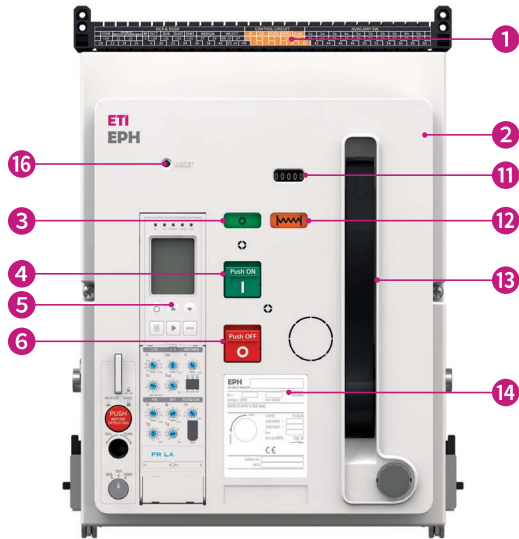
Acquired Standards and Certifications

- CB Certification (DEKRA, KERI) : IEC 60947-1, 2
- CE Mark

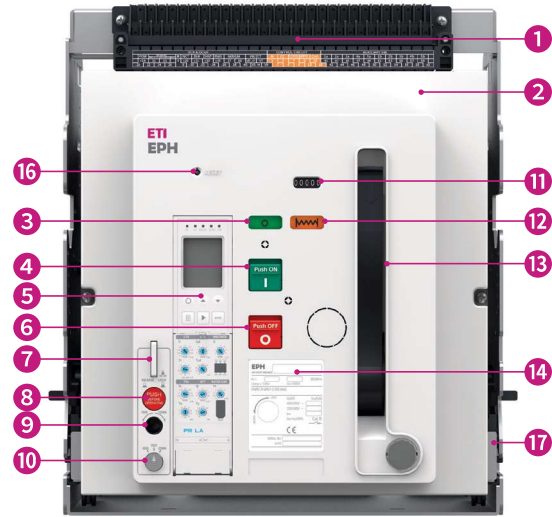


Technical Data

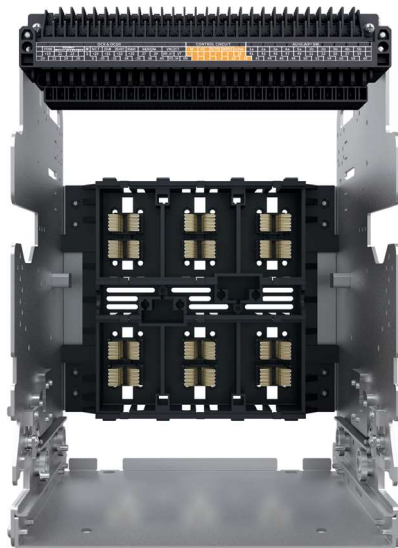
External Structure



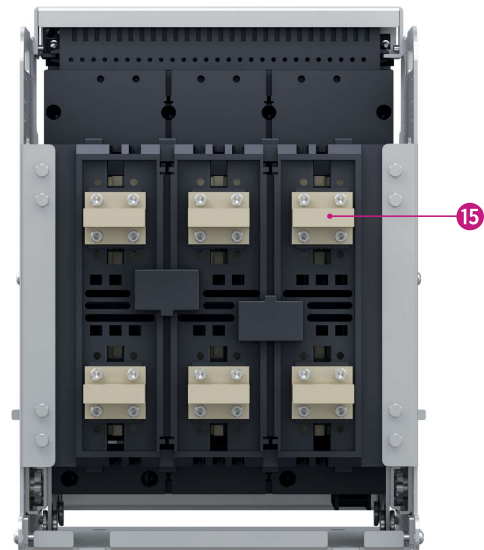
Draw-In/Out Type (ACB Body)



Draw-In/Out Type (Including Cradle)



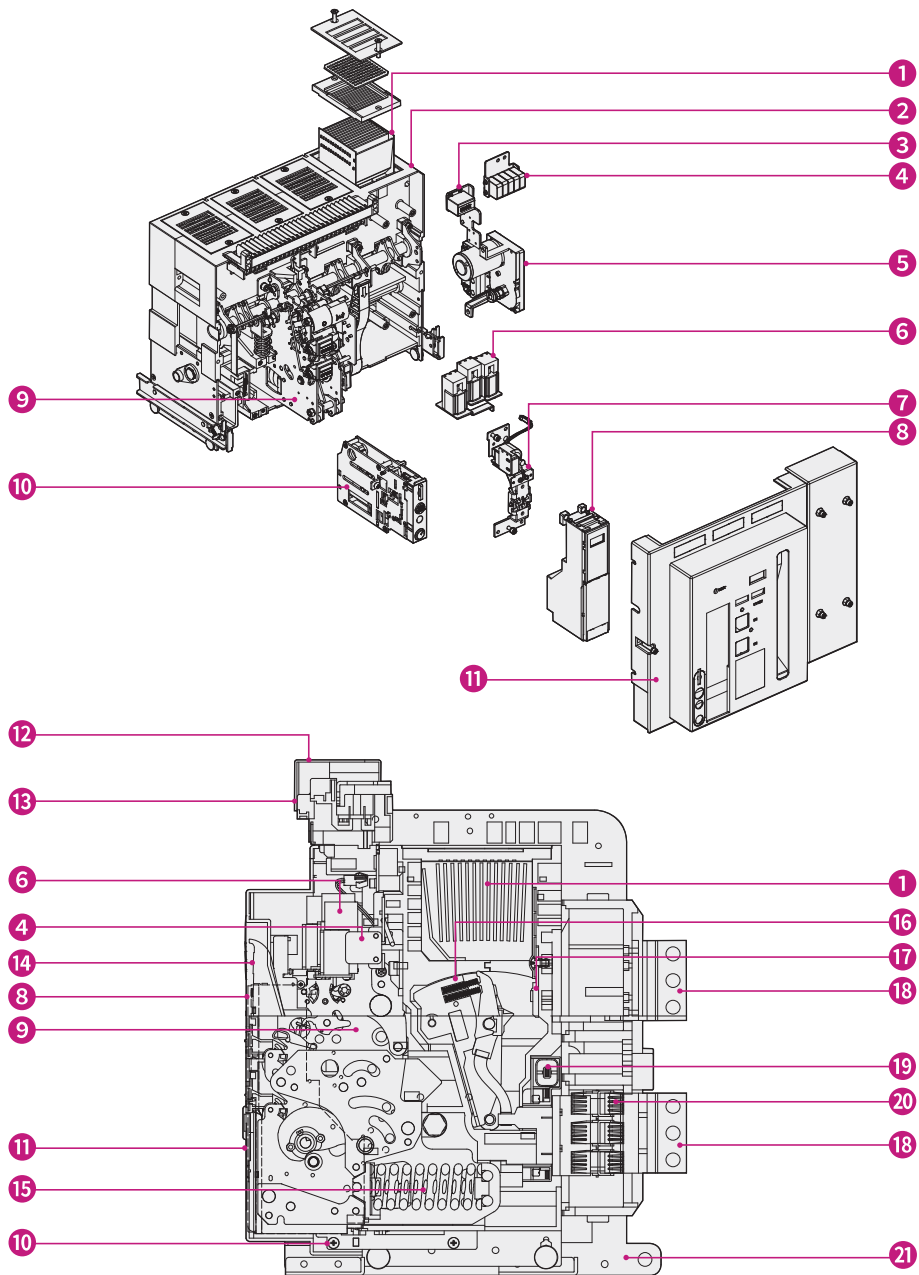
Cradle Front



Cradle Rear

- | | | |
|----------------------------|-------------------------------------|---------------------------------|
| 1 Control Circuit Terminal | 7 Position Padlock | 13 Manual Charging Handle |
| 2 Front Cover | 8 Position Lock Release Button | 14 Rating Nameplate |
| 3 Close/Open Indicator | 9 Draw-In/Out Handle Insertion Hole | 15 Terminal Busbar |
| 4 Close Button | 10 Position Indicator | 16 OCR & Alarm S/W Reset Button |
| 5 Overcurrent Relay Device | 11 Counter | 17 Draw-In/Out Guide Rail |
| 6 Open Button | 12 Charged/Discharged Indicator | |

Internal Structure



- | | | | |
|-------------------------|--------------------------------------|---------------------------|----------------------------|
| 1 DI Grid | 7 MHT Device | 13 Control Terminal | 19 Current Transformer(CT) |
| 2 CO Unit | 8 OCR | 14 Manual Charging Handle | 20 Terminal Clip |
| 3 Counter | 9 Mechanism | 15 Closing Spring | 21 Cradle |
| 4 AUX Switch | 10 DR Device | 16 Moving Contact | |
| 5 Motor | 11 Cover | 17 Fixed Contact | |
| 6 Closing/Trip/UVT Coil | 12 Control Terminal Protection Cover | 18 Terminal | |

※ EP Series air circuit breaker has been designed so that upon closing, the N phase is closed earlier than R, S, T phase and upon opening, the N phase is disconnected last in order to reduce burden of main contact and to prevent ripple effect of accident of N phase.

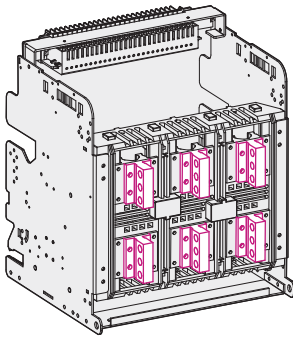
Technical Data

Connection Method

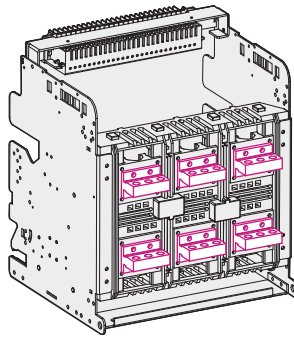
User convenience has been reinforced by allowing each terminal to be rotated 90 degrees directly on site depending on the busbar type of low voltage switchgear.

Standard Type

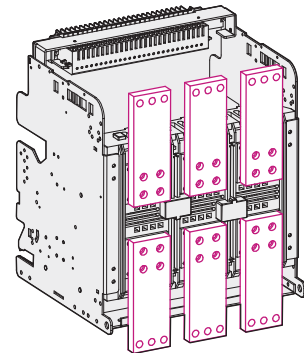
Vertical Type



Horizontal Type

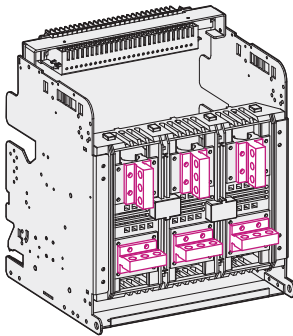


Front Type

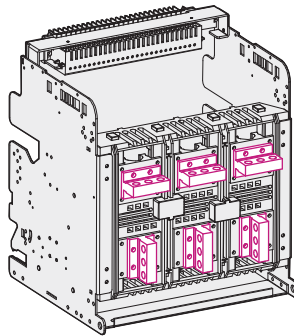


Combined Type

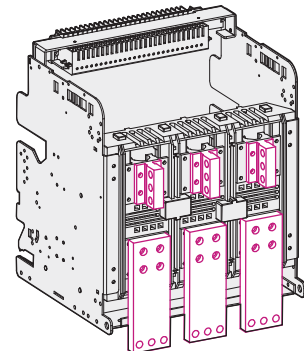
(Upper) Vertical Type +
(Lower) Horizontal Type



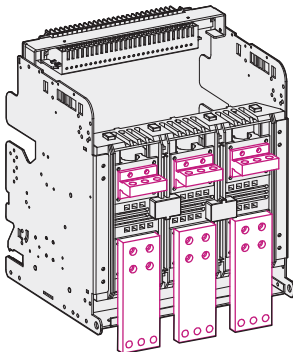
(Upper) Horizontal Type +
(Lower) Vertical Type



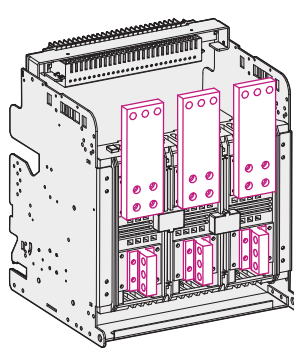
(Upper) Vertical Type +
(Lower) Front Type



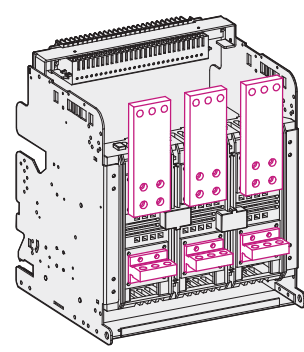
(Upper) Horizontal Type +
(Lower) Front Type



(Upper) Front Type +
(Lower) Vertical Type



(Upper) Front Type +
(Lower) Horizontal Type



※ Terminal change is only possible for EPL/EPH A frame 630 ~ 1600 A, B frame 2000 ~ 3200 A.
Front type is a terminal form that is suitable for switchgear with spatial restrictions.
Horizontal/vertical change above 4000 A requires separate parts so please contact our company.
In case of B frame, 3200 A terminal is provided as for the front type provided separately for 2000/2500 A.
Front type terminal has to be purchased separately.

Convenient Connection Method

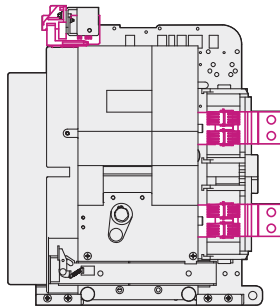
As for EP Series air circuit breaker, 4 types of mounting (Connected, test, isolated, removed) are possible and offer easy maintenance.



Sliding Body Type (In Case of Draw-In/Out Type)

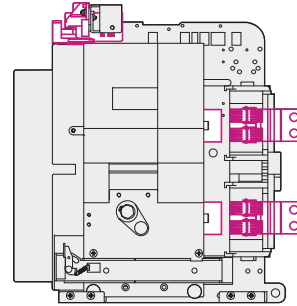
Connected Position

As a commonly used status, the main circuit and control circuit are both connected.



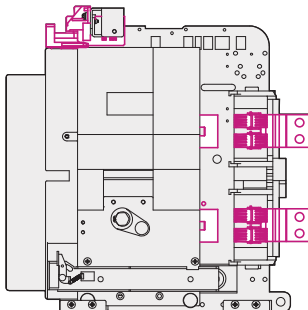
Test Position

As a status in which the main circuit is isolated and the control circuit is connected, the circuit breaker can be turned On/Off with the switchgear door closed.



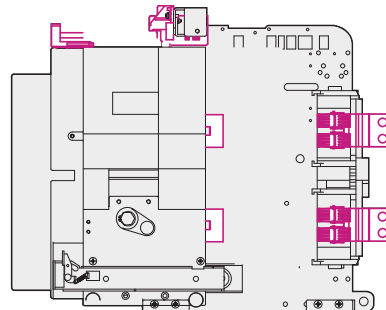
Isolated Position

With the main circuit and control circuit both isolated, the air circuit cannot be turned On/Off.



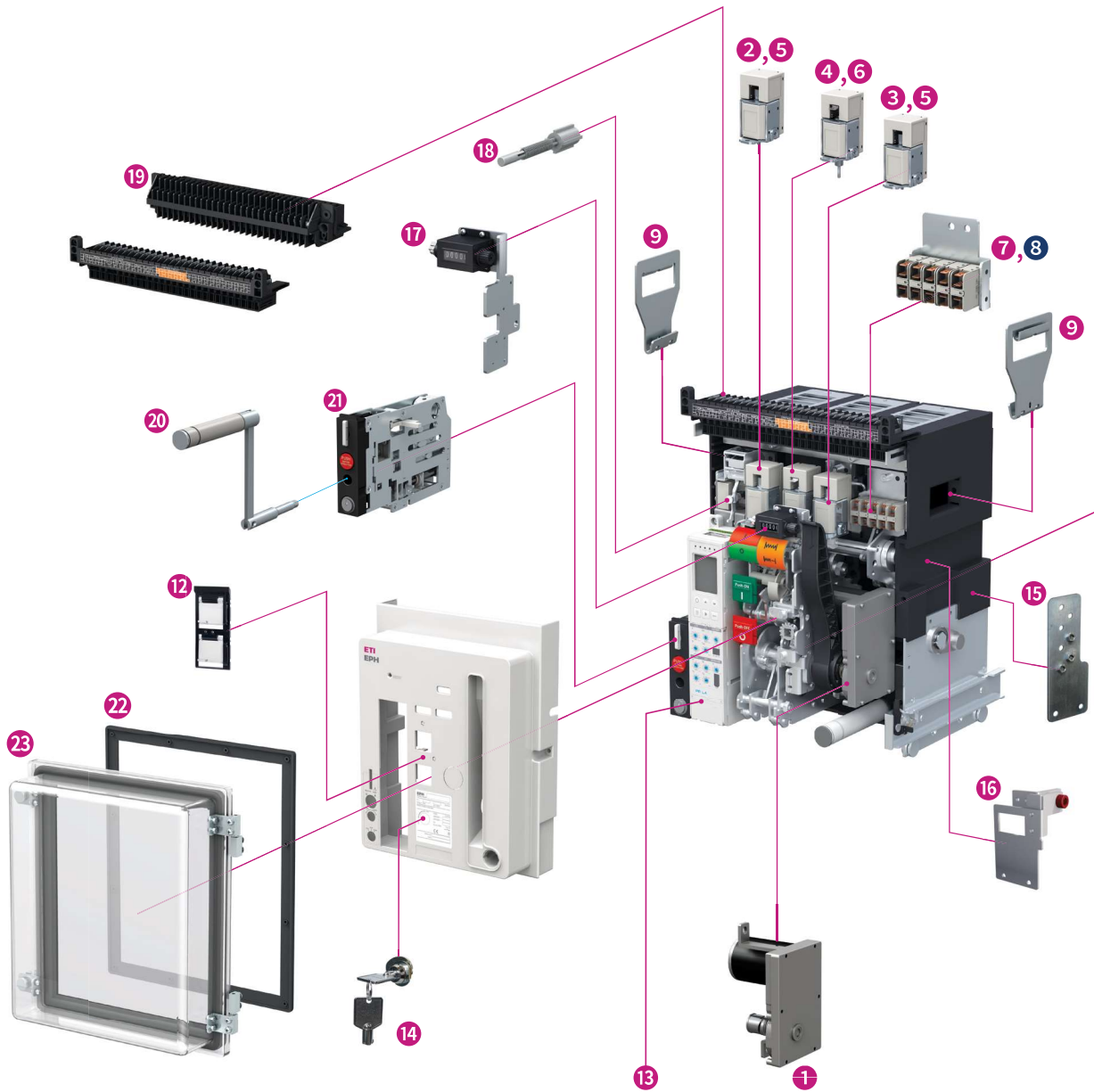
Removed Position

The air circuit has completely been removed from the cradle.



Technical Data

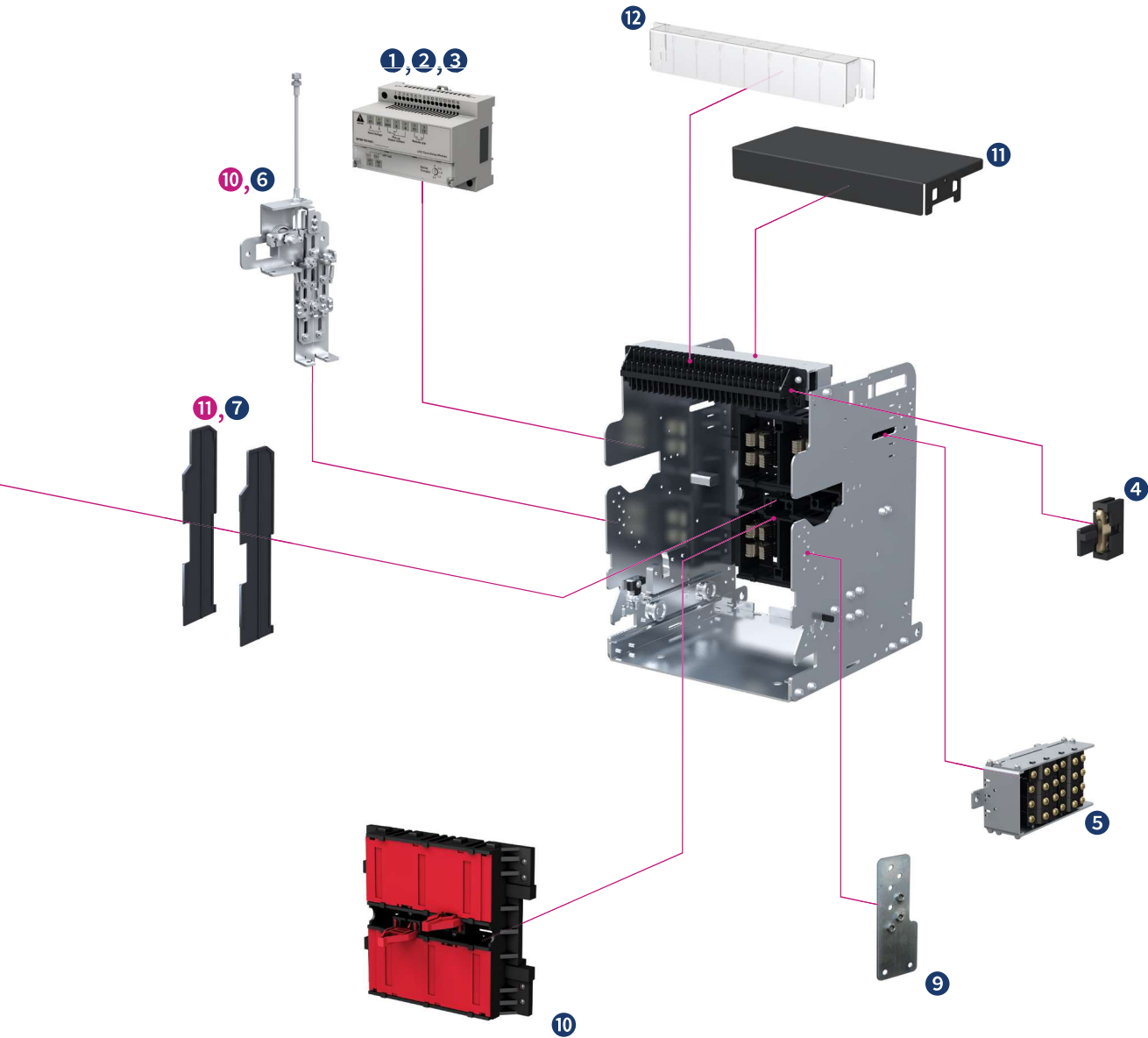
Various Accessories (Main Unit)



Accessories for Circuit Breaker

- | | | |
|------------------------------|-----------------------------|---------------------------------|
| 1 Spring Charge Geared Motor | 9 Lifting Lug | 17 Counter |
| 2 Closing Coil | 10 Mechanical Interlock | 18 OCR & Alarm S/W Reset Button |
| 3 Trip Coil | 11 Phase Insulation Barrier | 19 Test Jumper |
| 4 Secondary Trip Coil | 12 On/Off Button Lock | 20 Draw-In/Out Handle |
| 5 Trip Coil Supervision | 13 OCR | 21 Position Pad Lock |
| 6 UVT Coil | 14 Key Lock | 22 Door Flange |
| 7 AUX Switch | 15 Miss-Insertion Preventer | 23 Dust Cover |
| | 16 Fixing Block | |

Various Accessories (Cradle)



Accessories for Cradle

- | | |
|--|-------------------------------------|
| ① UVT Time Delay Controller | ⑧ Mechanical Operated Cell Switch |
| ② Remote Closing Prevention Module | ⑨ Miss-Insertion Preventer |
| ③ Temperature Monitoring Device Module | ⑩ Safety Shutter |
| ④ Short "b" Contact | ⑪ Arc Shield |
| ⑤ Position Switch | ⑫ Control Terminal Protection Cover |
| ⑥ Mechanical Interlock | |
| ⑦ Phase Insulation Barrier | |

Model Selection Table

Rating and Specification

Model Name			EPL		EPH			
Item			A Frame	B Frame	A Frame	B Frame	C Frame	D Frame
Rated Current [In max]	Based on 40 °C	A	06 : 630	20 : 2,000	06 : 630	06 : 630	32 : 3,200	40 : 4,000
			08 : 800	25 : 2,500	08 : 800	08 : 800	40 : 4,000	50 : 5,000
			10 : 1,000	32 : 3,200	10 : 1,000	10 : 1,000	50 : 5,000	63 : 6,300
			12 : 1,250		12 : 1,250	12 : 1,250		
			16 : 1,600		16 : 1,600	16 : 1,600		
					20 : 2,000	20 : 2,000		
						25 : 2,500		
						32 : 3,200		
				40 : 4,000				
Rated Operational Voltage [Ue]	V		690		690			
Rated Insulation Voltage [Ui]	V		1,000		1,000			
Frequency	Hz		50/60		50/60			
No. of Poles	P		3, 4		3, 4			
Current Setting Range (... × In max)	A		0.4 ~ 1.0		0.4 ~ 1.0			
Rated Current of Neutral Pole (N) (- % × In)	A		100 %	100 %	100 %	100 %	100 %	100 %
Rated Breaking Capacity [Icu] [Sym]								
IEC 60947-2	690/600/550 V		50	70 ¹⁾ (KS : 65)	65	85	85	100
Category "B"	AC	500/480/460 V	65	85	85	100	100	150
KS C 4620	415/380/230/220 V		65	85	85	100	100	150
Rated Service Short-Circuit Breaking Capacity [Ics] - % × Icu	kA		100 %	100 %	100 %	100 %	100 %	100 %
Rated Closing Current [Icm] [Peak]								
IEC 60947-2	690/600/550 V		105	154	143	187	187	220
Category "B"	AC	500/480/460 V	143	187	187	220	220	330
KS C 4620	415/380/230/220 V		143	187	187	220	220	330
Rated Short-Time withstand Voltage [Icw] (Without Inst)								
1 Second	kA		50	70	65	85	85	100
2 Seconds			35	65	42	75	75	85
3 Seconds			28	50	35	65	65	75
Rated Impulse withstand Voltage [Uimp]	kV		12		12			
Total Breaking-Time	ms		40 ³⁾		40 ³⁾			
Closing Operational Time								
Motor Charging Time (sec) max.			10		10			
Rated Trip Time (ms) max.			80		80			
Lifecycle (Cycles)								
Mechanical			20,000	15,000	20,000	15,000	10,000	10,000
Electrical			5,000	5,000	5,000	5,000	2,000	2,000
Weight								
3 Pole	Draw-Out Type	kg	63	87	63	87 (107) ²⁾	145	169
	Fixed Type		34	44	34	44 (61) ²⁾	76	108
4 Pole	Draw-Out Type		74	103	74	103 (140) ²⁾	173	214
	Fixed Type		44	55	44	55 (80) ²⁾	81	137
(W×H×D)								
3 Pole	Draw-Out Type	mm	328×460×368.4	399×460×368.4	328×460×368.4	399×460×368.4	624×460×368.4	766×460×368.4
	Fixed Type		337.4×404.4×295.8	408.4×404.4×295.8	337.4×404.4×295.8	408.4×404.4×295.8	633.4×404.4×295.8	775.4×404.4×295.8
4 Pole	Draw-Out Type		413×460×368.4	514×460×368.4	413×460×368.4	514×460×368.4	794×460×368.4	996×460×368.4
	Fixed Type		422.4×404.4×295.8	523.4×404.4×295.8	422.4×404.4×295.8	523.4×404.4×295.8	803.4×404.4×295.8	1,005×404.4×295.8

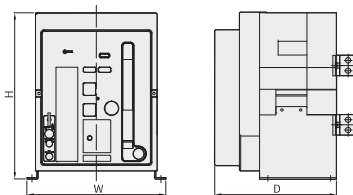
※ 1) 70 kA is DEKRA certified

2) 4,000 AF

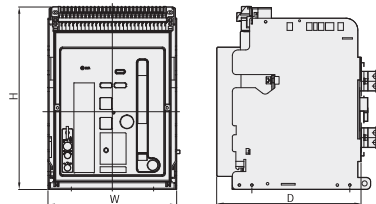
3) In case of MCR and override setting, INST is 50 ms.

Life time is the limit lifespan and is not the guaranteed lifespan. In case of maintenance, it is charged. In the event of abnormalities in accessories during use, it can be replaced. Quality Assurance : Based on IEC 60947-2's number of opening/closing within the warranty period.

Fixed Type



Draw-Out Type



Over Current Relay (OCR)

Function	General Feeder					Generator (Marine Type)		
	N Type	A Type		P Type	H Type	N Type	A Type	P Type
	PR-LN	PR-LA	PR-LAG	PR-LP	PR-LH	PR-SN	PR-SA	PR-SP
Frequency								
50 Hz	50	51	52	54	55	57	58	59
60 Hz	60	61	62	64	65	67	68	69
Control Power								
External Power	—	●	●	●	●	—	●	●
Self-Power	●	●	●	●	●	●	●	●
Protection Function								
LTD (Long Time)	●	●	●	●	●	●	●	●
STD (Short Time)	●	●	●	●	●	●	●	●
INST (Instantaneous)	●	●	●	●	●	●	●	●
Pre-Trip Alarm	—	●	●	●	●	—	●	●
Ground Fault Trip	●	●	—	●	●	—	—	—
ELT Function	—	—	● Outer CT Ground ²⁾ (Ground fault at more than 30 A)	—	—	—	—	—
Thermal Function	●	●	●	●	●	●	●	●
Field Test	—	●	●	●	●	—	●	●
Fail Safe	●	●	●	●	●	●	●	●
Indication								
True RMS Detection Method	●	●	●	●	●	●	●	●
LED Indication per Trip Type	—	●	●	●	●	—	●	●
Fault LED	L ¹⁾	PTA, L, S/I, G	PTA, L, S/I, leakage	PTA, L, S/I, G	PTA, L, S/I, G	L ¹⁾	PTA, L, S/I	PTA, L, S/I
Real-Time LCD Indication of Load Rate per Phase	—	●	●	●	●	—	●	●
Measurement LCD	—	●	●	●	●	—	●	●
Output Contact								
Integrated Instantaneous Contact (1a)	●	—	—	—	—	—	—	—
Individual Continuous Contact (4a)	—	●	●	●	●	—	● ⁴⁾	● ⁴⁾
Operation								
MCR	—	○	○	○	○	—	○	○
Communication	NFC	Modbus-RTU	Modbus-RTU	Modbus-RTU	Modbus-RTU	NFC	Modbus-RTU	Modbus-RTU
Event/Fault Recording	●	●	●	●	●	●	●	●

* ● : Standard, ○ : Option

¹⁾ Indicates reserve before operation during long time delay.

²⁾ ZCT designated by the customer is used.

³⁾ ZCT designated by our company is used.

⁴⁾ As for marine type, individual continuous contact is 3a.