



## Introduction of Mitsubishi ACB



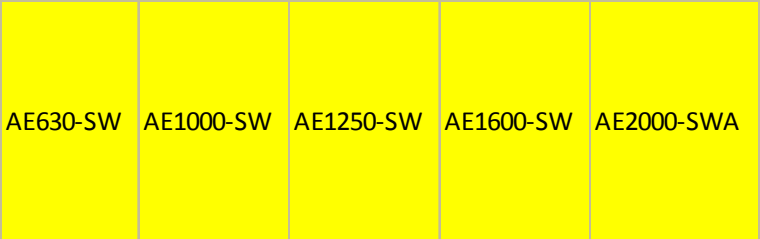


August, 2016

Mitsubishi Electric Corp. Fukuyama Works

# Product line of ACB

- Range from 630 up to 6300Amp 3/4Pole AC/DC, Fix and Drawout type
- Only 3 size from 630 to 6300Amp (see below color)
- Compliance to IEC / JIS / EN / UL / Marine standards
- All models approved by Third party KEMA

Class		FrameA	630	1000	1250	1600	2000	2500	3200	4000	5000	6300
ACB (AE)	AE-SW		AE630-SW	AE1000-SW	AE1250-SW	AE1600-SW	AE2000-SWA					
							AE2000-SW	AE2500-SW	AE3200-SW	AE4000-SWA		
										AE4000-SW	AE5000-SW	AE6300-SW

# External Construction of ACB

## Charging indicator



## Fixed type

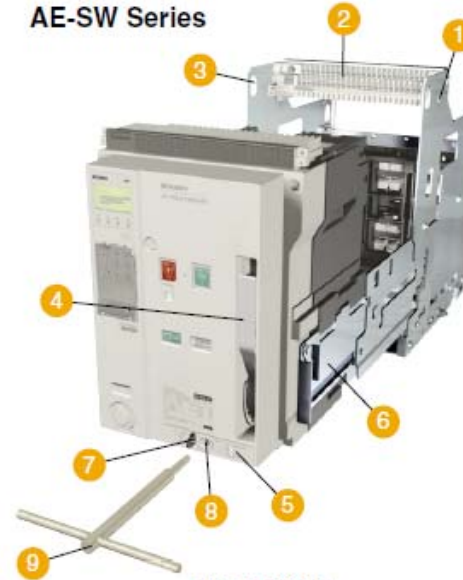
### AE-SW Series



- 1 Arc extinguishing chamber
- 2 Control circuit terminal block
- 3 Electronic trip relay
- 4 OFF button
- 5 ON button
- 6 Padlock hook
- 7 Charging indicator
- 8 ON/OFF indicator
- 9 Manual reset button(Optional)

## Drawout type

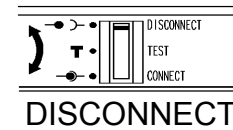
### AE-SW Series



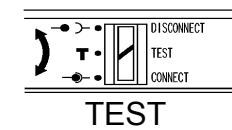
- 1 Cradle
- 2 Control circuit terminal block
- 3 Lifting hole
- 4 Charging handle
- 5 Drawout position indicator
- 6 Extension rail
- 7 Position lock
- 8 Aperture for the drawout handle
- 9 Drawout handle

In case of the drawout type, Drawout handle is attached.

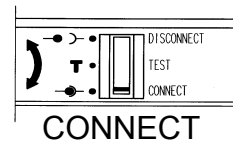
## Drawout position indicator



DISCONNECT

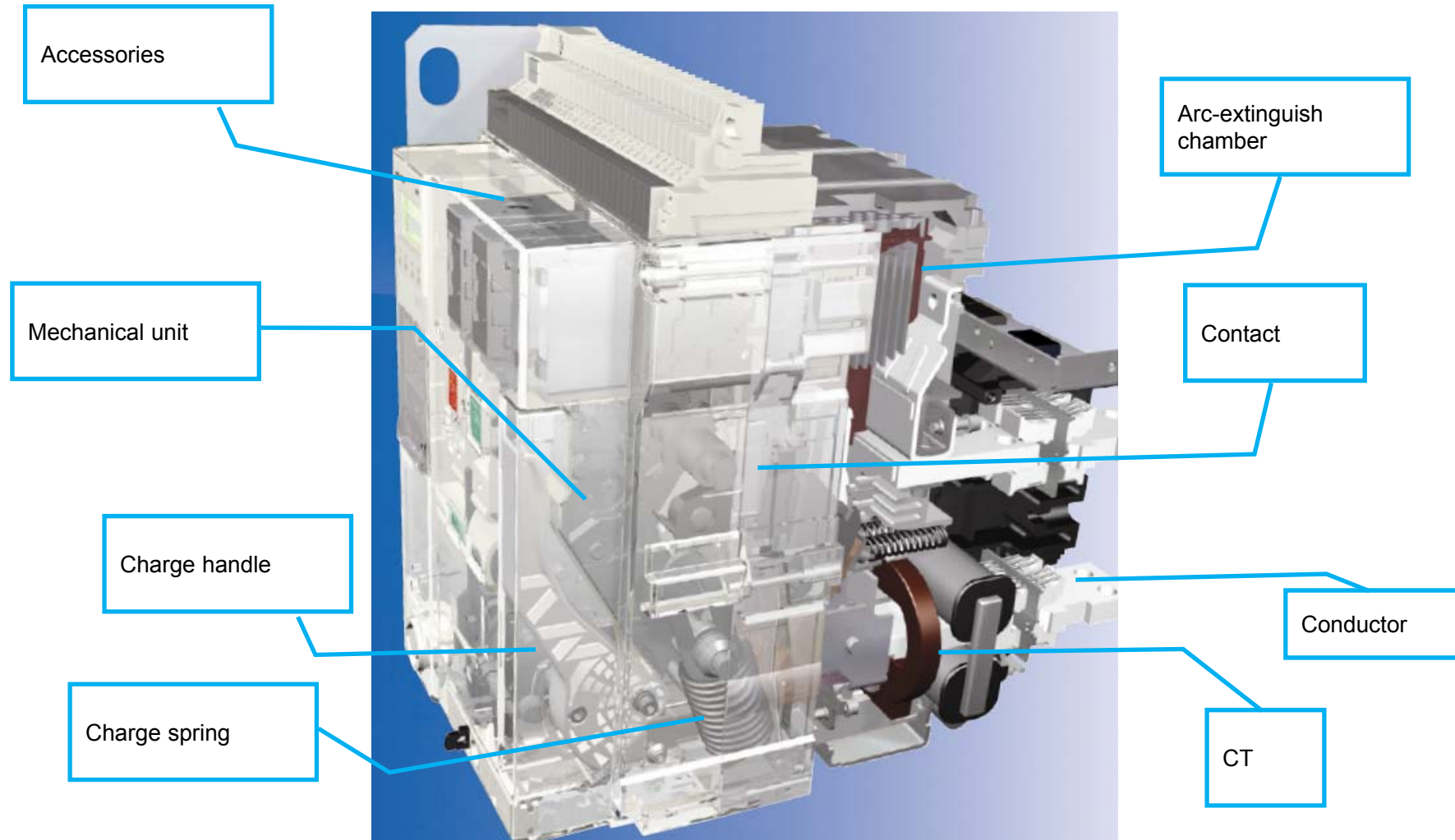


TEST



CONNECT

# Internal Construction of ACB



# ACB Label Information



Frame size,  
Max rated current,  
No. of pole



Rated impulse  
withstand voltage

Rated insulation  
voltage

Rated short time  
withstand current  
(1sec, 3sec)

Reference standard

Model name

LOW VOLTAGE AIR CIRCUIT BREAKER		<b>AE2000-SWA</b>	
Frame size	2000 A	IEC60947-2 EN60947-2 BS VDE	
I <sub>r</sub> max setting	2000 A	JIS C 8201-2-1 Ann1 Ann2	40°C
Pole	3 P	NK LR BV DNV GL ABS CCS	45°C
U <sub>i</sub> 1000V	U <sub>imp</sub> 12kV	I <sub>cs</sub> =100%I <sub>cu</sub>	U <sub>e</sub> I <sub>cu</sub>
I <sub>cw</sub> 1s	65kA	with INST.	600/690V ⊗ 65kA
I <sub>cw</sub> 3s	50kA		440/500V 65kA
Cat. B	50/60Hz		240V 65kA
		with MCR.	600/690V ⊗ 65kA
			440/500V 65kA
			240V 65kA
			
 MITSUBISHI ELECTRIC CORPORATION MADE IN JAPAN THA4F3 LN330N925-5		SERIAL <b>G14522035W</b>	

Breaking capacity  
I<sub>cs</sub> = 100% I<sub>cu</sub> (kA)

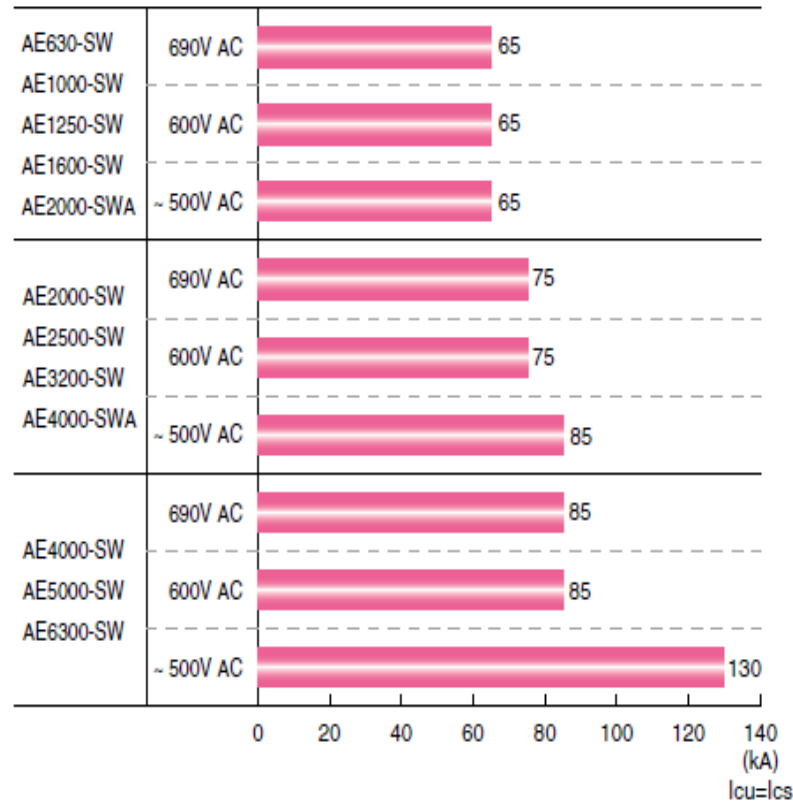
Serial No.



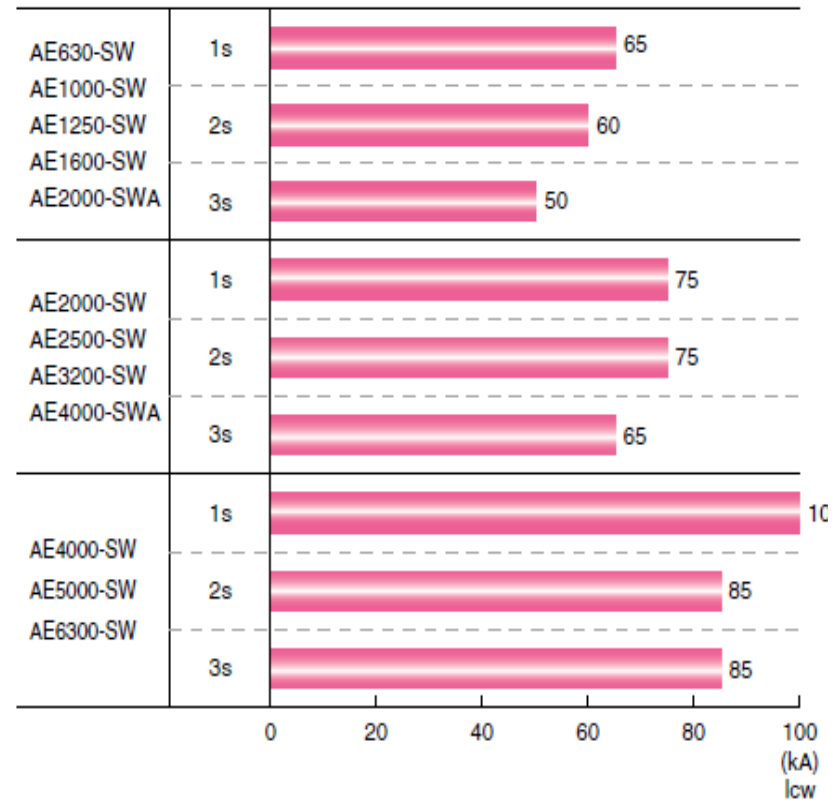
## High-Performance High-Reliability

The safety of valuable circuits can be securely maintained.

**I<sub>cu</sub>=I<sub>cs</sub> (Rated breaking capacity)**



**I<sub>cw</sub> (1s) (Rated short-time withstand current)**



## ● Global Standard

- International standard : IEC60947-1, 2
- National standard : EN(Europe), GB(China), BSMI(Taiwan)
- Japanese standard : JIS C8201-2

## ● 3rd Party Certification

- KEMA (AE630-SW-6300-SW) \*All models
- ASTA (AE630-SW-3200-SW, 2000-SWA, 4000-SWA)

## ● Safety Certification and Marine Approval

- CCC (China), TPC (Taiwan)
- LR, GL, BV, DNV, ABS, CCS, NK











## Available connections



Connections		Breakers											
		AE630-SW	AE1000-SW	AE1250-SW	AE1600-SW	AE2000-SWA	AE2000-SW	AE2500-SW	AE3200-SW	AE4000-SWA	AE4000-SW	AE5000-SW	AE6300-SW
Fixed type (FIX)	Horizontal	●	●	●	●	—	●	●	●	—	—	—	—
	FIX-VT	—	—	—	—	●	—	—	—	●	●	●	●
	FIX-VTA	○	○	○	○	—	○	○	○	—	—	—	—
	FIX-FTA	○	○	○	○	—	○	○	○	—	—	—	—
Drawout type (DR)	Horizontal	●	●	●	●	—	●	●	●	—	—	—	—
	DR-VT	○	○	○	○	●	○	○	○	●	●	●	●
	DR-FT	○	○	○	○	—	○	○	○	—	—	—	—
	DR-VTA	○	○	○	○	—	○	○	○	—	—	—	—
	DR-FTA	○	○	○	○	—	○	○	○	—	—	—	—

● Standard ○ Optional

### AE630~1600SW, AE2000-3200SW

Connections	Horizontal <small>Standard</small>	Vertical (VT)	Front (FT)	Vertical terminal adapter (VTA)	Front terminal adapter (FTA)
Fixed type (FIX)		—	—	 FIX-VTA	 FIX-FTA
Drawout type (DR)		 DR-VT	 DR-FT	 DR-VTA	 DR-FTA

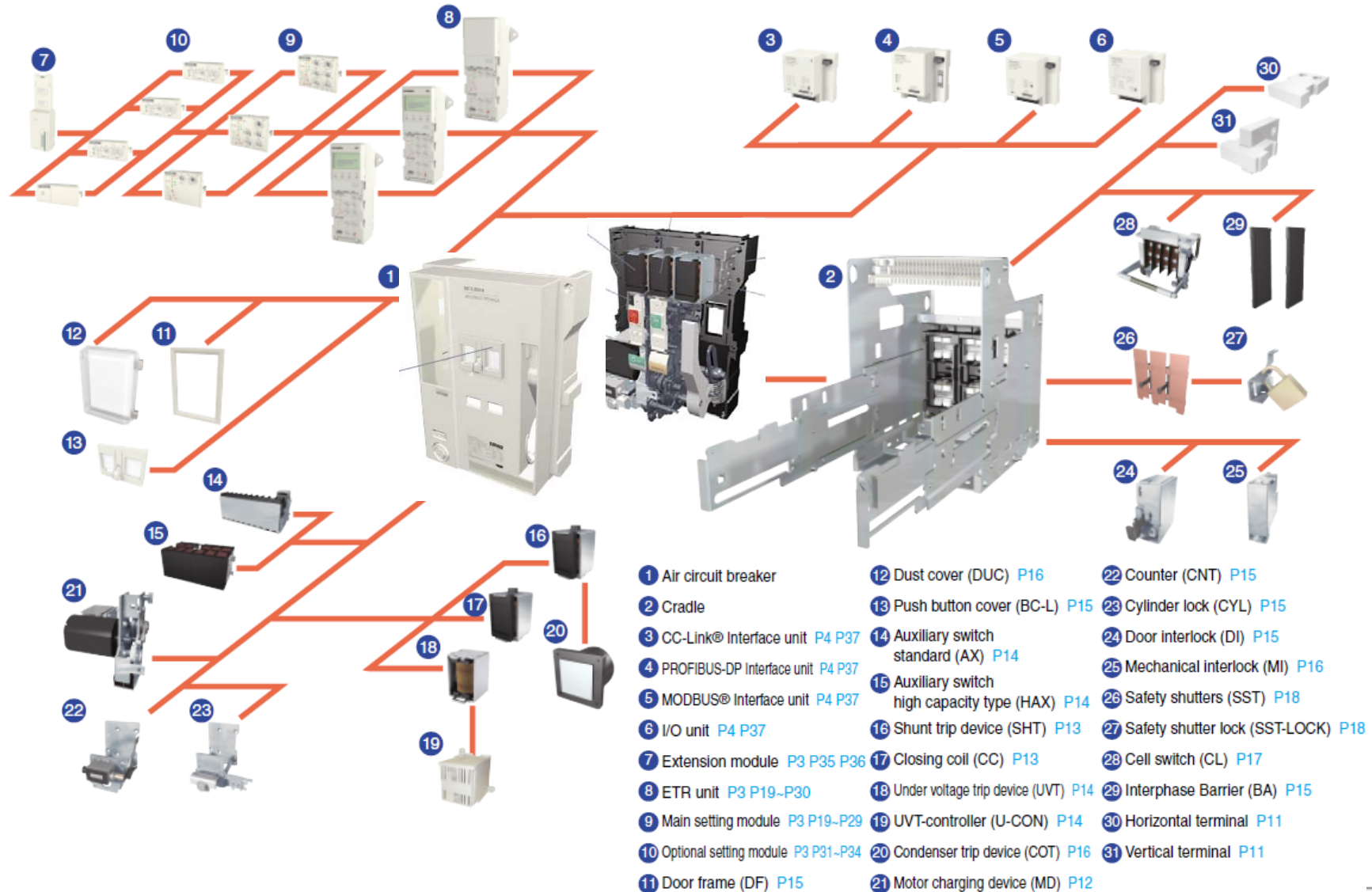
### AE2000/4000-SWA, AE4000~6300-SW

Connections	Vertical (VT) <small>Standard</small>
Fixed type (FIX)	 FIX-VT
Drawout type (DR)	 DR-VT



# Accessory parts of ACB

## Skeleton



Mechanical accessories	Electrical accessories
➤ Push button cover(BC-L)	➤ Auxiliary switch(AX)
➤ Counter(CNT)	➤ Motor charging device(MD)
➤ Cylinder lock(CYL)	➤ Closing coil(CC)
➤ Terminal cover(TJ)	➤ Shunt trip device(SHT)
➤ Door frame(DF)	➤ Under voltage trip device(UVT)
➤ Dust cover(DUC)	➤ OCR alarm(AL)
➤ Interphase barrier(BA)	➤ Condenser trip device(COT)
➤ Mechanical interlock(MI)	
Mechanical accessories only for Draw-out type	ETR accessories
➤ Cell switch(CL)	➤ Extension module(EX1)
➤ Short-circuit	➤ Display(DP1,DP2, DP3)
➤ B- contact(SBC)	➤ MCR switch(MCR-SW)
➤ Lifting hooks(HP)	➤ Temperature alarm(TAL)
➤ Safety shutter(SST)	➤ Neutral CT (NCT)
➤ Safety shutter lock(SST-lock)	➤ External ZCT (ZCT)
➤ Mis-insert preventor(MIP)	➤ VT unit(VT)
➤ Test-jumper(TJ)	

- Modurable Trip Unit for easy upgrade
  - \* No need to change Whole of Trip Unit

## ① Main protection module

General use (WS), Generator use (WM), Special use (WB)

## ② Power supply module

P1: 100-240VAC/DC, P2: 24-60VDC

P3: 100-240VAC/100-125VDC with output contact

P4: 24-60VDC with output contact

P5: 100-240VDC with output contact

## ③ Extensional function

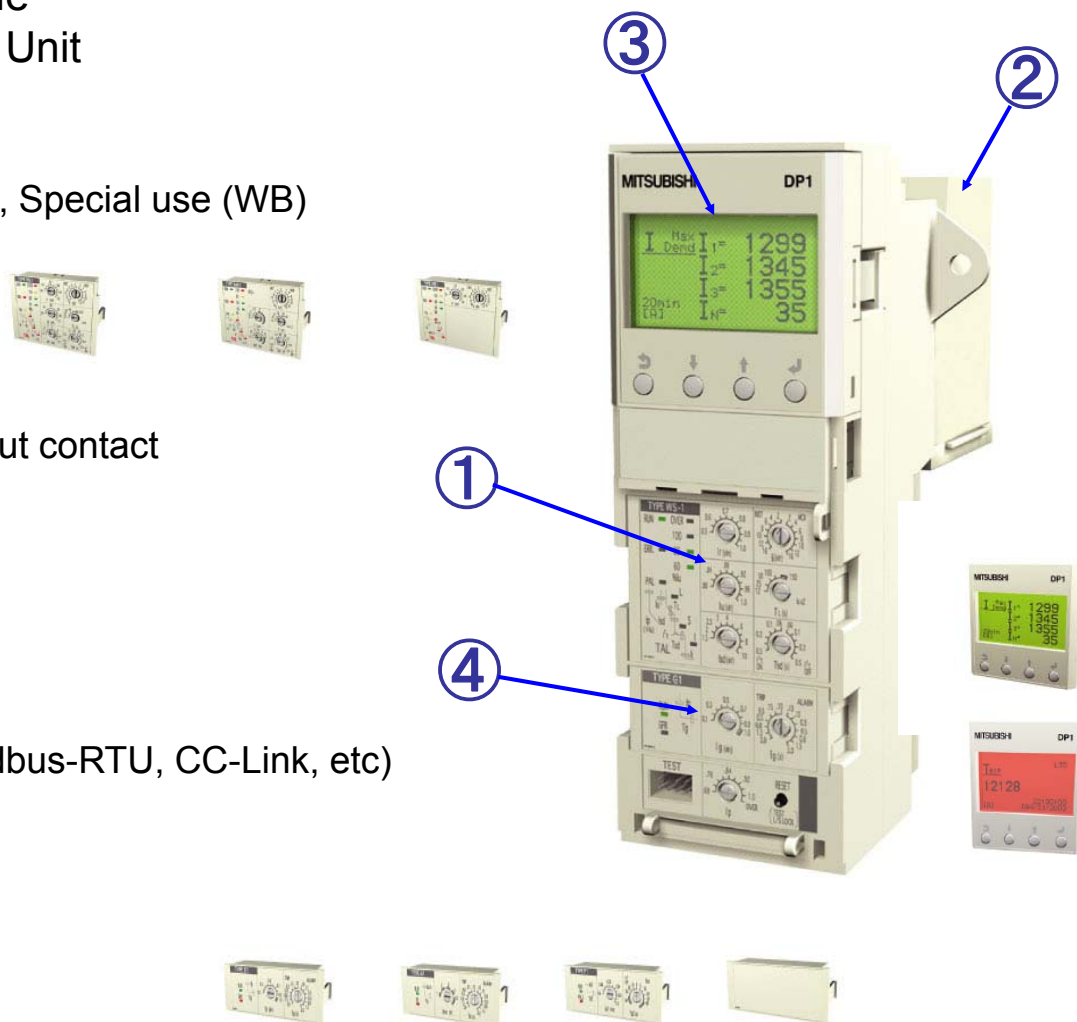
Energy monitoring, Communication (Modbus-RTU, CC-Link, etc)

Temperature alarm (TAL)

## ④ Optional protection module

Ground fault (G1), Earth leakage (E1),

2<sup>nd</sup> Pre-alarm (AP), 50% Neutral protection (N5)

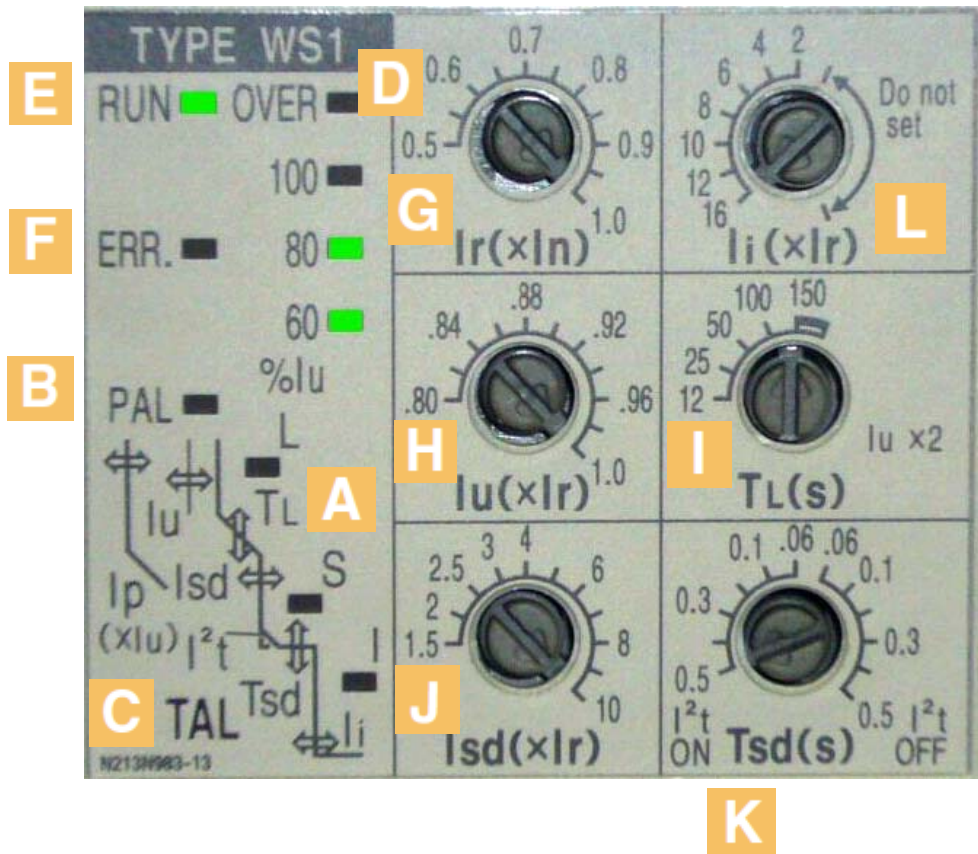


Characteristic table

	NA Nothing	G1 Ground fault	E1 Earth leakage	AP 2nd additional Pre-alarm	N5 Neutral pole 50% protection
<b>WS</b> General use LTD+STD+ INST/MCR					
<b>WM</b> Generator protection use LTD+STD+ INST/MCR					
<b>WB</b> Special use INST/MCR					
<b>WF</b> Protective coordination use LTD+STD+ INST/MCR					

## Main Protection Module Information

- WS relay information



- A** Trip indicator LED
- B** Pre-alarm LED
- C** Temperature alarm LED
- D** Load current LED
- E** RUN LED
- F** ERR. LED
- G** Current setting dial
- H** Uninterrupted current setting dial
- I** LTD time setting dial
- J** STD pick-up setting dial
- K** STD time setting dial



## Power supply module

Type	Rated Voltage (V)	Applicable Voltage range (V)	Criterion for Power requirement (VA)	Alarm output
P1	100-240 AC•DC	85-264 AC•DC	15	—
P2	24-60 DC	18-72 DC	10	—
P3	100-240 AC 100-125 DC	85-264 AC 85-138 DC	15	6 output contacts
P4	24-60 DC	18-72 DC	10	6 output contacts
P5	100-240 DC	85-264 DC	15	6 output contacts (SSR)

### Contact capacity (Type P3 and P4)

Voltage(V)		Current (A)	
		Resistive load	Inductive load
		$\cos\phi=1.0$	$\cos\phi=0.4$ L/R=0.7
AC	240	1	0.5
	120	1	1
DC	125	0.1	0.05
	30	1	1

### Current capacity (Type P5)

Voltage(V)		Normal current (A)	Peak inrush current (A)	ON resistance ( $\Omega$ ) (max.)
AC	240	0.1	0.3	5
	120	0.1	0.3	5
DC	240	0.1	0.3	5
	30	0.1	0.3	5

Note1: Over current protection and ground fault protection operates without control power source.

Note2: Factory setting of 6 output contacts is as follows.

①	②	③	④	⑤	⑥
LTD	STD/INST	G1/E1/AP	PAL	TAL	ERR
Self-holding	Self-holding	Refer to lower table	Automatic reset	Automatic reset	Automatic reset

ETR dial set	G1	E1	AP
TRIP side	Self-holding	Self-holding	—
ALARM side	Automatic reset	Automatic reset	Automatic reset

Self-holding:  
The output is maintained until it resets.

Automatic reset:  
The output will be reset if it backs to normal condition.



## Ground Fault & Earth Fault Protection

- Ground fault protection module (G1)

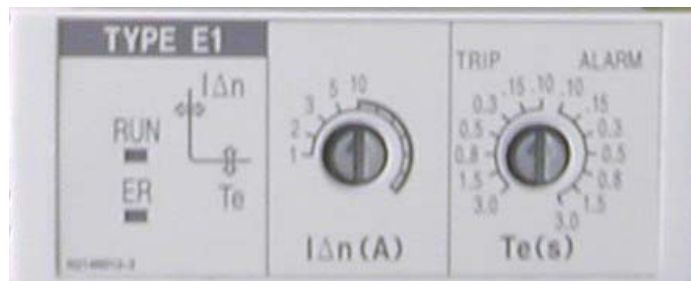


By combining with external ZCT

For transformer ground wire

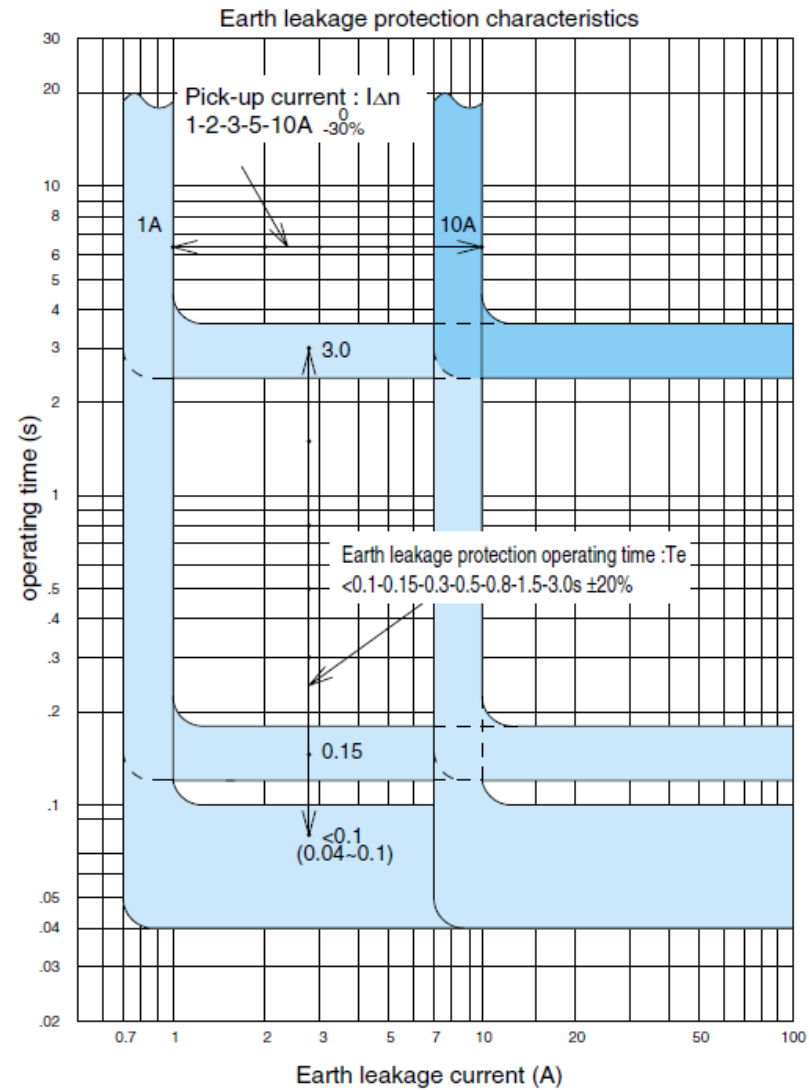
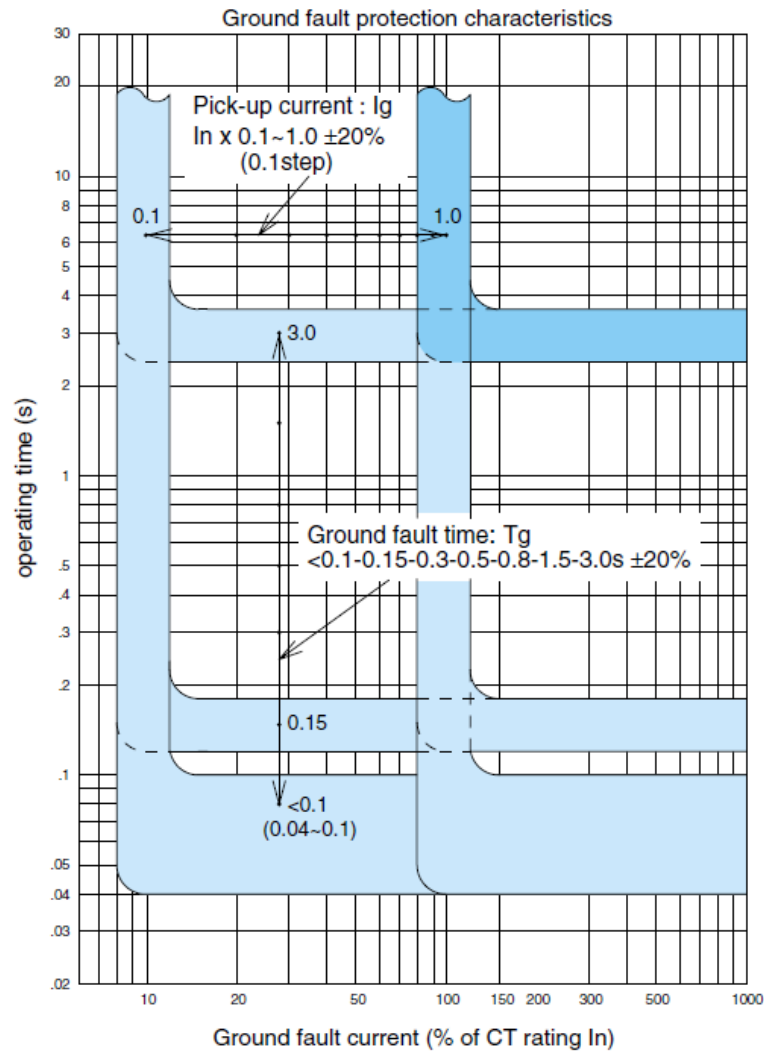


- Earth fault protection module (G1)

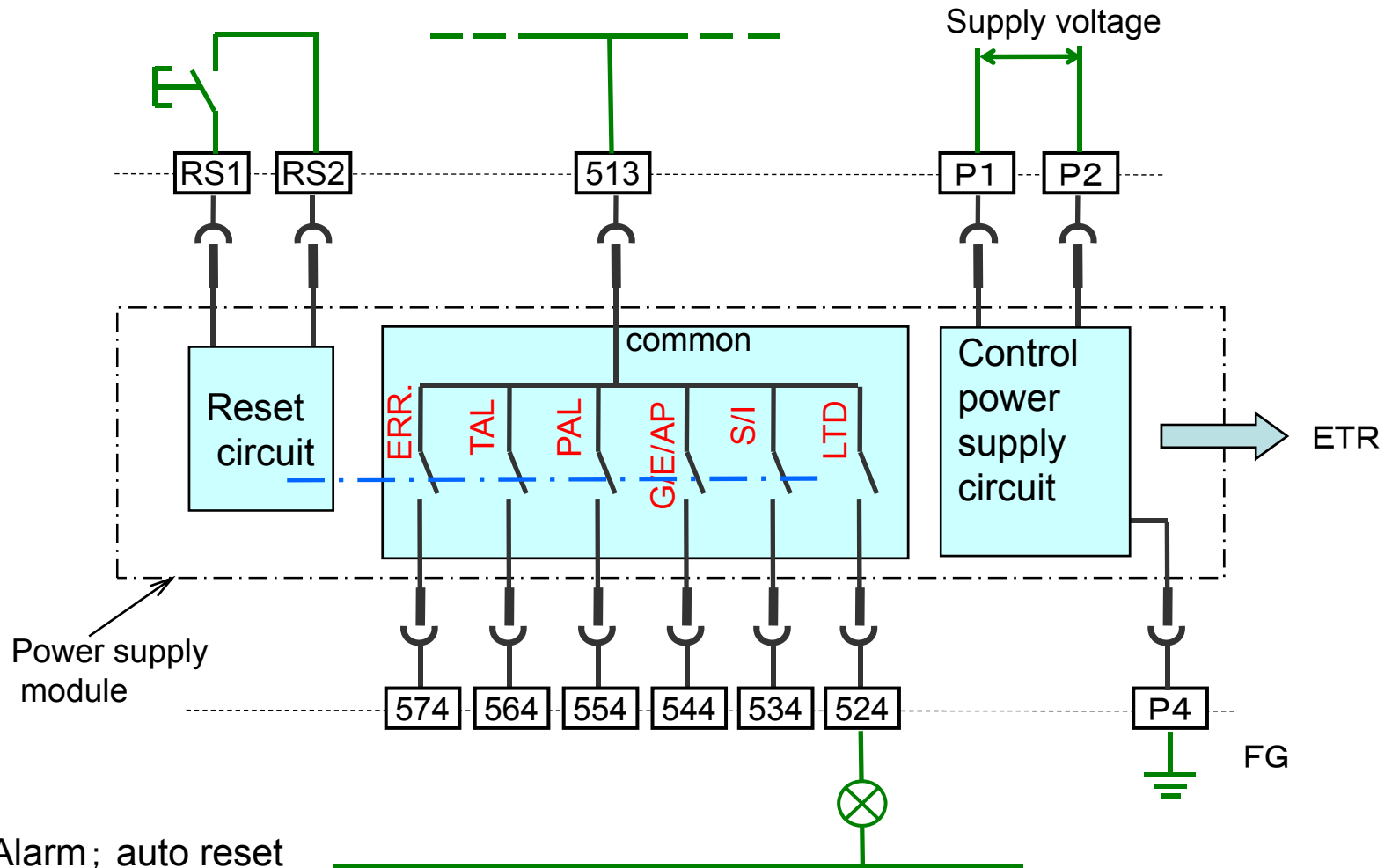


For main circuit



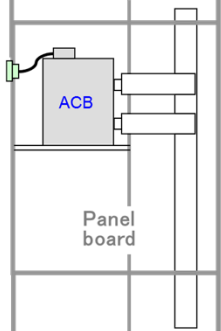





# Contact Output



Note) Alarm; auto reset

	Relay without Display	Relay with DP1	Relay with DP2	Relay with DP3
Appearance				
ETR structure	Modurable	Modurable	Modurable	Integral
Main protection	General (WS) Generator (WM) Special use(WB)	General (WS) Generator (WM) Special use(WB)	General (WS) Generator (WM) Special use(WB)	General (WS)
Optional protection	Ground fault (G1) Earth leakage (E1) 2nd Pre-alarm (AP) Neutral pole 50% (N5)	Ground fault (G1) Earth leakage (E1) 2nd Pre-alarm (AP) Neutral pole 50% (N5)	Ground fault (G1) Earth leakage (E1) 2nd Pre-alarm (AP) Neutral pole 50% (N5)	Ground fault (G1)
Feature	General protection	Multi-measuring & display Trip record up to 10 times Trip information (cause, current, date & time) Alert with back light color change Communication	Multi-measuring & display Trip record up to 10 times Trip information (cause, current, date & time) Alert with back light color change Communication	Current measuring Trip record up to 1 times Trip information (cause, current, time) Alert with back light color change

# Communication modules for DP1, DP2

## - Interface module



BIF-MD (MODBUS®(RS-485))



BIF-PR (PROFIBUS-DP)

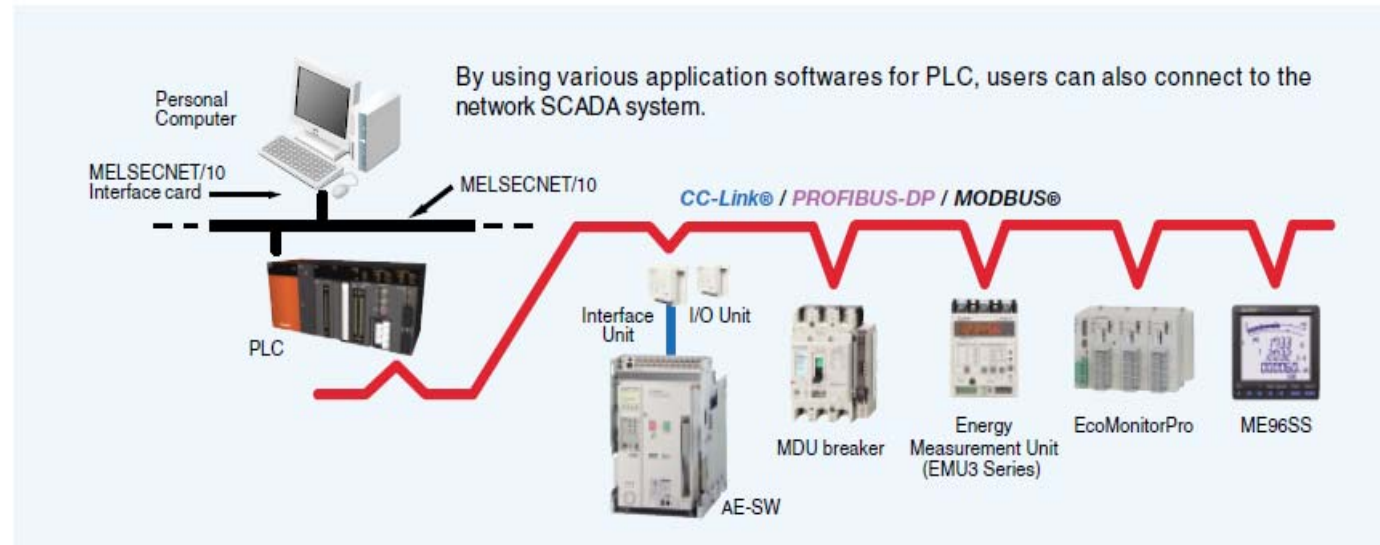


BIF-CC (CC-Link®)

## - I/O module



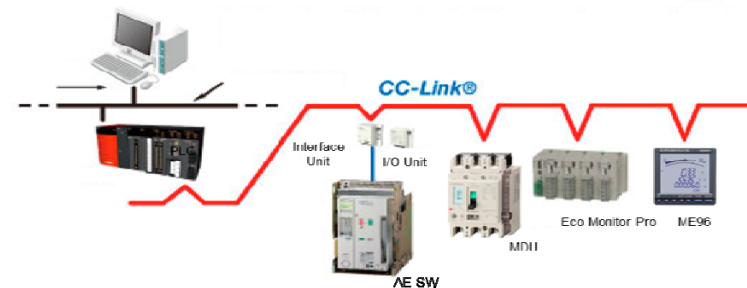
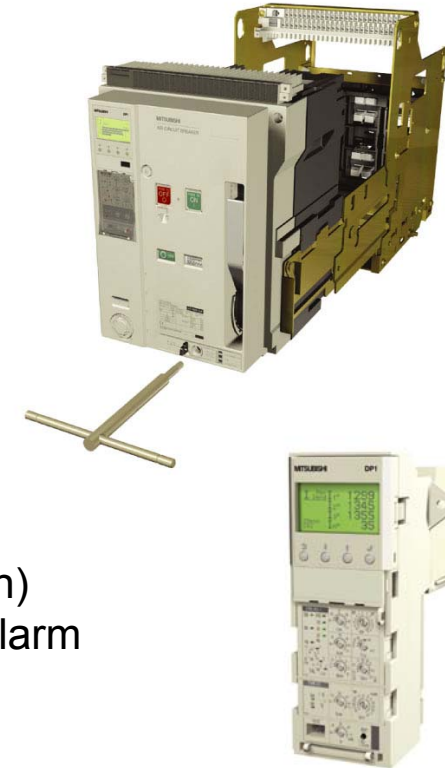
BIF-CON



## Features of ACB

### ■ ACB

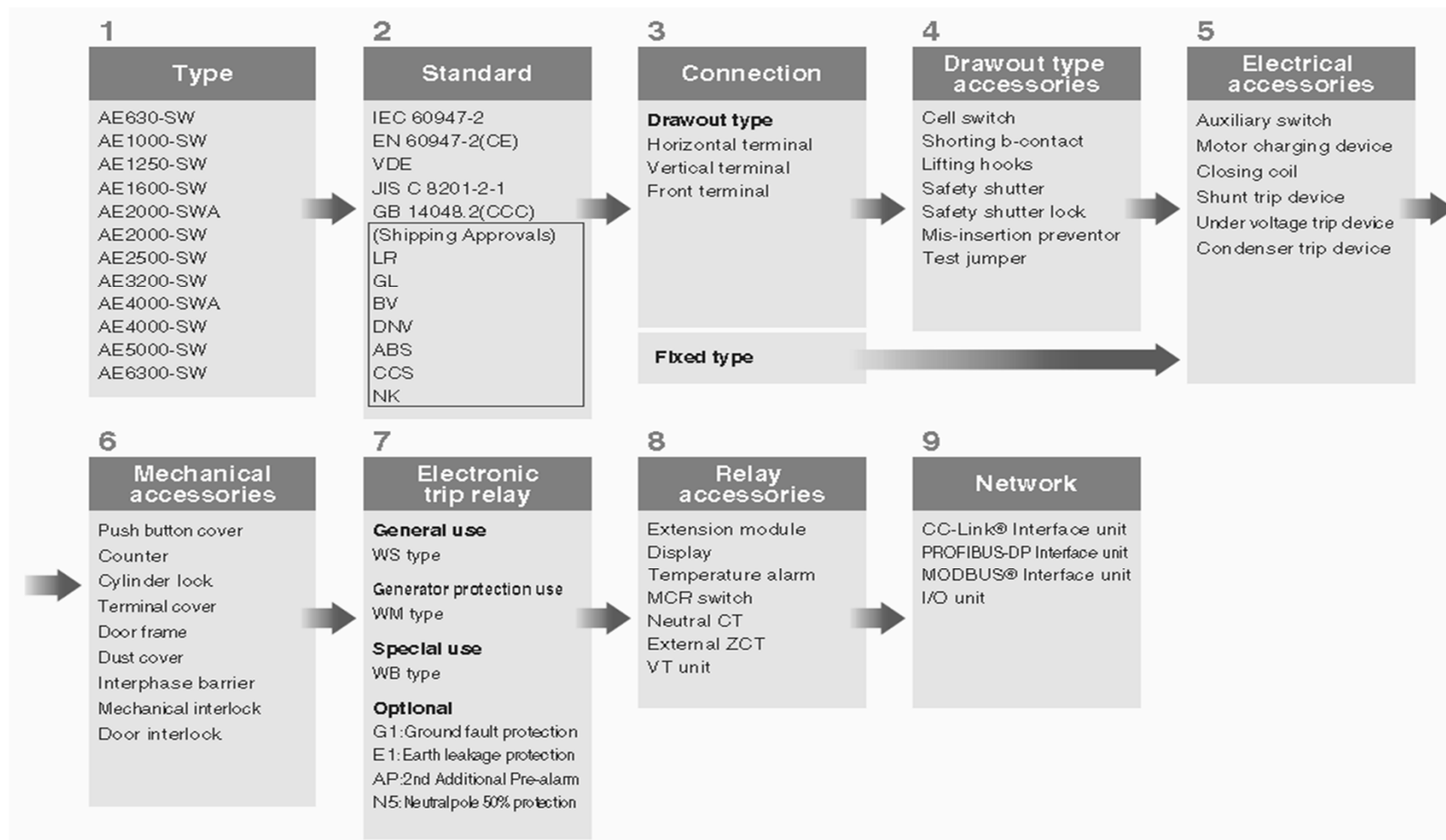
- Range: 630 up to 6300Amp 3/4Pole AC/DC
- Compliance to IEC / JIS / EN / UL / Marine standard
- Approval by Third party such as KEMA (all models), ASTA
- $I_{cs} = I_{cu} = I_{cw}$  up to 50kA for 3 sec
- No derating up to 50 degree (except for 6300A)
- Easy installation with front fitted accessories
- Modurable Trip Unit for easy upgrade
  - \* No need to change Whole of Trip Unit
- Temperature alarm for main contact available
- Adjustable Pre Alarm Indication LED as standard
- Multiline display for Current / Voltage / Energy and etc (Option)
- Color changing backlit (Green to Red) in event of Fault and Alarm
- Record 10 trip history with DP1 or DP2
- Communication with Modbus-RTU, Profibus and CC-Link





# Configuration of ACB

## Product configuration



# How to select ACB?

<b>Customer(name)</b>	<b>Order No.</b>	<b>Number of units</b>	<b>units</b>
<b>Type</b> P9-10 AE <u>1600</u> -SW AE _____ -SWA			
<b>Number of poles</b> <input checked="" type="checkbox"/> 3P <input type="checkbox"/> 4P AE4000-SW, AE300-SW <input type="checkbox"/> 3P <input type="checkbox"/> 4P HN Note15 AE2000-SW, AE4000-SWA <input type="checkbox"/> 4P FN Note15			
<b>Current setting I<sub>r</sub></b> <u>1600</u> A <b>CT rating</b> _____ A Note1, P9, P20			
<b>Applicable standard</b> <input checked="" type="checkbox"/> IEC 60947-2 <input type="checkbox"/> CCC			
<b>Ambient temperature</b> <input checked="" type="checkbox"/> 40°C(Standard) <input type="checkbox"/> Others _____ °C Note2			
<b>Reset type</b> <input checked="" type="checkbox"/> Automatic Reset (Standard) <input type="checkbox"/> Manual Reset (MRE)			
<b>Connection</b> <input type="checkbox"/> Fixed type Note3 <input checked="" type="checkbox"/> Drawout type Note3			
<b>Main circuit terminal</b> P.11 <input type="checkbox"/> Horizontal terminal(FIX) (AE300-SW / AE4000-SWA) <input checked="" type="checkbox"/> Horizontal terminals(DR)(standard) AE4000-SW, AE300-SW <input type="checkbox"/> Vertical terminal(FIX-VT) (AE2000-SWA / AE4000-SWA) <input type="checkbox"/> Vertical terminals(DR-VT) AE2000-SWA / AE4000-SWA, AE4000-S300-SW <input type="checkbox"/> Front terminals(DR-FT) Note4			
<b>Drawout type accessories</b> P17-18 <input checked="" type="checkbox"/> Cell switch(CL- <u>4</u> : 1 or 2 or 3 or 4) Note5 <input type="checkbox"/> Shorting b-contact(SBC- <input type="checkbox"/> : 1 or 2 or 3 or 4 or 5) <input type="checkbox"/> Lifting hooks(HP) <input checked="" type="checkbox"/> Safety shutter(SST) <input checked="" type="checkbox"/> Shutter lock(SST-LOCK) <input type="checkbox"/> Mis-insertion preventor(MIP) <input type="checkbox"/> Test jumper(TJ) <input type="checkbox"/> Vertical terminal adapter(VTA) Can be connected to the Horizontal terminals. <input type="checkbox"/> Front terminal adapter(FTA)			



**Electronic trip relay(ETR)**

With ETR  
 Type WS1 G1 - P1

<b>Main setting module</b>	<b>Optional setting module</b>	<b>Power supply</b>
WS1, WB1 AE630-1600-SW, AE2000-3200-SW, AE4000-SW WS2, WB2 AE2000-SWA, AE4000-SWA, AE5000-SW WS3, WB3 AE6300-SW WS: General use WB: INST/MCR only	G1: Ground fault protection Note5 N5: Neutral pole 50% protection Note5 E1: Earth leakage protection Note5 AP: 2nd Additional Prealarm Note5 NA: Without optional setting	P1: A: DC100-240V P2: DC24-60V P3: AC100-240V / DC100-125V with output contact P4: DC24-60V with output contact P5: DC100-240V with output contact (SSR) <input type="checkbox"/> Neutral CT(NCT) Note6 <input type="checkbox"/> External ZCT Note9 P28: ZCT <input type="checkbox"/> ZT <input type="checkbox"/> B ZTA <input type="checkbox"/>

**Additional function** P22  
 Extension module(EX1) Network P23  
 Display(DP1)  BIF-CC  
 Display on panel board(DP2)  BIF-PR  BIF-CON  
 VT unit(VT)  BIF-MD  BIF-CL  
 Temperature alarm(TAL)  
 MCR switch(MCR-SW)

**Wire system (when EX1 is specified)**

EX1  3φ3W  3φ4W  Normal connection : Note13  Inverse connection : Note14

**Electrical accessories** P12-14

Auxiliary switch A and B contacts in the same quantity are used. Max. quantity: 5 each for A and B contacts.  
 Standard(AX 6 : 2 or 4 or 6 or 8 or 10)  
 High capacity(HAX  : 2 or 4 or 6 or 8 or 10)

Motor charging(MD)  AC - DC100-125V  AC - DC200-250V  DC24V  DC48V Note10

Closing coil(CC)  AC - DC100-250V  DC24-48V

Shunt trip device (SHT)  AC - DC100-250V  AC380-500V  DC24-48V

Under voltage trip device(UVT)  
 AC100-120V  AC200-240V  AC380-460V  DC24V  DC48V  DC100-110V  DC120-125V

**Time delay**  
 Inst(INST)  
 0.5s(05)  
 3.0s(30)  
Note11: In case of 380-460V AC, the external transformer is attached.

# Introduction of Mitsubishi MCCB & ELCB



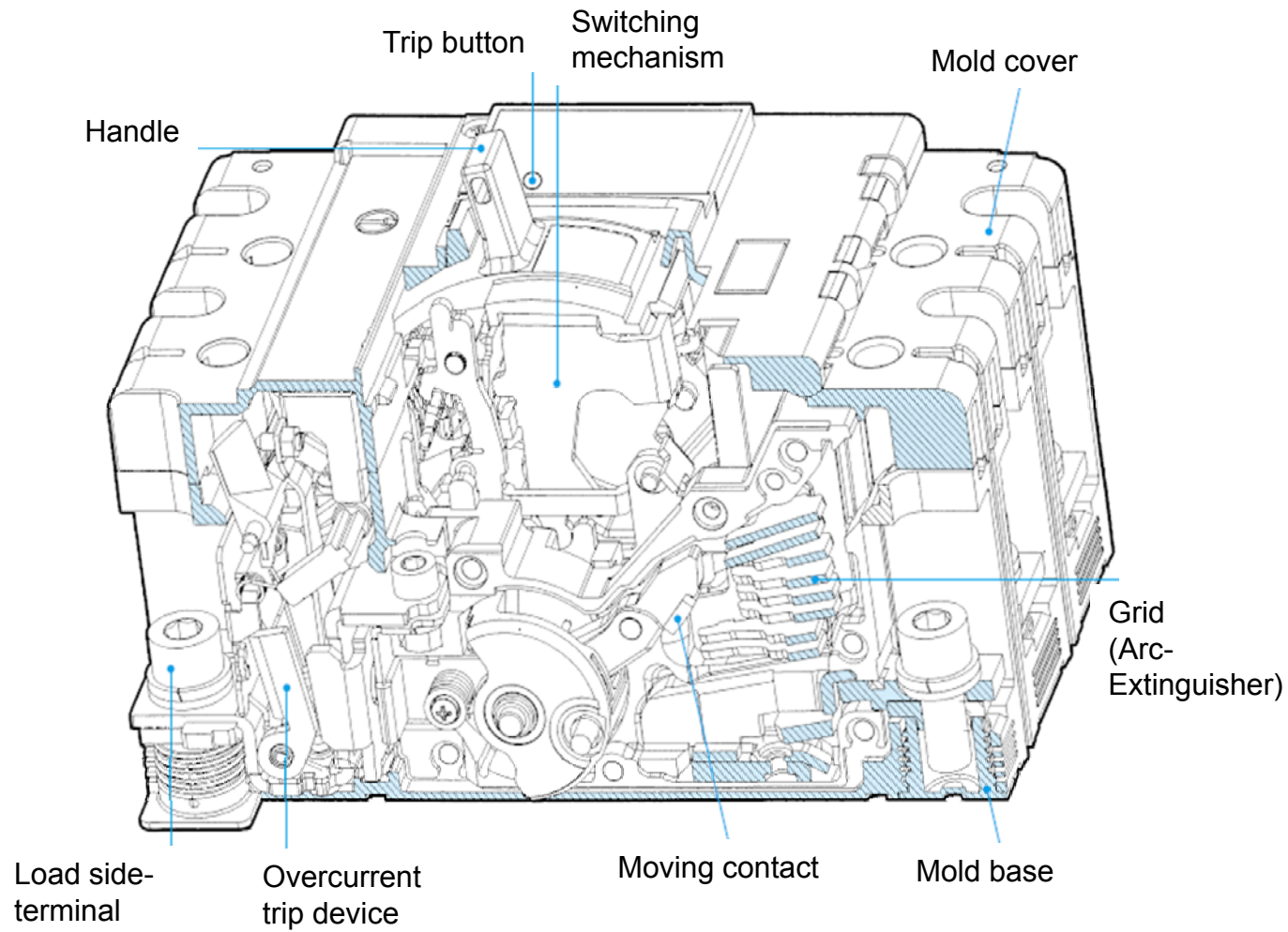
August, 2016

Mitsubishi Electric Corp. Fukuyama Works

Class		FrameA	32	63	125	160	250	400	630	800	1000	1250	1600
MCCB (NF)	NF-C		NF30-CS	NF63-CV	NF125-CV		NF250-CV	NF400-CW	NF630-CW	NF800-CEW			
	NF-S		NF32-SV	NF63-SV	NF125-SV		NF250-SV	NF400-SW	NF630-SW	NF800-SDW		NF1250-SDW	NF1600-SDW
					NF125-SGV	NF160-SGV	NF250-SGV						
				NF125-SEV		NF250-SEV	NF400-SEW	NF630-SEW	NF800-SEW	NF1000-SEW	NF1250-SEW	NF1600-SEW	
	NF-L			NF125-LGV	NF160-LGV	NF250-LGV							
	NF-H			NF63-HV	NF125-HV		NF250-HV						
					NF125-HGV	NF160-HGV	NF250-HGV						
				NF125-HEV		NF250-HEV	NF400-HEW	NF630-HEW	NF800-HEW				
	NF-R			NF125-RGV		NF250-RGV	NF400-REW	NF630-REW	NF800-REW				
NF-U			NF125-UV		NF250-UV	NF400-UEW		NF800-UEW					
ELCB (NV)	NV-C			NV63-CV	NV125-CV		NV250-CV	NV400-CW	NV630-CW				
	NV-S		NV32-SV	NV63-SV	NV125-SV		NV250-SV	NV400-SW	NV630-SW				
					NV125-SEV		NV250-SEV	NV400-SEW	NV630-SEW	NV800-SEW			
	NV-H			NV63-HV	NV125-HV		NV250-HV						
					NV125-HEV		NV250-HEV	NV400-HEW	NV630-HEW	NV800-HEW			
NV-R							NV400-REW						

- ... Fixed type
- ... Overload rating (Thermal) adjustable type
- ... Electronics type

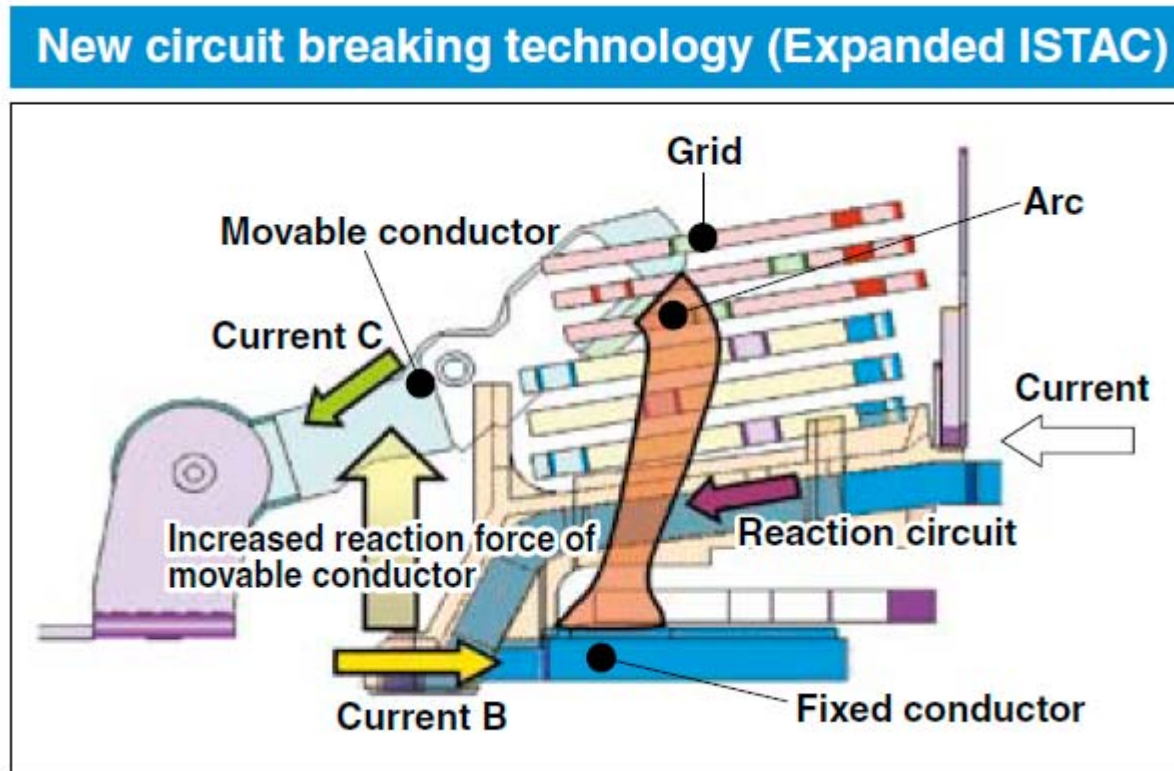
# Construction of MCCB





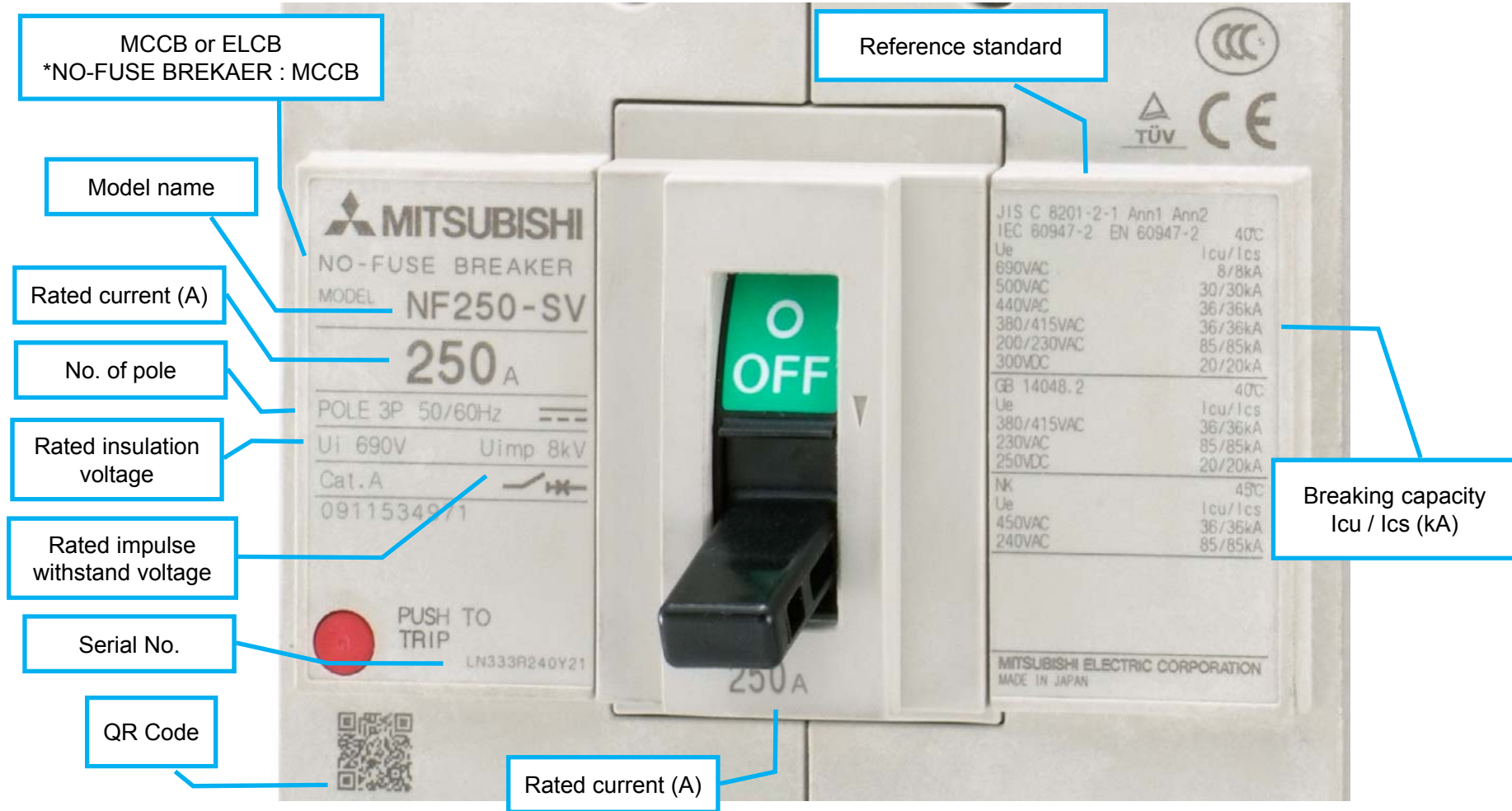
## Breaking Technology of MCCB

- The new circuit breaking technology “Expanded ISTAC” has improved the current-limiting performance and upgraded the overall breaking capacity. Expansion of the conductor under the stator shortens the contact parting time of the mover as compared to the conventional ISTAC structure. The current-limiting performance has been improved remarkably. (The maximum peak current value has been reduced by approx. 10%.)

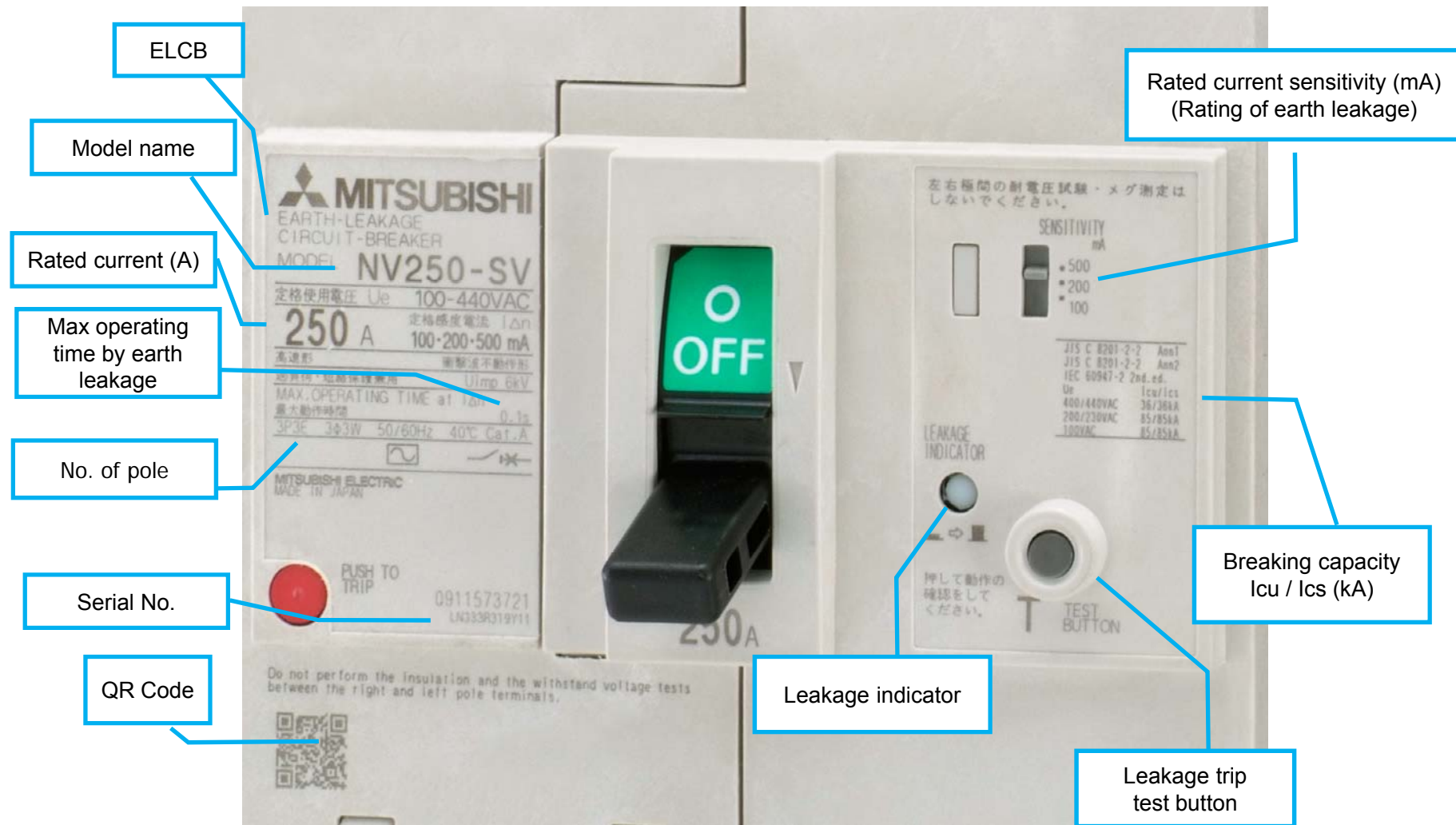




# MCCB Cover Information



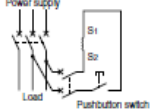
# ELCB Cover Information



# Internal Accessories for MCCB & ELCB

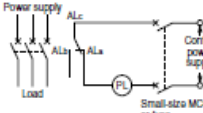
- Common internal accessories up to 250Amp MCCB & ELCB

**SHT (Shunt trip)**  
Device to electrically trip a circuit breaker from a distance. The allowable operating voltage range is 70 to 110% of the rated voltage. (JIS C 8201-2-1 Ann.1, Ann.2)



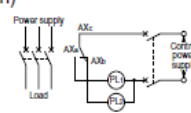
Connection diagram

**AL (Alarm switch)**  
Switch to electrically display the tripping status of circuit breaker



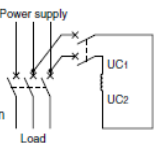
Connection diagram

**AX (Auxiliary switch)**  
Switch to electrically display the ON-OFF status of circuit breaker

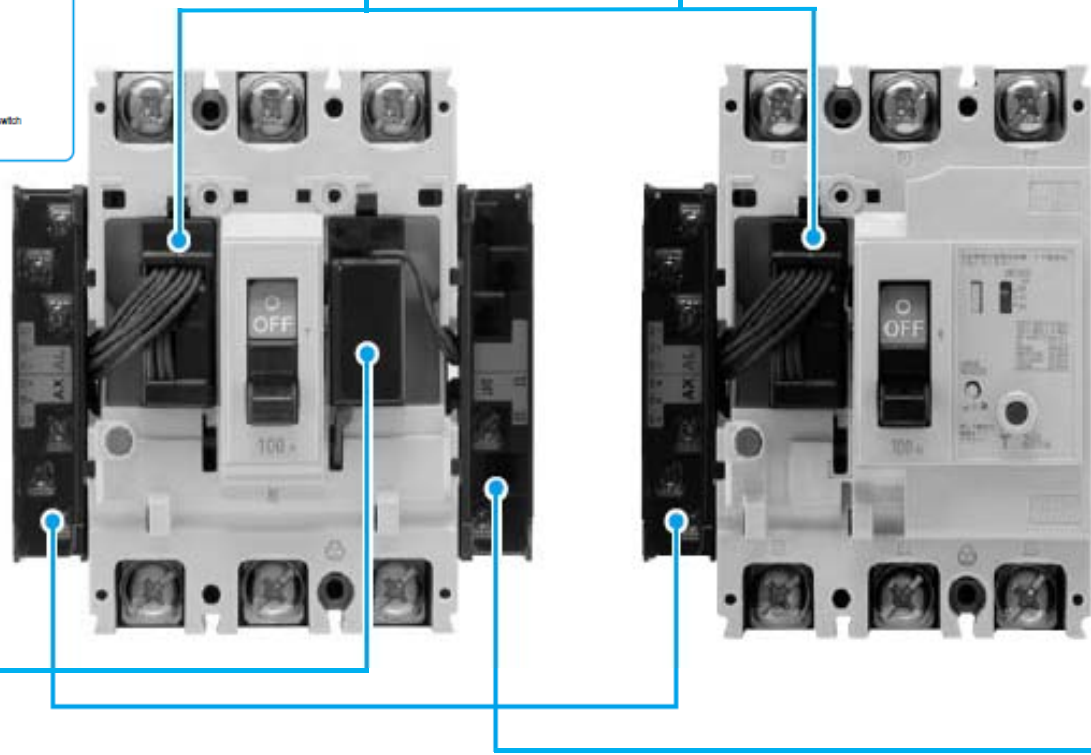


Connection diagram

**UVT (Undervoltage trip)**  
Device to automatically trip a circuit breaker when the voltage drops. The operating voltage is 70 to 35% of the UVT rated voltage. (JIS C 8201-2-1 Ann.1)  
When the voltage recovers at least to 85% or more, the circuit breaker can be turned on after the device is manually reset.



Connection diagram



**SLT (Lead wire terminal block)**  
Terminals for connecting with internal accessories. The terminal block will be manufactured to order. For the detailed dimensions, refer to pages 116 and 117. (The dimensions of SLT slightly vary depending on the number of installed accessories and the model.)  
However, circuit breakers with a frame size of 400A and above having an electrical operation device are normally provided with SLT.

## ■ Applicable models and kinds of cassette type accessories

	Model	Alarm switch (AL)	Auxiliary switch (AX)	Shunt tripping device (SHT)	Undervoltage tripping device (UVT)
MCCB	NF63-CV~NF250-CV, NF32-SV~NF250-SV NF63-HV~NF250-HV NF125-SGV~NF250-SGV, NF125-LGV~NF250-LGV NF125-HGV~NF250-HGV NF125-SEV, NF250-SEV, NF125-HEV, NF250-HEV NF125-RGV, NF250-RGV, NF125-UV, NF250-UV NF100-CVFU, NF125-SVU/HVU, NF250-SVU/HVU	○	○	○	○
	NF50-SVFU, NF400-CW, NF630-CW, NF800-CEW NF400-SW, NF630-SW, NF400-SEW~NF800-SEW NF800-SDW, NF400-HEW~NF800-HEW NF400-REW~NF800-REW, NF400-U EW, NF800-U EW	○	○	○	-
ELCB	NV63-CV~NV250-CV, NV32-SV~NV250-SV NV63-HV~HV250-HV NV125-SEV, NV250-SEV, NV125-HEV, NV250-HEV NV100-CVFU, NV125-SVU/HVU, NV250-SVU/HVU	○	○	○	○
	NV50-SVFU, NV400-CW, NV630-CW NV400-SW, NV630-SW, NV400-SEW~NV800-SEW NV400-HEW~NV800-HEW, NV400-REW	○	○	○	-

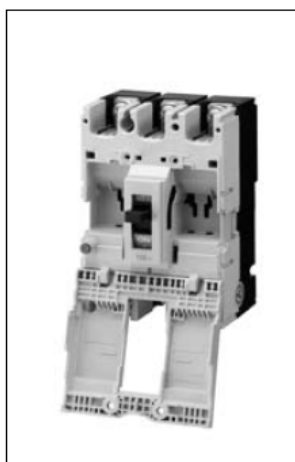
## ■ Procedure for installing cassette type accessories



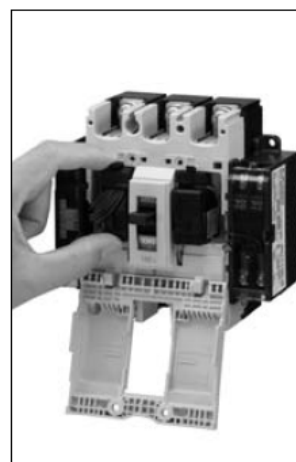
1. Press the trip button (PTT) to trip the circuit breaker.



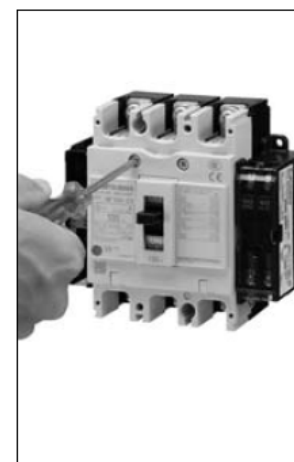
2. Loosen the cover screws.



3. Open the cover.

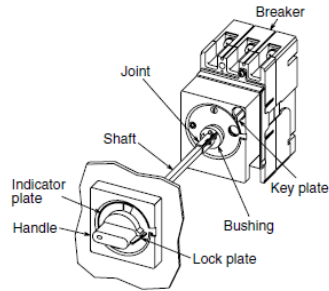


4. Install the cassette type accessory.

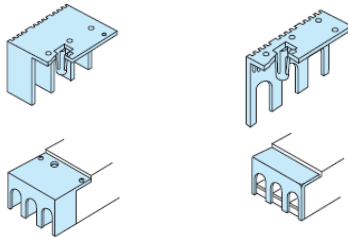


5. Close the cover, and tighten the screws.

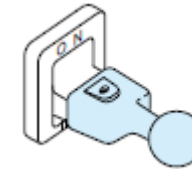
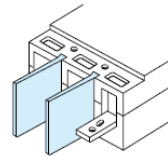
- Operating handle
  - Breaker mounted type (F-Type)
  - Panel door mounted type (V-Type)



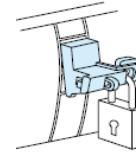
- Terminal cover
  - Large type (TC-L)
  - Small type (TC-S)



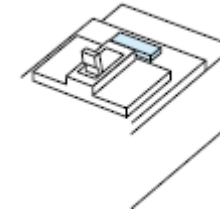
- Insulation barrier (BA)
- Auxiliary handle (HT)



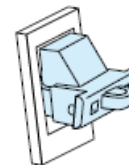
- Handle lock (HL)



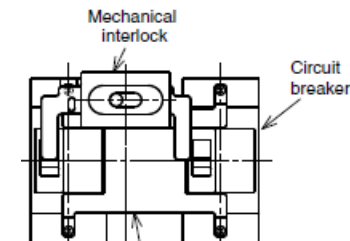
- Card holder (CH)



- Lock cover (LC)

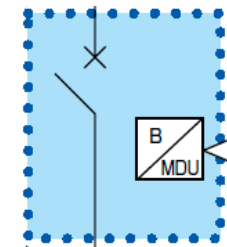
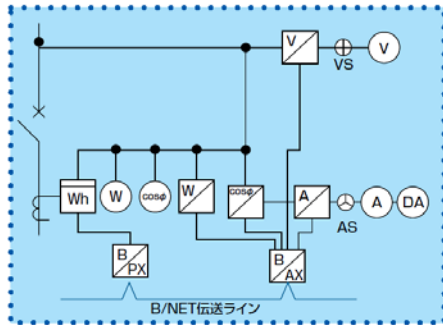


- Mechanical interlock (MI)

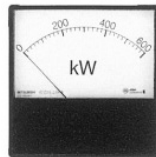




# Multifunctional Electronic Breaker



Ammeter



Energy meter



MCCB



CT



VT



Transmission module



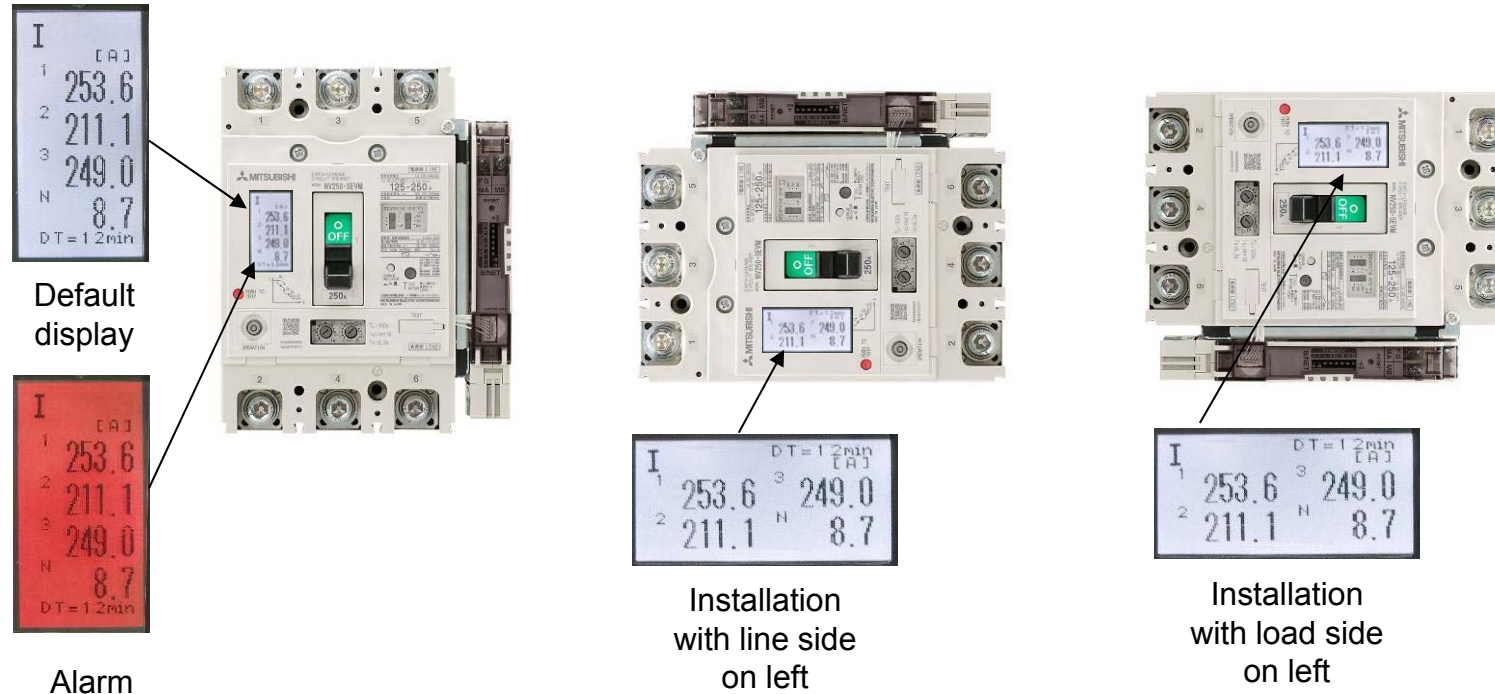
MDU Breaker



# Multifunctional Electronic Breaker

## Panel cut display with measuring & alarm functions

- Display direction can be changed according to breaker mounting direction
- Display turns red when alarming for easy notification of accident

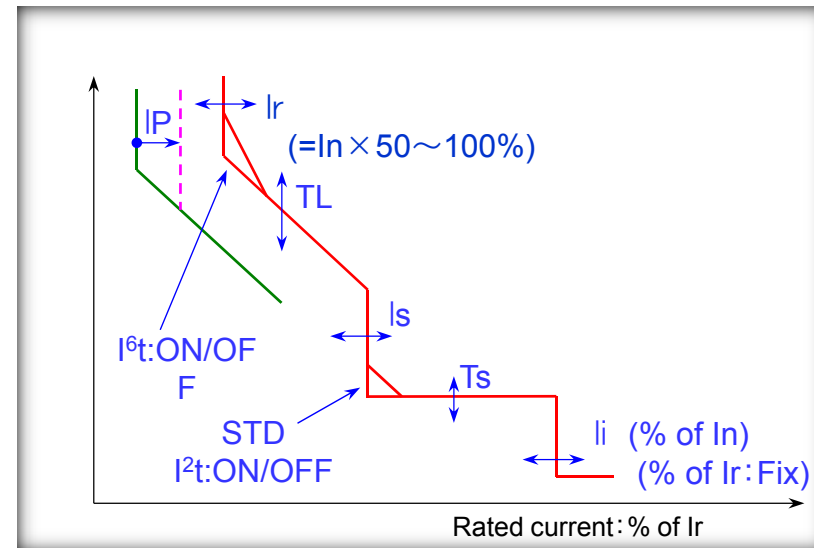
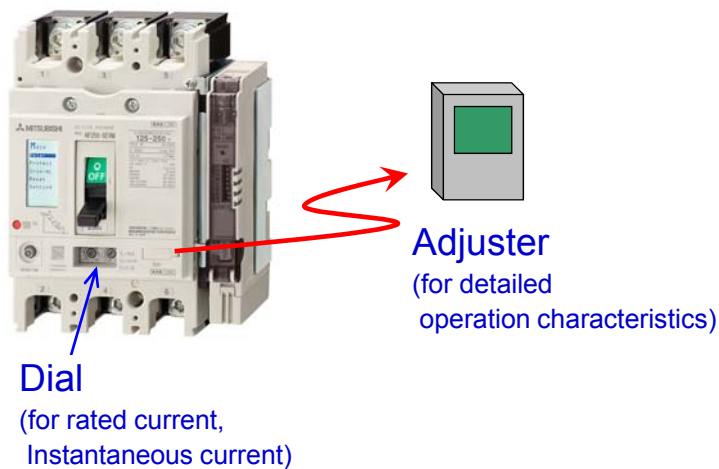


# Multifunctional Electronic Breaker

- Rated current and instantaneous current setting are adjustable with the dial

	Rated current (A)					
	125	150	175	200	225	250
Old WSS	●	●	●	●	●	—
New WS-V	← Adjustable 125 - 250 (12.5A step) →					

- Other detail of operating characteristics setting can be done with dial or adjuster



## Features of MCCB & ELCB

### ■ MCCB

- Range: 16 up to 1600Amp 3/4Pole AC/DC
- Compliance to IEC / JIS / EN / UL / Marine standard
- Approval by Third party KEMA
- MCCB with Thermal magnetic & Electronic trip unit (EV/EW)
- Thermal magnetic MCCB with adj Overload up to 250Amp (GV)
- Adj Pre Alarm Indication LED for Microprocessor based release
- Snap fit type front mounted accessories

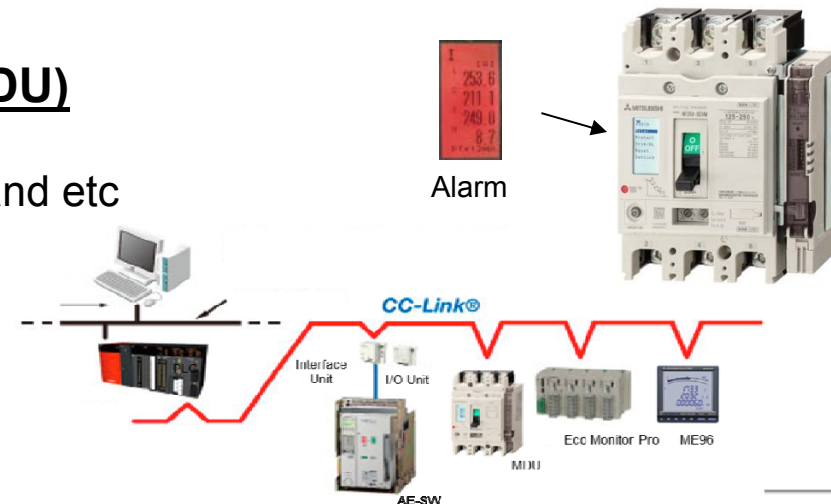


### ■ ELCB

- Range: 5 up to 800Amp 3/4Pole
- Compliance to IEC / JIS / EN / UL
- Same compact size as MCCB with inbuilt ZCT

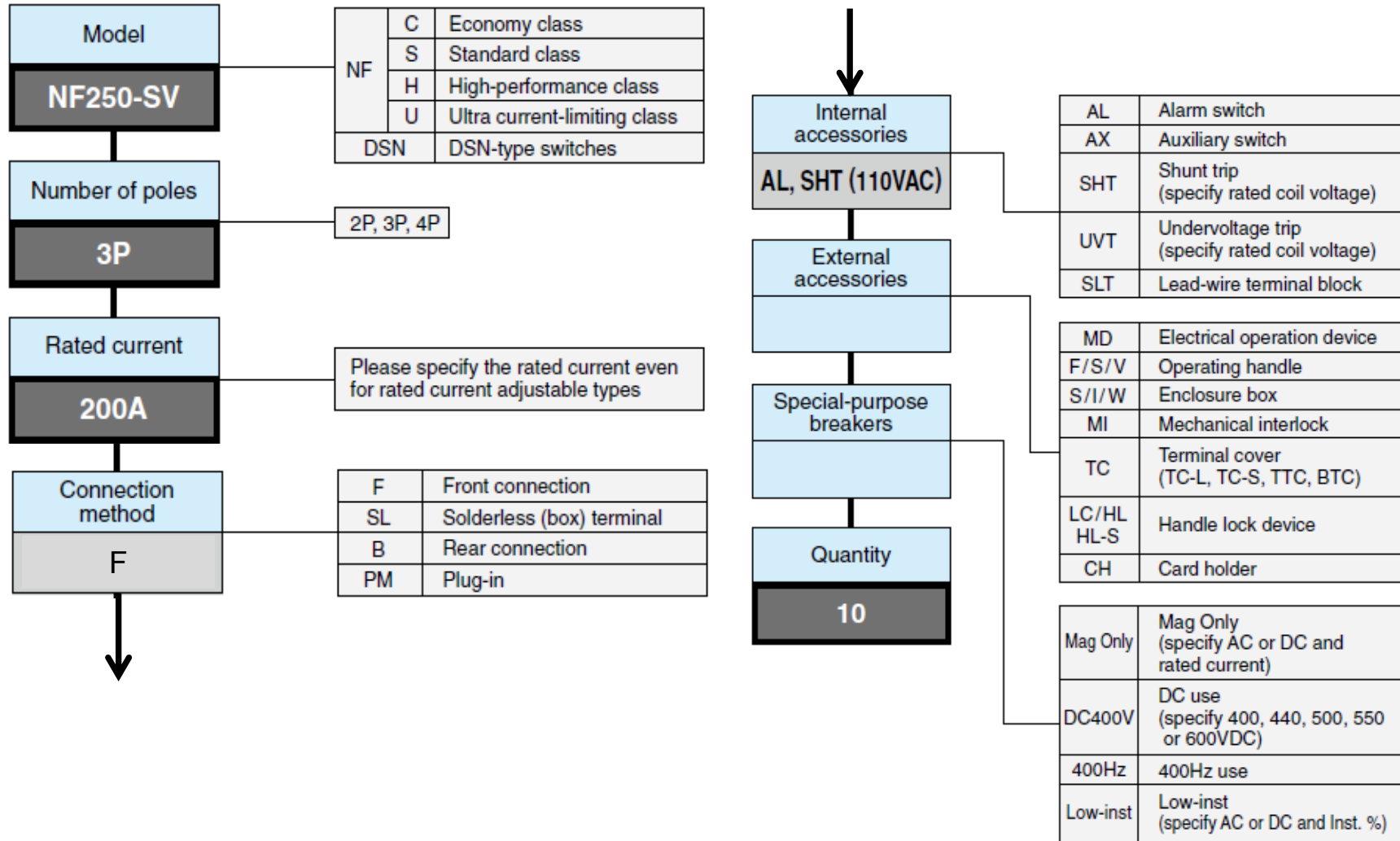
### ■ MCCB with Measuring Display Unit (MDU)

- Compliance to IEC / JIS / EN
- Multiline display for Current / Voltage / Energy and etc
- Backlight color change to Red during alarming
- Communication capable with CC-Link



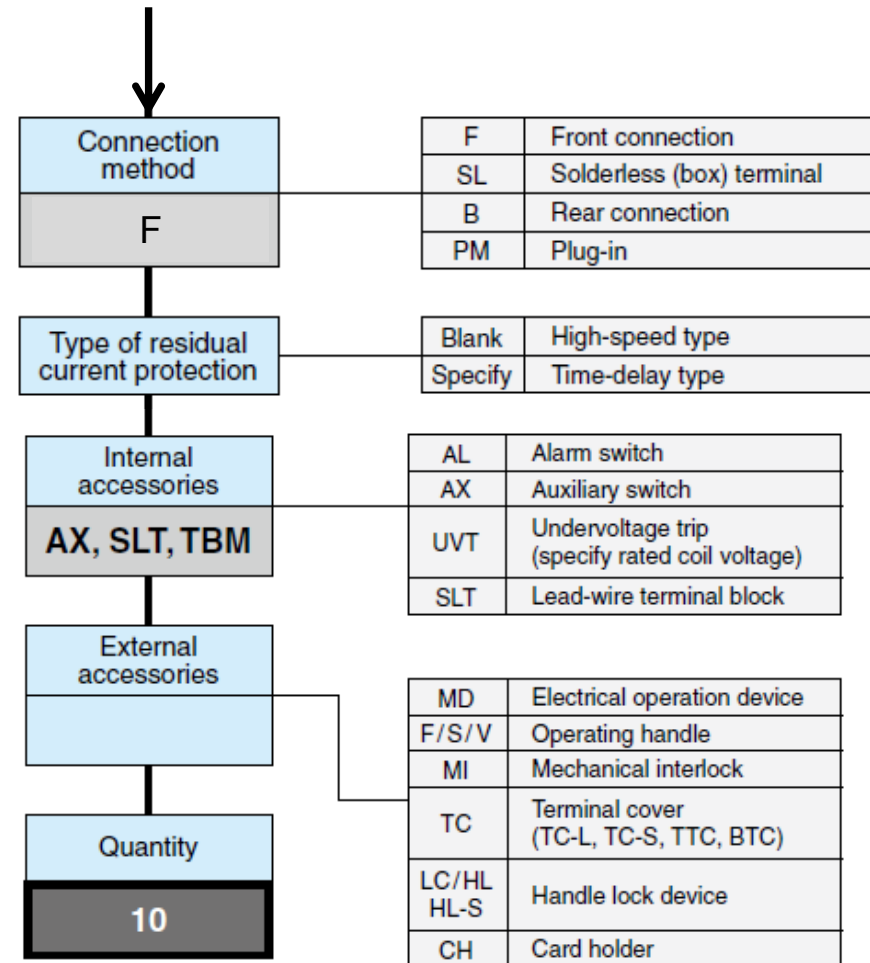
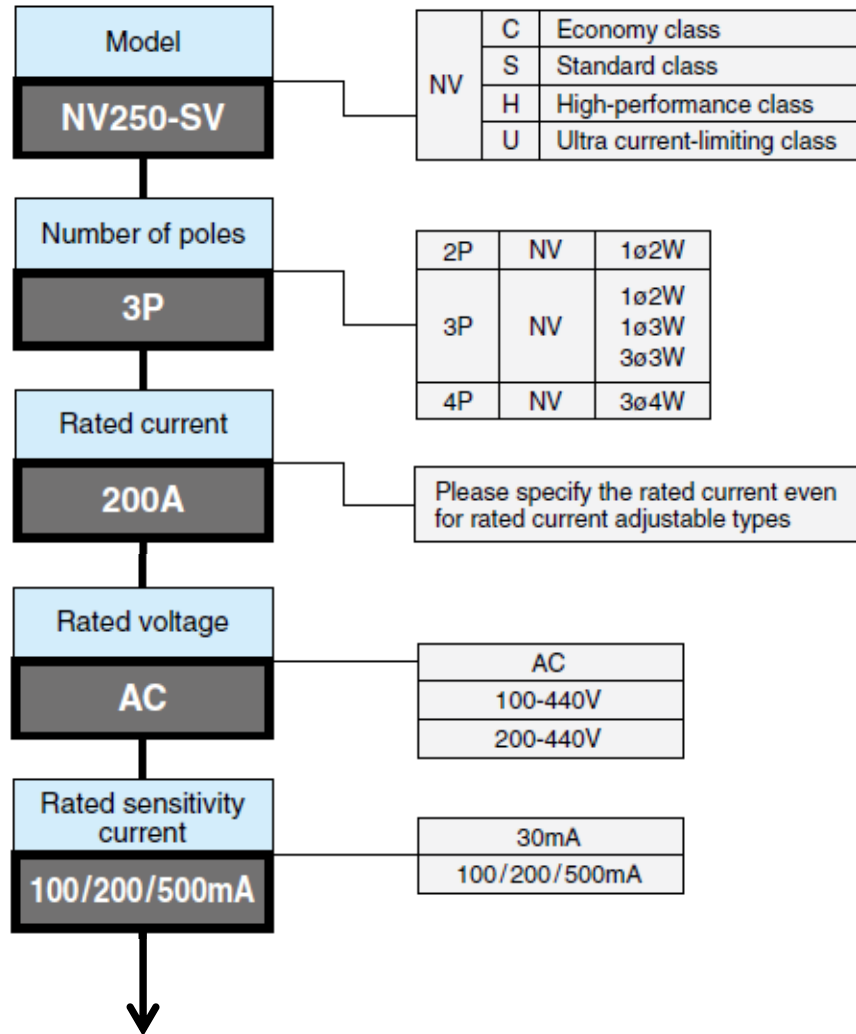
# How to select MCCB?

## ● Molded Case Circuit Breakers



# How to select ELCB?

## ● Earth Leakage Circuit Breakers



<http://www.mitsubishielectric.com/fa/index.html>



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  - Service

**Low-voltage Circuit Breakers**

Title	Language	Pub. date	File / Size
World Super V Series (WS-V Series)	English	2017-09	46.20MB
World super AE	English	2018-01	3.38MB
BH/BV DIN series	English	2017-08	4.12MB
BHW/BVW DIN series	English	2017-03	8.84MB
MCCB ELCB Technical Note	English	2013-07	27.31MB



Thank you  
for listening

We appreciate  
your time

