

### ■ Description

The highest priority for the molded case circuit breakers (MCCBs) and earth leakage circuit breakers (ELCBs) employed in power distribution control systems is to provide sure, safe protection for connected equipment against short-circuits or earth leakage. Fuji Electric FA has led the industry with the  $\alpha$ -TWIN Breakers (30 to 800AF), same-size MCCBs and ELCBs. All of these breakers meet exacting demands for quality and performance.

Now, the lineup has been further enhanced with six major concepts — international standardization, utility, technical innovation, compactness, safety and ecology — in the  $\alpha$ -TWIN series.

### • Outstanding features

$\alpha$ -TWIN Breakers employ a new current-limiting mechanism based on the arc-driving technique for high-speed contact opening and very short arcing time. This, and a dual-latching mechanism, enable 30AF and 225AF MCCBs to interrupt current faster at higher capacities. A special resin with excellent thermal and mechanical

properties produces a more compact molded case for higher breaking capacity.

### • Standardized modular construction

Standardized dimensions ease panel design and manufacture. Models 30AF to 225AF are 60mm deep and require a panel cutout height of 52mm.

Models 400AF to 800AF are 103mm deep and require a panel cutout height of 92mm.

With standardized modular construction,  $\alpha$ -TWIN Breakers cut panel manufacturing costs.

### • A wider range of customer-mountable accessories

The range of cassette-type internal accessories has been greatly expanded for 30AF to 800AF MCCBs. This speeds up and simplifies customer response to specification changes.

All accessories shown here can be mounted by the customer except for motor operating mechanism and plate type padlocking device.



### • Conforming to international standards

The  $\alpha$ -TWIN series conforms to IEC and EN standards, and features UL, cUL and CCC.

### • Compliance with EN Standards

FUJI's MCCBs conform to the European Standards for circuit breakers (EN60947-2 = IEC60947-2). (E and S series, 30AF to 800AF only)

### ■ Types of MCCBs

#### • Line protection

##### For general-purpose circuit protection

This type of MCCB may be employed in both main and branch circuits. They are installed in motor control centers and distribution boards to provide protection from both overload and short-circuit currents.

The overcurrent trip mechanism of the general-purpose MCCB consists of thermal and magnetic elements.

Thermal trip action and magnetic trip action provided overcurrent protection and short-circuit protection, respectively.

##### For distribution boards

These MCCBs are used exclusively in branch circuits of distribution boards for lighting installations. These breaker are compact and suitable for mounting in groups. These circuit breakers are available in 50 and 100AF (Ampere Frame) types, and their breaking capacities are within the 2.5kA to 5.5kA range.

#### • Motor-protection

The line current ratings of MCCBs for motor protection are equal to the motor's full-load current to provided motor overload and line overcurrent protection. These MCCBs obviate the need for magnetic motor starters. Since these MCCBs control motor start-stop operation, they must be used with loads which do not require frequent switching. These MCCBs handle starting rush currents of up to 600% and enable starting times of up to two seconds.

These MCCBs are for general-purpose, 3-phase squirrel-cage induction motors with direct-on-line starting.

#### • Solid-state trip

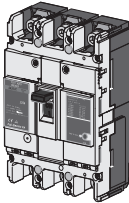
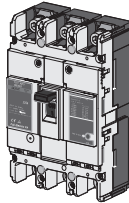
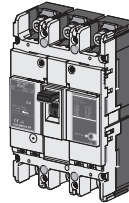
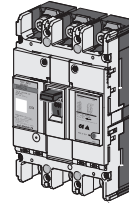
These solid-state trip type MCCBs incorporate a trip device with a built-in microprocessor. Rated current levels can be selected in five to six steps, and a wide variety of tripping parameters, including long-time delay, short-time delay, and instantaneous

tripping, can be set with high precision. These MCCBs are ideal for providing selective trip protection coordination with various protective devices, such as fuses and other MCCB units. This type of MCCB also increases the reliability of the power supply.

# Molded Case Circuit Breakers

## General information

### Models and applications

CE marking		UL approved	
Line protection		Motor protection	
S series	E series	S, E series	S-UL, E-UL series
			
Used for equipment with a capacity range of 15 to 20kVA. Satisfies EN (IEC) standards and bears CE markings.	Ideal for circuits with comparatively low short-circuit current. Satisfies EN (IEC) standards and bears CE markings. Enables the design of compact, economical control panels. The depth is 60mm for types with a capacity range of 30 to 225A.	This breaker protects motors from overload and cables from excessive current.	This breaker is UL and CSA approved. Satisfies EN (IEC) standards and bears CE markings.

### Varieties of MCCBs

#### IEC and CE marking conformed

Frame size		30AF	50AF	60AF	100AF	225AF	400AF	600AF	800AF
Line protection	S series	SA30C□-CE	SA50C□-CE SA50RC□-CE	SA60C□-CE SA60RC□-CE	SA100C□-CE SA100RC□-CE	SA225C□-CE SA225RC□-CE	SA400C□-CE SA400RC□-CE	SA600RC□-CE	SA800RC□-CE
	E series	EA30AC□-CE	EA50AC□-CE EA50C□-CE	EA60C□-CE	EA100AC□-CE EA100C□-CE	EA225C□-CE	EA400C□-CE	EA600C□-CE	EA800C□-CE
Motor protection	S series	SA30CM□-CE	SA50CM□-CE SA50RCM□-CE	SA60CM□-CE	SA100CM□-CE SA100RCM□-CE	SA225CM□-CE SA225RCM□-CE	-	-	-
	E series	EA30ACM□-CE	EA50CM□-CE	EA60CM□-CE	EA100CM□-CE	EA225CM□-CE			

Note: Type number with "-CE" indicates the IEC and CE marking conformed model, but type number without "-CE" indicates also the same.

#### UL489 Listed

Frame size		30AF	50AF	60AF	100AF	225AF	400AF	600AF	800AF
UL489 Listed	SA-UL	-	SA50RCUL	-	SA100CUL SA100RCUL	SA225CUL SA225RCUL	SA400CUL SA400RCUL	SA600RCUL	SA800RCUL
	EA-UL	-	-	-	EA100CUL	-	-	-	-

#### JIS C8370

Frame size	30AF	50AF	60AF	100AF	225AF	400AF	600AF	800AF
S series	-	-	-	-	-	-	-	-
L series H series	-	LA50B H50C	-	H100C H100R	H225C H225R	H400C H400R	H600C H600R	H800C H800R
4-pole	-	SA54B	-	EA104B SA104R	SA204R	SA404HA	SA604H	SA804H
F series	-	F51B F52B F53B	-	F102B F103B	-	-	-	-

Note: Solid-state trip type is also available. SA1000E, 1200E, 1600E