

DISTRIBUTION

Molded Case Circuit Breakers

BW0 Series



Economy series MCCB from 32AF to 400AF

BW0 series

Focusing on assembly of easy wiring, maintenance check, reasonable price, and standardized distribution board design, BW0 series MCCBs are designed mainly for building construction market and secondary distribution market.



BW253E0



BW33A0



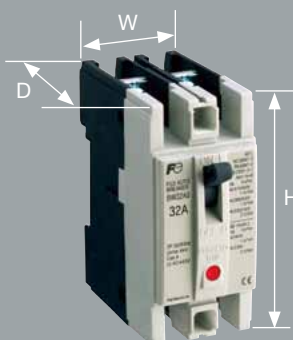
BW403S0

32AF

Compact design

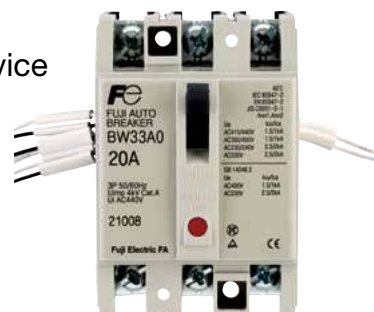
Cost and space saving for building a control panel.

- Compact size
2P W36×H80×D76(mm)
3P W54×H80×D76(mm)
- AC 440V application
Icu: 1.5kA at 440V AC,
2.5kA at 240V AC



Available accessories

- Auxiliary switch
- Alarm switch
- Shunt trip device



Compliance to RoHS Directive

All materials used are compliant to RoHS Directive and the main components are easy to recycle.

100AF to 400AF

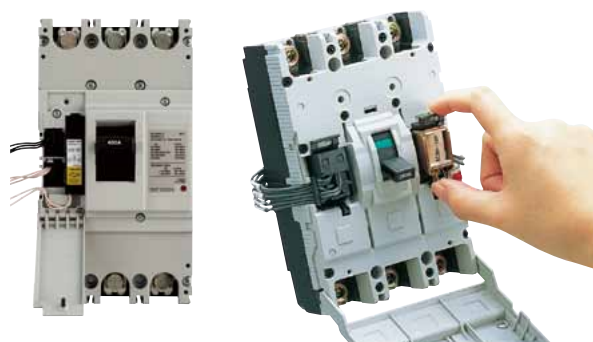
Compact design

We've applied high-performance technology to achieve 100AF to 250AF models with a uniform depth of 60mm.

Cassette type accessories

All accessories can be installed by the user.

Quickly adaptable to the many onsite changes in specifications.



Compliance to RoHS Directive

All materials used are compliant to RoHS Directive and the main components are easy to recycle.

Interchangeability

The design of the same external dimensions (400AF) and mounting size (160AF to 400AF) with G-TWIN circuit breaker.

Just simply change the model when a customer suddenly changes the design (e.g. when changed to earth leakage circuit breaker).



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BW0 Series

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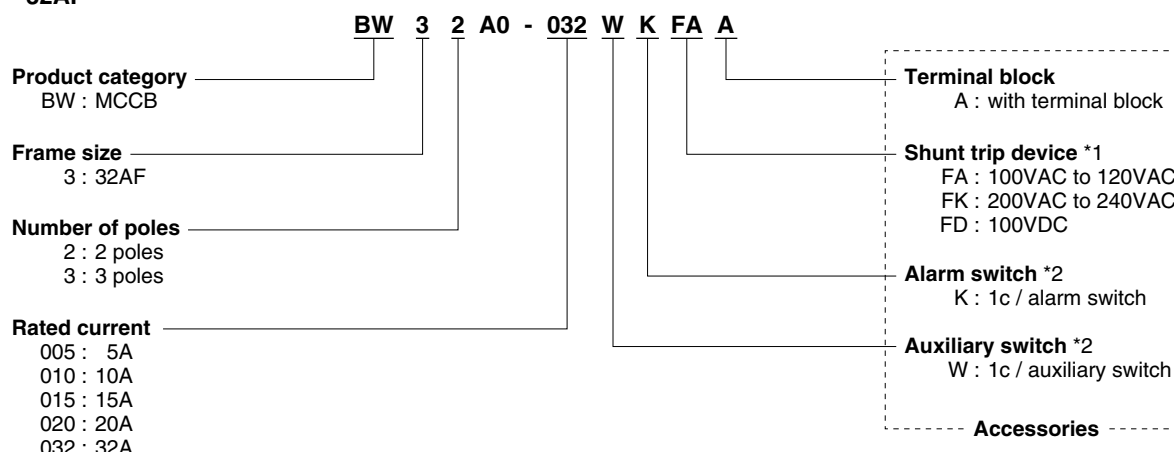
Line up / Type number nomenclature

Line up

Series	Breaker ampere frame	Type	Pole	Rated current (A)	Insulation voltage Ui (V)	Breaking capacity (kA) [Icu/Ics] IEC60947-2 AC		
						230V	380V	415V
BW0	32	BW32A0	2	5, 10, 15, 20, 32	440	2.5/2	1.5/1	1.5/1
		BW33A0	3	5, 10, 15, 20, 32	440	2.5/2	1.5/1	1.5/1
	100	BW103E0	3	15, 20, 25, 30, 40, 50, 60, 75, 80, 100	690	25/13	18/9	15/8
		BW102S0	2	15, 20, 25, 30, 40, 50, 60, 75, 80, 100	690	50/25	30/15	30/8
		BW103S0	3	15, 20, 25, 30, 40, 50, 60, 75, 80, 100	690	100/50	30/15	30/8
	160	BW162E0	2	100, 125, 150, 160	690	25/13	18/9	18/9
		BW163E0	3	100, 125, 150, 160	690	25/13	18/9	18/9
		BW162J0	2	100, 125, 150, 160	690	50/25	25/13	25/13
		BW163J0	3	100, 125, 150, 160	690	50/25	25/13	25/13
		BW162S0	2	100, 125, 150, 160	690	85/43	36/18	36/18
		BW163S0	3	100, 125, 150, 160	690	85/43	36/18	36/18
	250	BW252E0	2	175, 200, 225, 250	690	25/13	18/9	18/9
		BW253E0	3	175, 200, 225, 250	690	25/13	18/9	18/9
		BW252J0	2	175, 200, 225, 250	690	50/25	25/13	25/13
		BW253J0	3	175, 200, 225, 250	690	50/25	25/13	25/13
		BW252S0	2	175, 200, 225, 250	690	85/43	36/18	36/18
		BW253S0	3	175, 200, 225, 250	690	85/43	36/18	36/18
	400	BW402S0	2	250, 300, 350, 400	690	85/43	36/18	36/18
		BW403S0	3	250, 300, 350, 400	690	85/43	36/18	36/18

Type number nomenclature

• 32AF

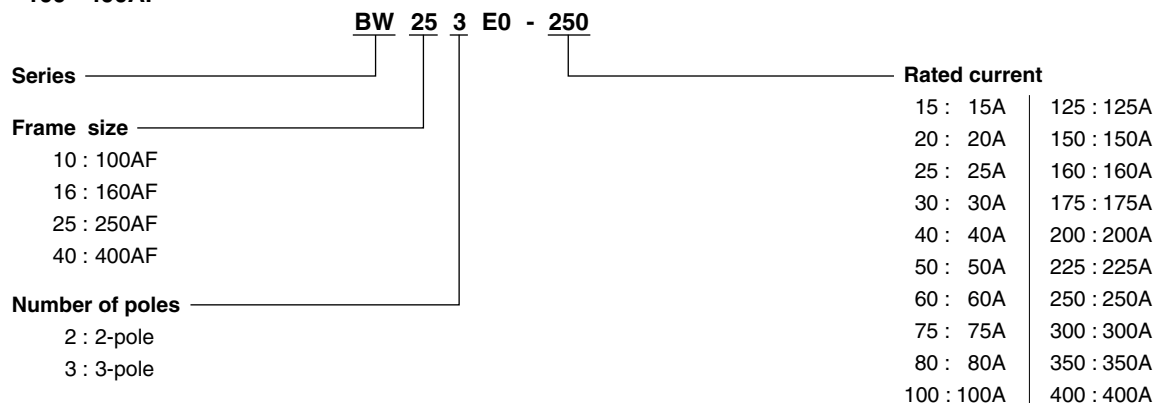


Notes

*1 A shunt trip device can be added only to 3-pole models.

*2 Only one of the following can be added to a 2-pole model:
alarm switch or auxiliary switch.

• 100 - 400AF



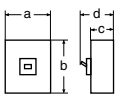


Molded Case Circuit Breakers

Quick reference guide

BW0 series 2, 3-pole IEC and CE marking conformed types

• 32AF

Frame	32A	
Pole	2	3
Type	BW32A0	BW33A0
Rated current (A)	5, 10, 15, 20, 32	
Rated insulation voltage (VAC)	440	
[IEC 60947-2] (VDC)	–	
Rated breaking capacity (kA)	500VAC	–
[IEC 60947-2]	440VAC	1.5/1
(Icu/Ics) *1	415VAC	1.5/1
	400VAC	1.5/1
	380VAC	1.5/1
	240VAC	2.5/1
	230VAC	2.5/1
	250VDC	–
Rated operating voltage [UL508] (VAC)	–	
Dimensions (mm)		
<i>Page 25</i>	a	36
	b	80
	c	60
	d	76
Mass (kg)	0.18	0.25
Tripping device	Thermal-magnetic	
Front mounting, front connection	●	●
Internal accessories	<i>Page 12</i>	
Auxiliary switch (W)	▲	▲
Alarm switch (K)	▲	▲
Auxiliary switch + alarm switch (W+K)	–	▲
Shunt trip (F)	–	▲
Undervoltage trip (R)	–	–
External accessories	<i>Page 21</i>	
Terminal cover Short	–	–
Terminal cover Long	BW9BTA0-L2	BW9BTA0-L3
Insulation barrier Interphase	–	–
Flat terminal	–	–
Block terminal	–	–
Handle locking device	–	–
IEC 35mm rail mounting	●	●

Notes: *1 Icu: Rated ultimate short-circuit breaking capacity
Ics: Rated service short-circuit breaking capacity

● Available ▲ Factory mounted accessory – Not available



Molded Case Circuit Breakers

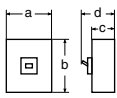
Quick reference guide

BW0 series 2, 3-pole IEC and CE marking conformed types • 100AF

Frame	100A		
Pole	3	2	3
Type	BW103E0	BW102S0	BW103S0
Rated current (A)	15, 20, 25, 30, 40, 50, 60, 75, 80, 100	15, 20, 25, 30, 40, 50, 60, 75, 80, 100	
Rated insulation voltage (VAC)	690	690	
[IEC 60947-2] (VDC)	250	250	
Rated breaking capacity (kA)	500VAC 5/3	10/3	10/3
[IEC 60947-2]	440VAC 10/5	20/5	20/5
(Icu/Ics) *1	415VAC 15/8	30/8	30/8
	400VAC 15/8	30/15	30/15
	380VAC 18/9	30/15	30/15
	240VAC 25/13	50/25	100/50
	230VAC 25/13	50/25	100/50
	250VDC 5/3	5	10
Rated operating voltage [UL508] (VAC)	–	–	–
Dimensions (mm)	a 75 b 130 c 60 d 81	50 130 60 81	75 130 60 81
Mass (kg) Front mounting type	0.78	0.6	0.78
Tripping device	Thermal-magnetic		
Front mounting, front connection	●	●	●
Internal accessories	<i>Page 13</i> Auxiliary switch (W) BW9W1SB0 Alarm switch (K) BW9K1SB0 Auxiliary switch + alarm switch (W+K) BW9WKS0B0 Shunt trip (F) BW9F□B0 Undervoltage trip (R) BW9R□B0		
External accessories	<i>Page 21</i> Terminal cover Short – Terminal cover Long BW9BTB0-L3 Insulation barrier Interphase BW9BPB0 Flat terminal – Block terminal BW9SSL0B0-□ Handle locking device BW9Q1B0 IEC 35mm rail mounting BW9PDB0		

Notes: *1 Icu: Rated ultimate short-circuit breaking capacity
Ics: Rated service short-circuit breaking capacity

BW0 series 2, 3-pole IEC and CE marking conformed types
• 160AF

Frame	160A					
Pole	2	3	2	3	2	3
Type	BW162E0	BW163E0	BW162J0	BW163J0	BW162S0	BW163S0
Rated current (A)	100, 125, 150, 160		100, 125, 150, 160		100, 125, 150, 160	
Rated insulation voltage (VAC)	690		690		690	
[IEC 60947-2] (VDC)	250		250		250	
Rated breaking capacity (kA)	500VAC 5/3	5/3	8/4	8/4	10/5	10/5
[IEC 60947-2]	440VAC 10/5	10/5	20/10	20/10	25/13	25/13
(Icu/Ics) *1	415VAC 15/8	15/8	25/13	25/13	36/18	36/18
	400VAC 15/8	15/8	25/13	25/13	36/18	36/18
	380VAC 18/9	18/9	25/13	25/13	36/18	36/18
	240VAC 25/13	25/13	50/25	50/25	85/43	85/43
	230VAC 25/13	25/13	50/25	50/25	85/43	85/43
	250VDC 5/3	5/3	20/10	20/10	30/15	30/15
Rated operating voltage [UL508] (VAC)	480	480	480	480	480	480
Dimensions (mm)						
Page 27	a	105	105	105	105	105
	b	165	165	165	165	165
	c	60	60	60	60	60
	d	86	86	86	86	86
Mass (kg) Front mounting type	1.36	1.36	1.36	1.56	1.36	1.56
Tripping device	Thermal-magnetic					
Front mounting, front connection	●	●	●	●	●	●
Internal accessories	Page 13					
Auxiliary switch (W)	BW9W1SG0	BW9W1SG0	BW9W1SG0	BW9W1SG0	BW9W1SG0	BW9W1SG0
Alarm switch (K)	BW9K1SG0	BW9K1SG0	BW9K1SG0	BW9K1SG0	BW9K1SG0	BW9K1SG0
Auxiliary switch + alarm switch (W+K)	BW9WKSG0	BW9WKSG0	BW9WKSG0	BW9WKSG0	BW9WKSG0	BW9WKSG0
Shunt trip (F)	BW9F□G0	BW9F□G0	BW9F□G0	BW9F□G0	BW9F□G0	BW9F□G0
Undervoltage trip (R)	BW9R□G0	BW9R□G0	BW9R□G0	BW9R□G0	BW9R□G0	BW9R□G0
External accessories	Page 21					
Terminal cover Short	BZ-TS40B	BZ-TS40B	BZ-TS40B	BZ-TS40B	BZ-TS40B	BZ-TS40B
Terminal cover Long	BZ-TB40B	BZ-TB40B	BZ-TB40B	BZ-TB40B	BZ-TB40B	BZ-TB40B
Insulation barrier Interphase	BZ-B40B	BZ-B40B	BZ-B40B	BZ-B40B	BZ-B40B	BZ-B40B
Flat terminal	BZ-S50B-2252	BZ-S50B-2253	BZ-S50B-2252	BZ-S50B-2253	BZ-S50B-2252	BZ-S50B-2253
Block terminal	BW9SSL0G0	BW9SSL0G0	BW9SSL0G0	BW9SSL0G0	BW9SSL0G0	BW9SSL0G0
Handle locking device	BW9Q1G0	BW9Q1G0	BW9Q1G0	BW9Q1G0	BW9Q1G0	BW9Q1G0
IEC 35mm rail mounting	—	—	—	—	—	—

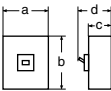
Notes: *1 Icu: Rated ultimate short-circuit breaking capacity
Ics: Rated service short-circuit breaking capacity



Molded Case Circuit Breakers

Quick reference guide

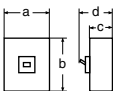
BW0 series 2, 3-pole IEC and CE marking conformed types • 250AF

Frame		250A						
Pole		2	3	2	3	2	3	
Type		BW252E0	BW253E0	BW252J0	BW253J0	BW252S0	BW253S0	
Rated current (A)		175, 200, 225, 250		175, 200, 225, 250		175, 200, 225, 250		
Rated insulation voltage (VAC)		690		690		690		
[IEC 60947-2] (VDC)		250		250		250		
Rated breaking capacity (kA)		500VAC	5/3	5/3	8/4	8/4	10/5	
[IEC 60947-2]		440VAC	15/8	15/8	20/10	20/10	25/13	
(Icu/Ics) *1		415VAC	18/9	18/9	25/13	25/13	36/18	
		400VAC	18/9	18/9	25/13	25/13	36/18	
		380VAC	18/9	18/9	25/13	25/13	36/18	
		240VAC	25/13	25/13	50/15	50/15	85/43	
		230VAC	25/13	25/13	50/15	50/15	85/43	
		250VDC	5/3	5/3	20/10	20/10	30/15	
Rated operating voltage [UL508] (VAC)		480	480	480	480	480	480	
Dimensions (mm)			a	105	105	105	105	105
Page 27			b	165	165	165	165	165
			c	60	60	60	60	60
			d	86	86	86	86	86
Mass (kg) Front mounting type		1.36	1.56	1.36	1.56	1.36	1.56	
Tripping device		Thermal-magnetic						
Front mounting, front connection		●	●	●	●	●	●	
Internal accessories		Page 13	Alarm switch (W) BW9W1SG0 Auxiliary switch (K) BW9K1SG0 Auxiliary switch + alarm switch (W+K) BW9WKSG0 Shunt trip (F) BW9F□G0 Undervoltage trip (R) BW9R□G0					
Alarm switch (W)								
Auxiliary switch (K)								
Auxiliary switch + alarm switch (W+K)								
Shunt trip (F)								
Undervoltage trip (R)								
External accessories		Page 21	Terminal cover Short BZ-TS40B Terminal cover Long BZ-TB40B Insulation barrier Interphase BZ-B40B Flat terminal BZ-S50B-2252 Block terminal BW9SSL0G0 Handle locking device BW9Q1G0 IEC 35mm rail mounting —					
Terminal cover Short								
Terminal cover Long								
Insulation barrier Interphase								
Flat terminal								
Block terminal								
Handle locking device								
IEC 35mm rail mounting								

Notes: *1 Icu: Rated ultimate short-circuit breaking capacity
Ics: Rated service short-circuit breaking capacity

● Available – Not available

BW0 series 2, 3-pole IEC and CE marking conformed types
• 400AF

Frame	400A	
Pole	2	3
Type	BW402S0	BW403S0
Rated current (A)	250, 300, 350, 400	
Rated insulation voltage (VAC)	690	
[IEC 60947-2] (VDC)	250	
Rated breaking capacity (kA)	500VAC 20/10	20/10
[IEC 60947-2]	440VAC 36/18	36/18
(Icu/Ics) *1	415VAC 36/18	36/18
	400VAC 36/18	36/18
	380VAC 36/18	36/18
	240VAC 85/43	85/43
	230VAC 85/43	85/43
	250VDC 20/10	20/10
Rated operating voltage [UL508] (VAC)	–	
Dimensions (mm)		
<i>Page 28</i>	a	140
	b	257
	c	103
	d	146
Mass (kg) Front mounting type	4.6	5.6
Tripping device	Thermal-magnetic	
Front mounting, front connection	●	●
Internal accessories	<i>Page 16</i>	
Alarm switch (W)	BW9W1SHA	BW9W1SHA
Auxiliary switch (K)	BW9K1SHA	BW9K1SHA
Auxiliary switch + alarm switch (W+K)	–	–
Shunt trip (F)	BW9FHA–□	BW9FHA–□
Undervoltage trip (R)	BW9RHA–□	BW9RHA–□
External accessories	<i>Page 21</i>	
Terminal cover Short	BW9BTHA-S3	BW9BTHA-S3
Terminal cover Long	BW9BTHA-L3	BW9BTHA-L3
Insulation barrier Interphase	B-43A	B-43A
Flat terminal	BW9SS0H0-2	BW9SS0H0-3
Block terminal	–	–
Handle locking device	–	–
IEC 35mm rail mounting	–	–

Notes: *1 Icu: Rated ultimate short-circuit breaking capacity
Ics: Rated service short-circuit breaking capacity

● Available – Not available



Molded Case Circuit Breakers

Internal accessories

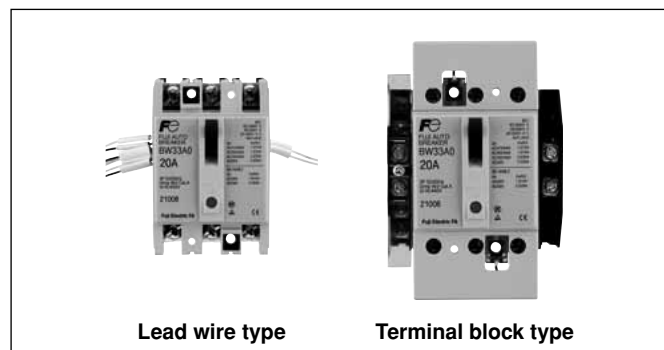
Internal accessories 32AF

Auxiliary switch and alarm switch

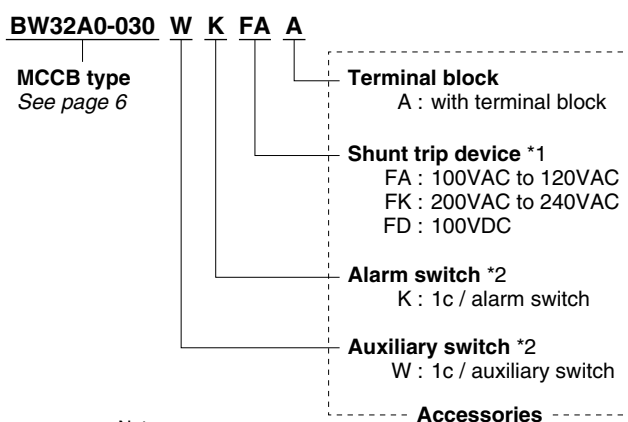
These devices indicate the MCCBs operation status electrically. Auxiliary switch (W) indicates the ON/OFF status of MCCB. Alarm switch (K) indicates the trip status of MCCB. An MCCB trips when an overload occurs or a short-circuit current flows through the MCCB. Both the auxiliary switch and alarm switch can be installed on the left side of MCCB body.

Shunt trip device

Shunt trip (F) is a device that issues an electrical signal to trip the MCCB. The MCCB when the main circuit voltage drops lower than the specified value. Shunt trip device can be installed on the right side of MCCB body.



Type number nomenclature



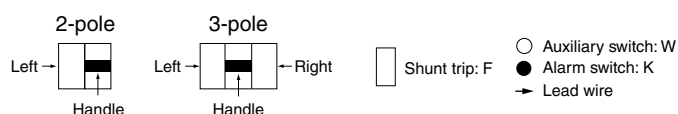
Notes

- *1 A shunt trip device can be added only to 3-pole models.
- *2 Only one of the following can be added to a 2-pole model:
alarm switch or auxiliary switch.

Specifications

Type	Contact capacity	Wire size	Input
W, K	125VAC 3A 30VDC 2A	AWG24	—
F	—	AWG24	150VA

Available configurations



Type	BW32A0	BW33A0
Pole	2	3
Auxiliary switch : W		
Alarm switch : K		
Shunt trip device : F		
W + K		
W + F		
K + F		
W + K + F		

Note: Terminal block is installed on the same side of the accessory.

Operation of auxiliary switches(W) and alarm switches(K)

Accessory	Handle position		
	ON	OFF	Trip
Auxiliary switch (W)			
Alarm switch (K)			

■ Internal accessories 100 to 250AF

The number of tasks can be greatly reduced as all the internal accessories are cassette-type user-installed.

■ Auxiliary switch and alarm switch

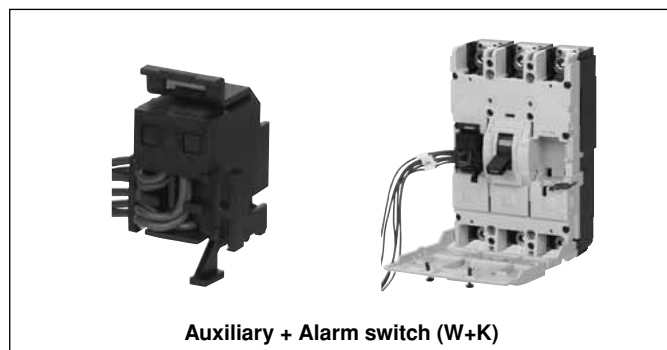
These devices indicate the MCCB's operation status electrically.

Auxiliary switch (W) indicates the ON/OFF status of MCCB.

Alarm switch (K) indicates the trip status of MCCB. An MCCB trips when an overload occurs or a short-circuit current flows through the MCCB. Both the auxiliary switch and alarm switch can be installed either on the right or left side of MCCB body.

All auxiliary switches (W) and alarm switches (K) are electrically pre-wired with wires of 1 mm², 500 mm long.

The auxiliary switch, alarm switch and auxiliary plus alarm switch have almost the same appearance.



Auxiliary + Alarm switch (W+K)

■ Combination of MCCB

Frame	MCCB Type		Type		
			Auxiliary switch (W)	Alarm switch (K)	Auxiliary switch + alarm switch (W+K)
100A	BW103E0	BW102S0, BW103S0	BW9W1SB0	BW9K1SB0	BW9WKS0
160A	BW162E0, BW163E0	BW162J0, BW163J0 BW162S0, BW163S0	BW9W1SG0	BW9K1SG0	BW9WKS0
250A	BW252E0, BW253E0	BW252J0, BW253J0 BW252S0, BW253S0			

■ Rating of auxiliary switches (W) and alarm switches (K)

Type number	AC			DC			Minimum load current
	Voltage (V)	Make/Break current (A)		Voltage (V)	Make/Break current (A)		
		AC12	AC15		DC12	DC14	
BW9W1SB0	24	5	5	24	4	3	5VDC 160mA 30VDC 30mA
BW9K1SB0	48	5	5	48	2.5	1	
BW9WKS0	125	5	3	125	0.4	0.4	
	250	3	2	250	0.2	0.2	
BW9W1SG0	24	5	5	24	4	3	
BW9K1SG0	48	5	5	48	2.5	1	
BW9WKSG0	125	5	3	125	0.4	0.4	
	250	3	2	250	0.2	0.2	

■ Operation of auxiliary switches(W) and alarm switches(K)

Accessory	Handle position		
	ON	OFF	Trip
Auxiliary switch (W)			
Alarm switch (K)			



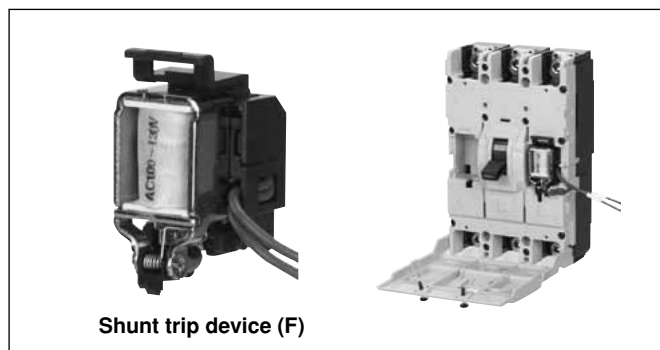
Molded Case Circuit Breakers

Internal accessories

■ Shunt trip and undervoltage trip device

Shunt trip (F) is a device that issues an electrical signal to trip the MCCB.

Undervoltage trip device (R) is a device that is used to trip the MCCB when the main circuit voltage drops lower than the specified value. Both the shunt trip and undervoltage trip device can be installed on the right side of MCCB body.



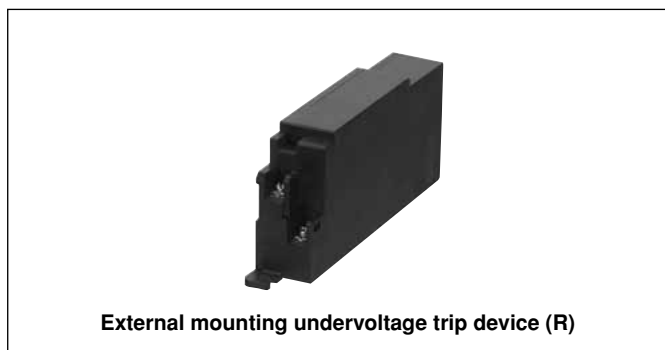
■ Combination of MCCB and shunt trip device (F)

Frame		Type	Operating voltage code	
100A	BW103E0 BW102S0, BW103S0	BW9FAB0	A	100-130VAC
		BW9FKB0	K	200-277VAC
		BW9FPB0	P	380-480VAC
		BW9FRB0	R	24VDC
		BW9FSB0	S	48VDC
160A 250A	BW162E0, BW163E0 BW162J0, BW163J0 BW162S0, BW163S0 BW252E0, BW253E0 BW252J0, BW253J0 BW252S0, BW253S0	BW9FAG0	A	100-120VAC
		BW9F1G0	1	120-130VAC
		BW9FKG0	K	200-240VAC
		BW9FBG0	B	277VAC
		BW9FPG0	P	380-440VAC
		BW9FHG0	H	440-480VAC
		BW9FRG0	R	24VDC
		BW9FSG0	S	48VDC

■ Combination of MCCB and undervoltage trip device (R)

Frame		Type	Operating voltage code	
100A	BW103E0 BW102S0, BW103S0	BW9RAB0	A	100-130VAC
		BW9RKB0	K	200-240VAC
		BW9RBB0	B	277VAC
		BW9RPB0	P	380-415VAC
		BW9RHB0	H	440-480VAC
		BW9RRB0	R	24VDC
		BW9RSB0	S	48VDC
		BW9RLB0	L	125VDC
160A 250A	BW162E0, BW163E0 BW162J0, BW163J0 BW162S0, BW163S0 BW252E0, BW253E0 BW252J0, BW253J0 BW252S0, BW253S0	BW9RAG0	A	100-130VAC
		BW9RKG0	K	200-240VAC
		BW9RBG0	B	277VAC
		BW9RPG0	P	380-415VAC
		BW9RHG0	H	440-480VAC
		BW9RRG0	R	24VDC
		BW9RSG0	S	48VDC
		BW9RLG0	L	125VDC

Shunt trip devices (F) are capable of internal mounting only.
 Undervoltage trip device (R) for 100AF is capable of internal mounting only.
 Undervoltage trip device (R) for 160AF and 250AF is capable of external mounting only.



■ Ratings of shunt trip (F)

Type	Power consumption		Time rating of coil	Operating time (ms)	Allowable voltage fluctuation
	AC VA	DC W			
BW9F□B0	30	30	Continuous	13 to 21	AC voltage: 85% to 110% of coil rated voltage DC voltage: 75% to 125% of coil rated voltage
BW9F□G0	30	35			

■ Ratings of undervoltage trip device (R)

Type	Coil rated voltage	Power consumption		Allowable voltage fluctuation
		AC VA	DC W	
BW9R□B0	110-130VAC	5	—	Tripping voltage: 70 to 35% of coil rated voltage Closing voltage: 85% to 110% of coil rated voltage
	200-240VAC	5	—	
	277VAC	5	—	
	380-415VAC	5	—	
	440-480VAC	5	—	
	24VDC	—	5	
	48VDC	—	5	
	125VDC	—	5	
BW9R□G0	110-130VAC	200	—	
	200-240VAC	150	—	
	277VAC	150	—	
	380-415VAC	200	—	
	440-480VAC	200	—	
	24VDC	—	150	
	48VDC	—	150	
	125VDC	—	300	



Molded Case Circuit Breakers

Internal accessories

■ Variation of internal accessory

• 400AF

Alarm switch (Type K)



This switch can be connected to a warning lamp or buzzer to indicate when the breaker has been tripped. See page 18.

Shunt trip device (Type F)



The purpose of this accessory is to trip the breaker from a distance. See page 19.

Undervoltage trip device (Type R)



The device is designed to protect circuits from harmful voltage drops. It can also be used for remote control purposes. The trip operates when the voltage drops to less than 70% of nominal coil rating, and the breaker cannot be reset until the voltage recovers 85% of its normal rating. See page 19.

Auxiliary switch (Type W)



This switch is used for indicator lamp or control circuit. See page 18.



■ Terminal number of internal accessory

Accessory		400AF
Auxiliary switch	SPDT: W	
	2PDT: V	
Alarm switch	SPDT: K	
	2PDT: J	
Shunt trip device : F	Continuous rating	
Undervoltage trip device : R		

■ Available configurations

		2-pole 3-pole Undervoltage trip: R Shunt trip: F Auxiliary switch: W Alarm switch: K Lead wire
MCCB	BW402S0, BW403S0	
Pole	2, 3	
Auxiliary switch SPDT: W		
Alarm switch SPDT: K		
Shunt trip: F		
Undervoltage trip: R		
W+K		
Auxiliary switch 2PDT: V		
Alarm switch 2PDT: J		
V+K		
W+J		
V+J		
W+F		
W+R		
K+F		
K+R		
W+K+F		
W+K+R		
V+F		
V+R		
J+F		
J+R		
V+K+F		
V+K+R		
W+J+F		
W+J+R		
V+J+F		
V+J+R		



Molded Case Circuit Breakers

Internal accessories

■ Operation of auxiliary switches(W) and alarm switches(K)

Accessory	Handle position	
	ON	OFF Trip
Auxiliary switch	SPDT: W 	
	2PDT: V 	
Alarm switch	SPDT: K 	
	2PDT: J 	

Note: Ring mark indication

■ Ratings of auxiliary switches(W) and alarm switches(K)

Rated thermal current (A)	Rated operational current (A)						Minimum load current
	AC			DC			
	Rated operational Voltage (V)	Res. load	Ind. load	Rated operational Voltage (V)	Res. load	Ind. load	
5	24	5	5	24	4	3	5VDC 160mA 30VDC 30mA
	48	5	5	48	2.5	1	
	125	5	3	125	0.4	0.4	
	250	3	2	250	0.2	0.2	

■ Rating of shunt trip (F)

MCCB type	AC		DC		Type	Time rating of coil	Operating time (ms)
	V	VA	V	W			
BW402S0 BW403S0	24-48	2	24-48	2	BW9FHA-R	Continuous	8-20
	100-240	3	100-220	3	BW9FHA-A		
	277	3	—	—	BW9FHA-B		
	380-550	4	—	—	BW9FHA-P		

Note: The operating tripping voltage range for shunt trip devices is 70% to 110% of the rated operating voltage.

■ Rating of undervoltage trip (R)

MCCB type	AC		DC		Type
	V	VA	V	W	
BW402S0 BW403S0	24	2	24	2	BW9RHA-R
	48	2	48	2	BW9RHA-S
	100-110	3	100-110	3	BW9RHA-A
	120-130	3	125	3	BW9RHA-1
	200-240	3	200-220	3	BW9RHA-K
	277	3	—	—	BW9RHA-B
	380-480	4	—	—	BW9RHA-P

Notes: • The operating voltages of undervoltage tripping devices are as follows:

Tripping voltage: 35% to 70% of rated voltage, closing voltage: 85% to 110% of rated voltage.



Molded Case Circuit Breakers

Internal accessories

• Type number

Accessory	Type	Operating voltage
	Lead wire system	
	Left side	
Auxiliary switch x 1	BW9W1SHA	—
Auxiliary switch x 2	BW9W2SHA	
Auxiliary switch (low level circuit) x 1	BW9W1DHA	
Auxiliary switch (low level circuit) x 2	BW9W2DHA	
Alarm switch x 1	BW9K1SHA	
Alarm switch x 2	BW9K2SHA	
Alarm switch (low level circuit) x 1	BW9K1DHA	
Alarm switch (low level circuit) x 2	BW9K2DHA	
Shunt trip device	BW9FHA-R	24-48VAC/DC
	BW9FHA-A	100-240VAC/100-220VDC
	BW9FHA-B	277VAC
	BW9FHA-P	380-550VAC
Undervoltage trip devices	BW9RHA-R	24VAC/DC
	BW9RHA-S	48VAC/DC
	BW9RHA-A	100-110VAC/DC
	BW9RHA-1	120-130VAC/125VDC
	BW9RHA-K	200-240VAC/200-220VDC
	BW9RHA-B	277VAC
	BW9RHA-P	380-480VAC



Molded Case Circuit Breakers

External accessories

■ External accessories

• Terminal cover

Finger protection guards against shock from accidentally touching live terminals.



Long type



Short type

Frame	MCCB type				Short type	Long type	Color	Packing quantity
32A	BW32A0				—	BW9BTA0-L2	Gray	2 pcs.
	BW33A0				—	BW9BTA0-L3		
100A	BW103E0 BW103S0				—	BW9BTB0-L3	Transparent	
160A	BW162E0	BW163E0	BW162J0	BW163J0	BZ-TS40B	BZ-TB40B		
			BW162S0	BW163S0				
250A	BW252E0	BW253E0	BW252J0	BW253J0				
			BW252S0	BW253S0				
400A	BW402S0 BW403S0				BW9BTHA-S3	BW9BTHA-L3	Transparent	
					BW9BTHA-S3W	BW9BTHA-L3W	Gray	

• Insulation barrier Interphase

The interphase barrier reinforces the insulation between terminals. Two insulation barriers are supplied with the MCCB body. If additional insulation barriers are needed, please place an order with the following type number.



Frame	MCCB type	Type	Packing quantity
100A	BW103E0 BW102S0 BW103S0	BW9BPB0	2 pcs.
160A	BW162E0 BW163E0 BW162J0 BW163J0 BW162S0 BW163S0	BZ-B40B	4 pcs.
250A	BW252E0 BW253E0 BW252J0 BW253J0 BW252S0 BW253S0		
400A	BW402S0 BW403S0	B-43A	

• Flat terminal

This terminal facilitates connecting work. Additional flat terminals can be attached to 160 to 400A frames. Attach flat terminals according to the screw size and tightening torque as shown in the table below.



Frame	Pole	MCCB type	Type	MCCB side		Flat terminal side		Packing quantity
				Screw size	Torque	Screw size	Torque	
160A 250A	2	BW162E0 BW162J0 BW252E0 BW162S0 BW252J0 BW252S0	BZ-S50B-2252	M8 x 20	8-13N•m	M8 x 25	8-10N•m	4 pcs.
	3	BW163E0 BW163J0 BW253E0 BW163S0 BW253J0 BW253S0	BZ-S50B-2253	M8 x 20	8-13N•m	M8 x 25	8-10N•m	6 pcs.
400A	2	BW402S0	BW9SS0H0-2	M10 x 35	20-30N•m	M12 x 35	40-50N•m	4 pcs.
	3	BW403S0	BW9SS0H0-3	M10 x 35	20-30N•m	M12 x 35	40-50N•m	6 pcs.

• Block terminal

This connector screws directly to the standard connectors.



Frame	MCCB type	Rated current (A)	Wire size (mm ²)	Type	Packing quantity
100A	BW102S0	15 to 50	1.5 to 16	BW9SSL0B0-052	2 pcs.
		60 to 100	5.5 to 50	BW9SSL0B0-102	
	BW103E0 BW103S0	15 to 50	1.5 to 16	BW9SSL0B0-053	3 pcs.
		60 to 100	5.5 to 50	BW9SSL0B0-103	
160A	BW162E0 BW163E0 BW162J0 BW163J0 BW162S0 BW163S0	100 to 160	42.4 to 152	BW9SSL0G0(*)	
250A	BW252E0 BW253E0 BW252J0 BW253J0 BW252S0 BW253S0	175 to 250			

Note:(*) The Icu decreases to 50% when Block terminals are installed to the power supply side.



Molded Case Circuit Breakers

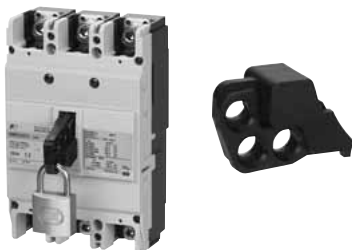
External accessories

■ External accessories

• Handle locking device

This key lock device snaps on to the enable the handle to be locked in either the OFF position. It can be used either as a handle locking cover or, with the addition of a padlock, as an OFF lock.

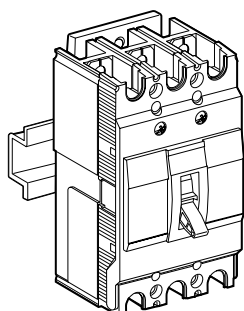
Use a commercially-available padlock. The shackle of the padlock should 4 to 8mm diameter.



Frame	MCCB type		Type
100A	BW103E0	BW102S0, BW103S0	BW9Q1B0
160A	BW162E0, BW163E0	BW162J0, BW163J0	BW9Q1G0
		BW162S0, BW163S0	
250A	BW252E0, BW253E0	BW252J0, BW253J0	
		BW252S0, BW253S0	

• IEC 35mm rail mounting adapter

Unification of the external and basic dimensions has expanded the range of models mountable on IEC 35mm rails.



MCCB type		Type
BW103E0	BW102S0, BW103S0	BW9PDB0

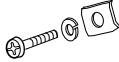
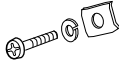


Molded Case Circuit Breakers

Terminal connection

■ Terminal Connection/Front mounting, Front Connection

- MCCBs and cables according to the screw size and tightening torque as shown in the table below.
- To facilitate the connecting work, the following parts are prepared.
Flat terminal and block terminal: *See page 22*

Frame	MCCB type	Screw and Bolt	Size (mm)	Tightening torque [N·m]
32A	BW32A0, BW33A0	Pan-head screw 	M5 x 14	2.0 - 3.0
100A	BW103E0 BW102S0, BW103S0	Pan-head screw 	Rated current: 15 to 50A M5 x 13.5	2.0
			Rated current: 60 to 100A M8 x 13.5	5.5
160A	BW162E0, BW163E0 BW162J0, BW163J0 BW162S0, BW163S0	Hexagonal socket head bolt 	M8 x 16	8 - 13
250A	BW252E0, BW253E0 BW252J0, BW253J0 BW252S0, BW253S0			
400A	BW402S0, BW403S0	Hexagonal head bolt 	M10 x 35	20 - 30



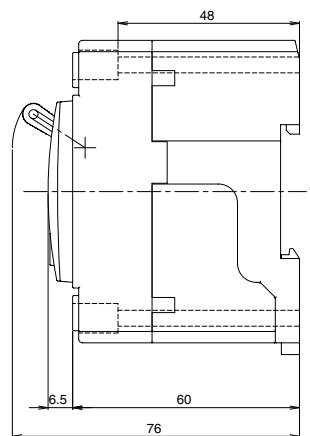
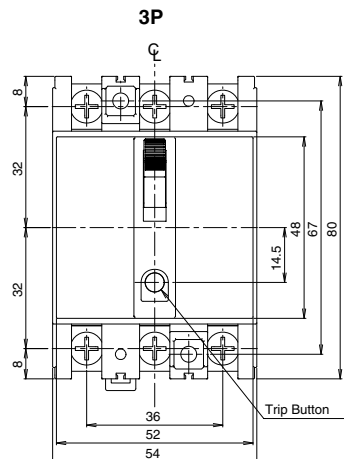
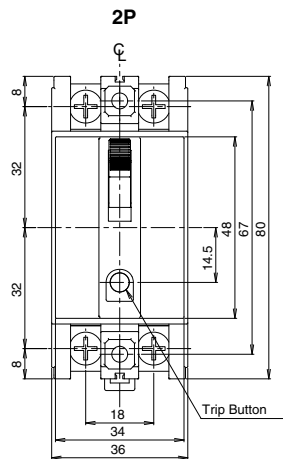
Molded Case Circuit Breakers

Dimensions

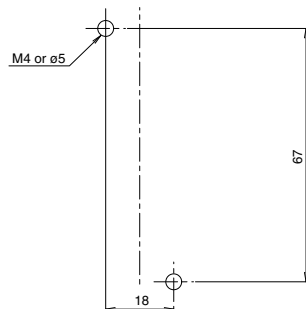
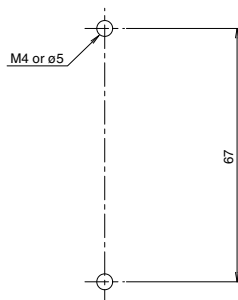
■ Dimensions, mm

■ Front mounting, front connection

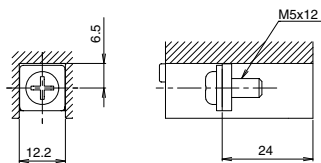
BW32A0, BW33A0



Panel drilling

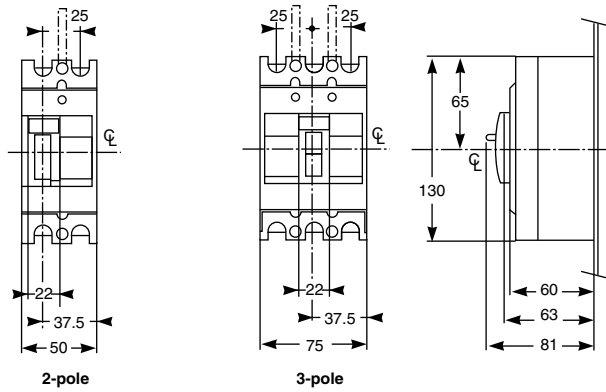


Terminal section

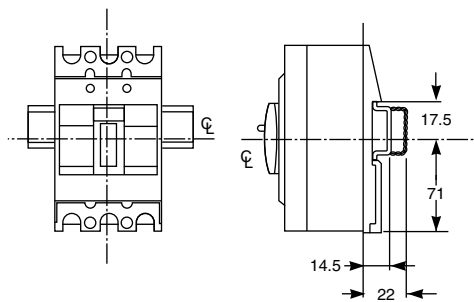


- Dimensions, mm
- Front mounting, front connection

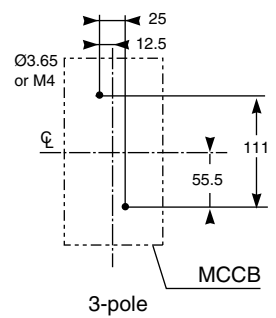
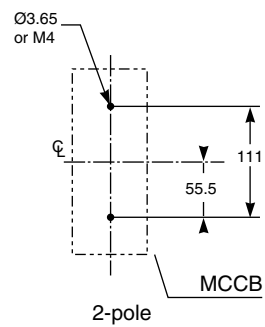
BW103E0
BW102S0, BW103S0



- Mounting on IEC 35mm rail
(with optional rail mounting adapter)



Panel drilling





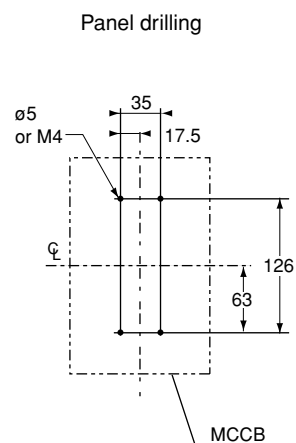
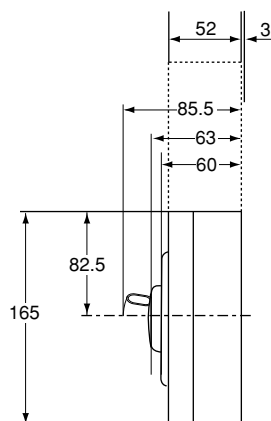
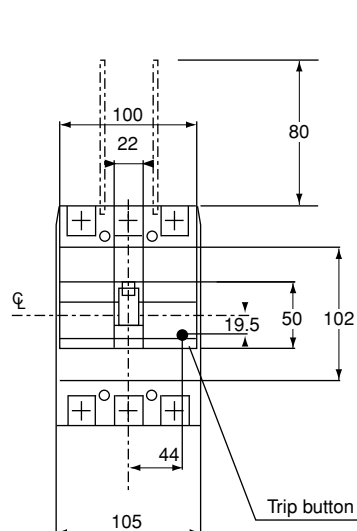
Molded Case Circuit Breakers

Dimensions

■ Dimensions, mm

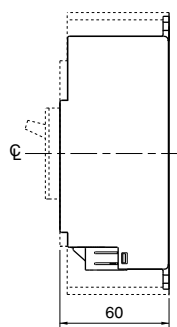
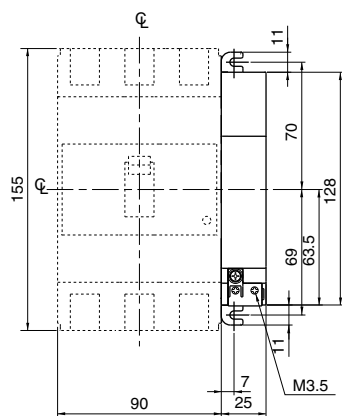
■ Front mounting, front connection

BW163E0, BW252E0, BW253E0,
BW162J0, BW163J0, BW162S0, BW163S0, BW252J0, BW253J0, BW252S0, BW253S0



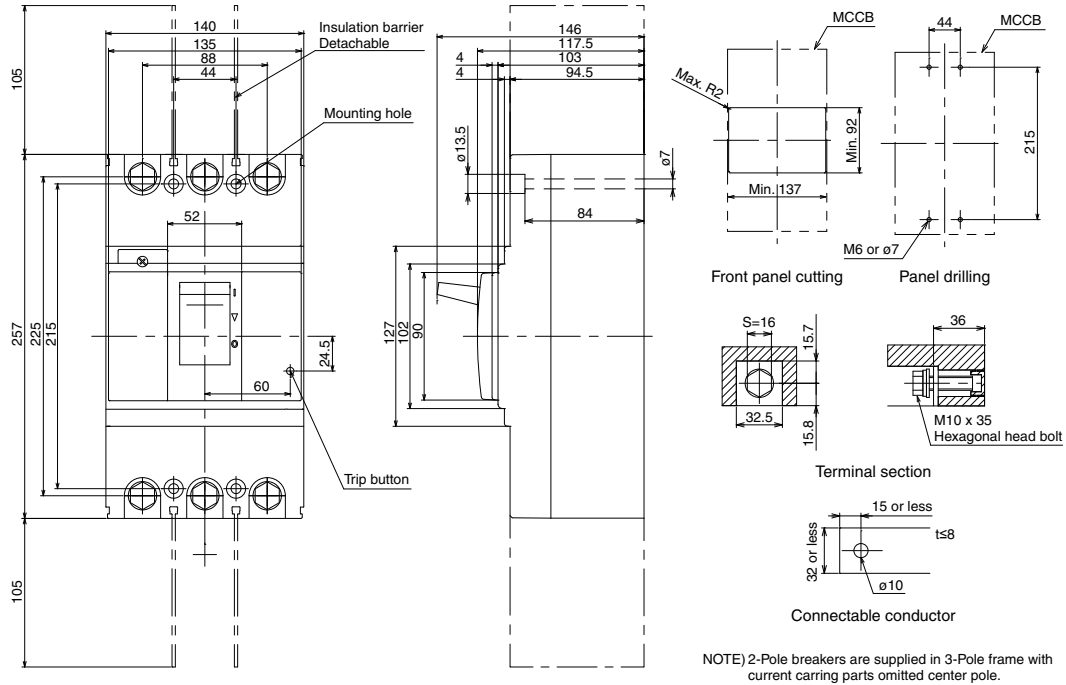
■ Undervoltage trip device

For 160 and 250AF



- Dimensions, mm
- Front mounting, front connection

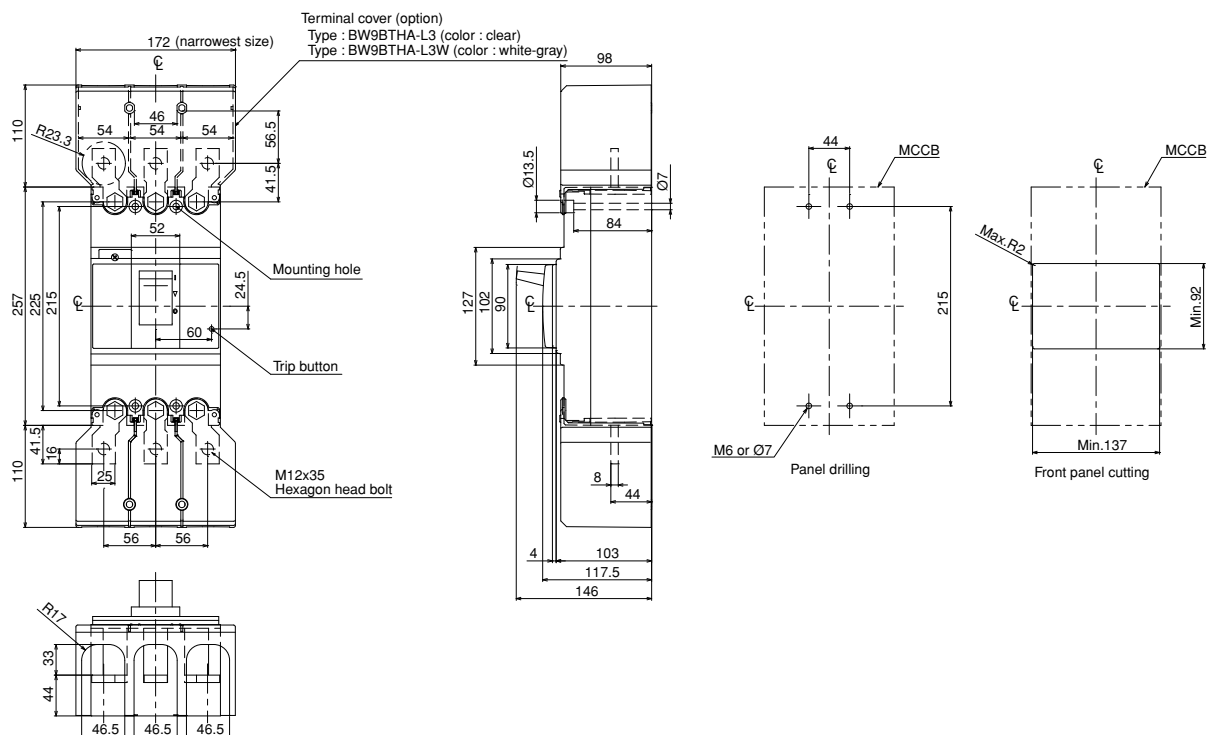
BW402S0, BW403S0



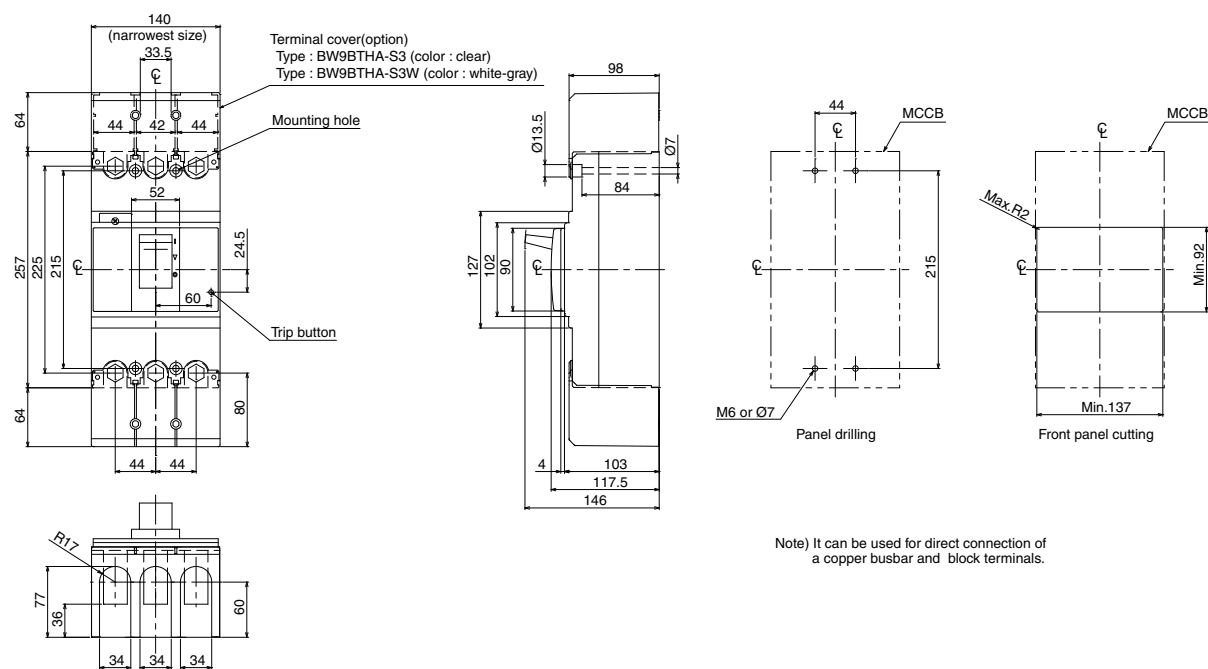
Dimensions

- Dimensions, mm
- Terminal cover

BW9BTHA-L3, BW9BTHA-L3W



BW9BTHA-S3, BW9BTHA-S3W



Note) It can be used for direct connection of a copper busbar and block terminals.



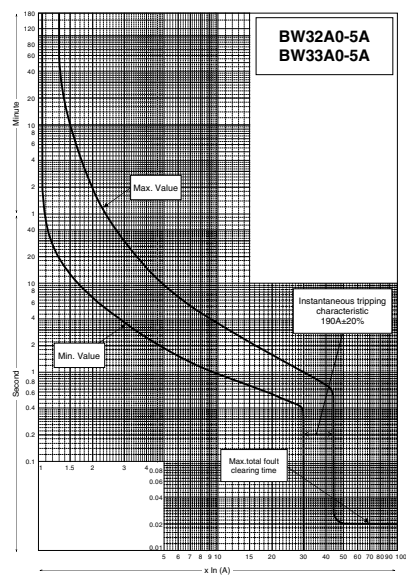
Molded Case Circuit Breakers

Characteristic curves

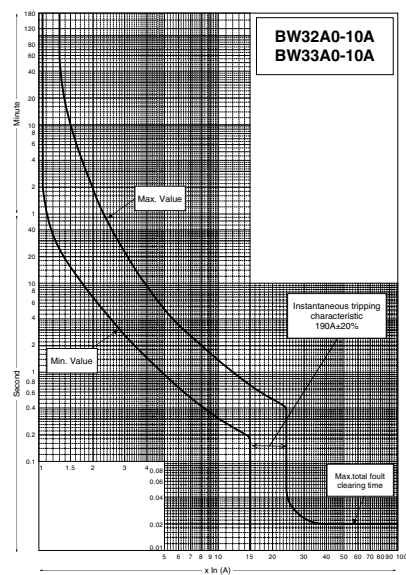
■ Characteristic curves

BW32A0, BW33A0

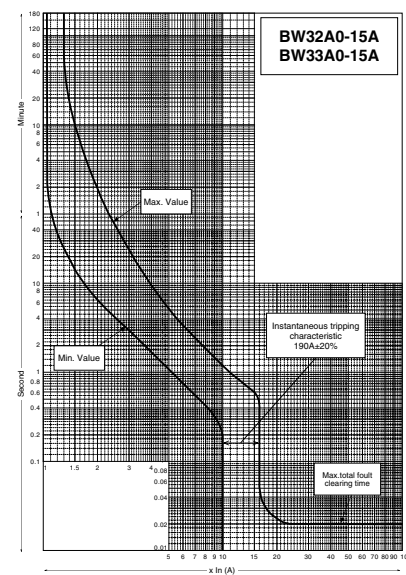
• 5A



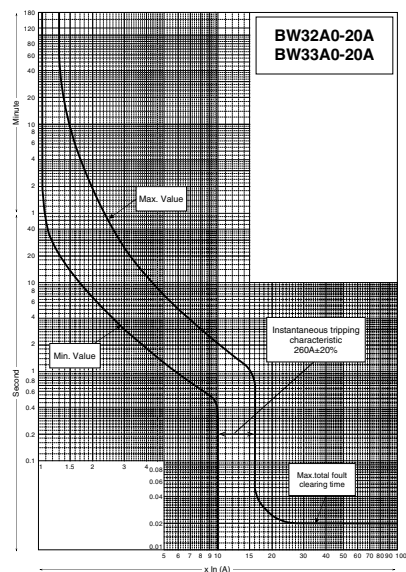
• 10A



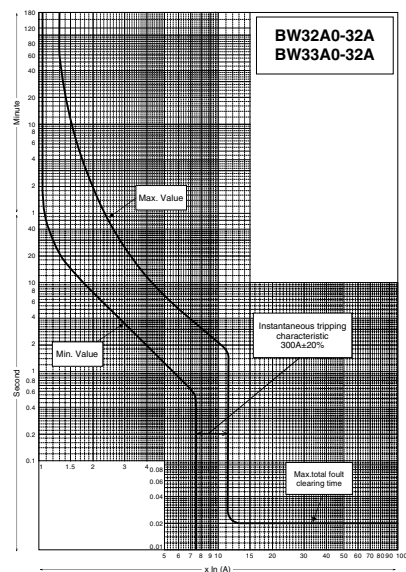
• 15A



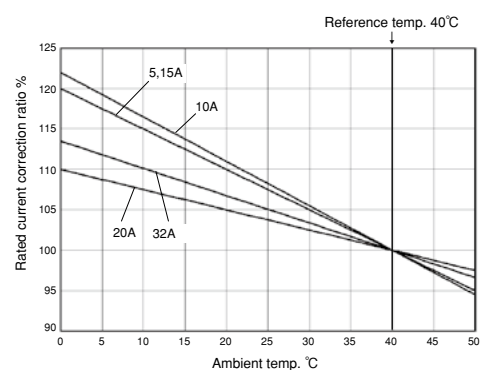
• 20A



• 32A



■ Ambient temperature correction curve

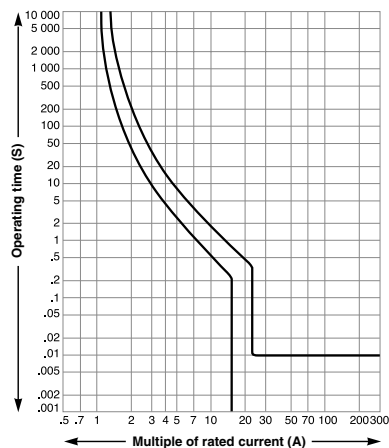




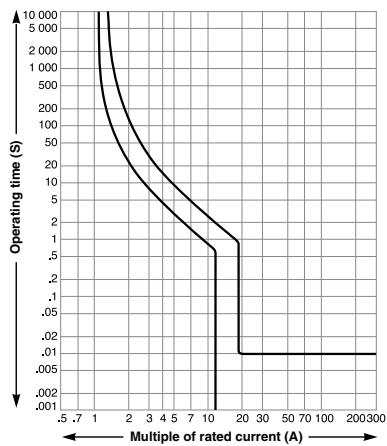
■ Characteristic curves

BW103E0,
BW102S0, BW103S0

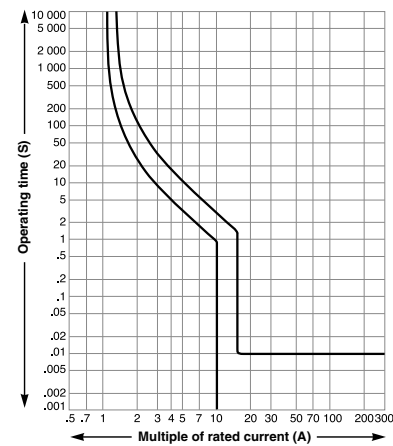
15A



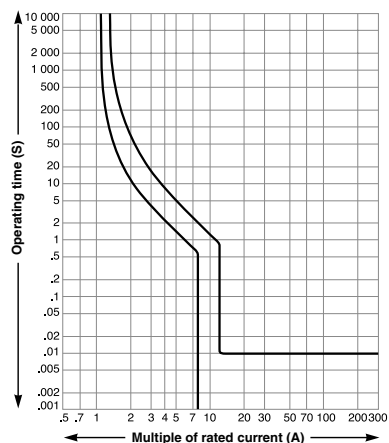
20A



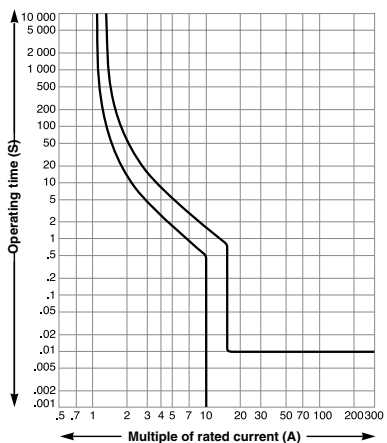
25A



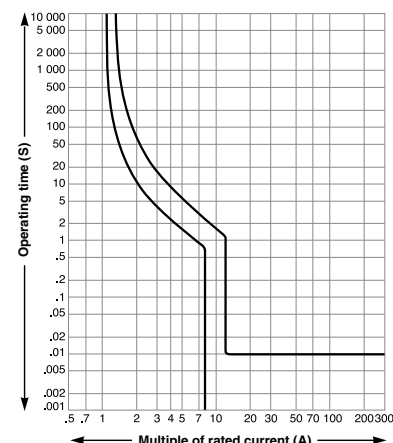
30A



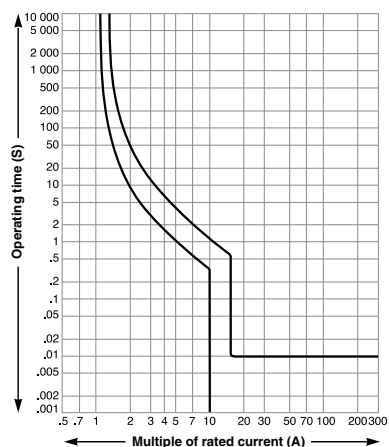
40A



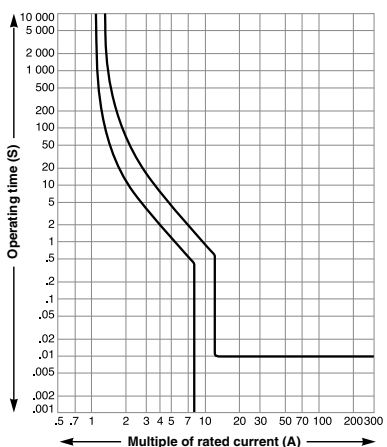
50A



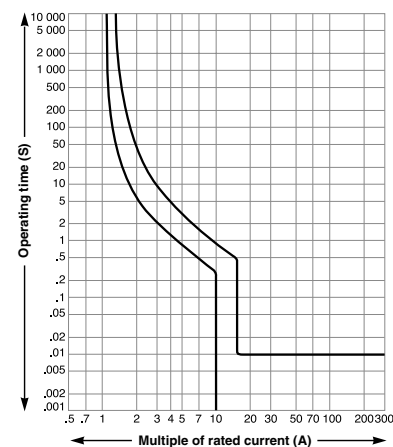
60A



75A



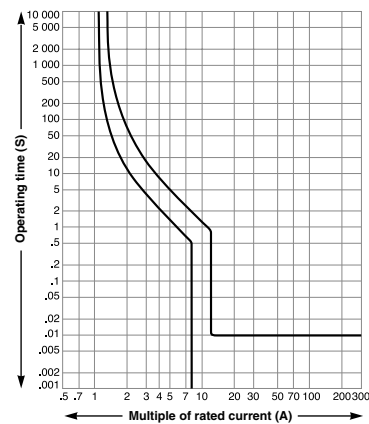
80A



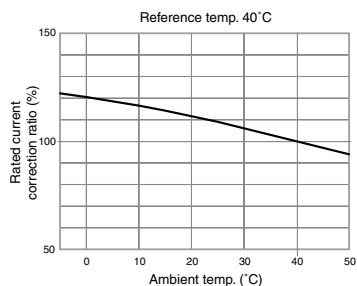
**BW103E0,
BW102S0, BW103S0**

■ Characteristic curves

100A

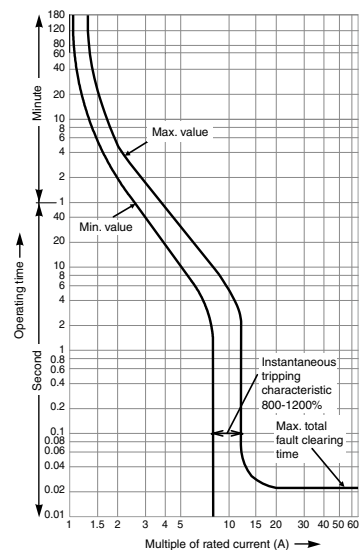


■ Ambient temperature correction curve

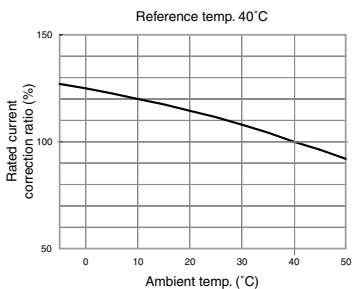


**BW162E0, BW163E0, BW252E0, BW253E0,
BW252J0, BW253J0, BW162J0, BW163J0,
BW162S0, BW163S0, BW252S0, BW253S0**

■ Characteristic curves

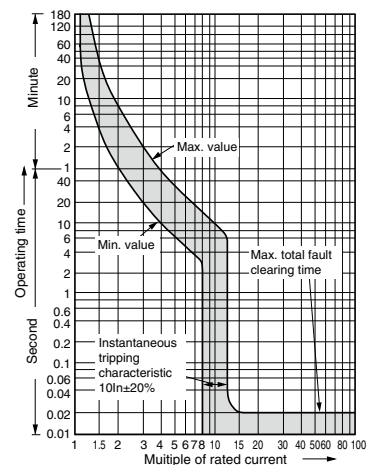


■ Ambient temperature correction curve

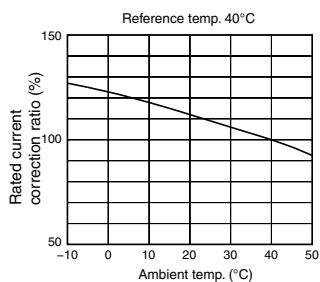


BW402S0, BW403S0

■ Characteristic curves



■ Ambient temperature correction curve



Safety Considerations

- Operate (keep) in the environment specified in the operating instructions and manual. High temperature, high humidity, condensation, dust, corrosive gases, oil, organic solvents, excessive vibration or shock might cause electric shock, fire, erratic operation or failure.
- For safe operation, before using the product read the instruction manual or user manual that comes with the product carefully or consult the Fuji sales representative from which you purchased the product.
- Products introduced in this catalog have not been designed or manufactured for such applications in a system or equipment that will affect human bodies or lives.
- Customers, who want to use the products introduced in this catalog for special systems or devices such as for atomic-energy control, aerospace use, medical use, passenger vehicle, and traffic control, are requested to consult with Fuji Electric FA.
- Customers are requested to prepare safety measures when they apply the products introduced in this catalog to such systems or facilities that will affect human lives or cause severe damage to property if the products become faulty.
- For safe operation, wiring should be conducted only by qualified engineers who have sufficient technical knowledge about electrical work or wiring.
- Follow the regulations of industrial wastes when the product is to be discarded.
- For further questions, please contact your Fuji sales representative or Fuji Electric FA.

 **Fuji Electric FA Components & Systems Co., Ltd.**

5-7, Nihonbashi Odemma-cho, Chuo-ku, Tokyo, 103-0011, Japan

URL <http://www.fujielectric.co.jp/fcs/eng>