

ACB Accessories for frame 1 & 2

A wide range of optional accessories have been developed that are compatible with all Power-WAVE Plus air circuit breakers, regardless of nominal rating or Frame size. Each one incorporates 'easy-fit' design features for quick installation, either in the factory or by the user on site.

Motorised spring charging unit



The unique motor/gearbox unit is specially designed to operate with the full range of Power-WAVE Plus breakers. It is easily fitted with just three bolts. In the event of circuit breaker closure, this unit will automatically recharge the spring and makes it ready for instant reclosure should the need arise. High speed recharging ensures that the springs are fully charged within approximately three seconds following a release. As an optional feature, a "springs charged" contact is available for the motor unit.

Closing coil



The closing coil is an easy-to-fit, clip-on unit, with simple plug-in connectors. This permits either local or remote release of the spring charged closing mechanism by electrical operation. An additional anti-pumping safety feature also ensures that the electrical closing signal must be released before further closure is attempted, and a cut-off is instigated should a closing signal be maintained. Because each coil operates within a wide voltage range, the number of individually rated coils required is drastically reduced.

Shunt trip



Energisation, locally or remote, will instantaneously activate the circuit breaker mechanism, ensuring rapid disconnection of the main contacts. In addition, a series connected auxiliary switch ensures automatic isolation whenever the circuit breaker is open. Shunt trip releases also have a wide operational voltage range, and they include the same easy-fit, clip-on/plug-in connectors as the closing coil.

Undervoltage release



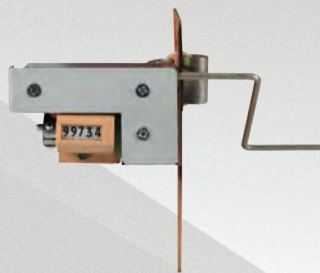
Instantaneously releases the circuit breaker trip mechanism when the supply voltage dip below the pre-set value. Simple to install, these devices have the same easy-fit features as previously described. Note: This is a 'no-volt/no-close device'. The circuit breaker cannot be closed (manually or electrically) unless the undervoltage release coil is energized.

Time delay undervoltage release

Similar to the above, but this electronic device prevents nuisance tripping of the circuit breaker if circuit interruption is not desirable when supply voltage drop is only transient. Fixed time delay
3 sec \pm 1 sec.

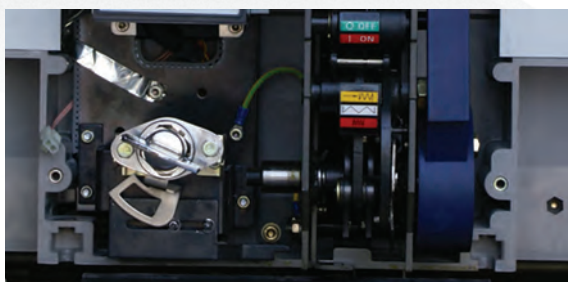
Due to its principle of action the UV is suitable for emergency stop situations.

Mechanical operation counter



Easily fitted, this useful accessory may be specified for use with either manual or motor charged Power-Wave Plus circuit breakers. It is clearly visible through the front panel, and the counter provides an accurate record of the cumulative number of complete breaker closing operations.

Circuit breaker Key interlock facility



Ready-to-fit interlocking devices such as Castell, Ronis, Profalux and Fortress, for installation between separate circuit breakers, available in kit form. This valuable safeguard ensures that a circuit breaker cannot be closed unless the dedicated key has been inserted and secured within the lock.

Note: Castell, Fortress or Profalux locks and keys cannot be supplied by GE. Please order separately from your local supplier.

Sealed door panel escutcheon



An optional IP54 complete front door panel is available should a higher degree of protection be necessary.
(Only for frame 1 & 2)

Cassette main terminal adaptors



Type 'N': 65kA rear connection shown above.

Cassette interlock



Available for withdrawable circuit breakers only, this sophisticated interlock system secures the circuit breaker in the disconnected position by means of a Ronis or Profalux key. When the key is removed, the safety shutters are automatically locked in position, thus preventing access to the contacts and also ensuring that the racking mechanism is not operable.

Cable interlocks



Cable interlocking version shown above available for fixed and withdrawable circuit breakers. These units enable the direct interlocking of Power-Wave Plus circuit breakers, either mounted side by side or stacked. The interlocking mechanisms are connected by a specially designed cable and provides interlocking between the breakers 1 from 2, 1 from 3 and 2 from 3 configurations

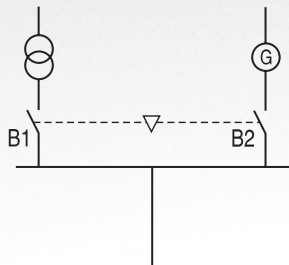
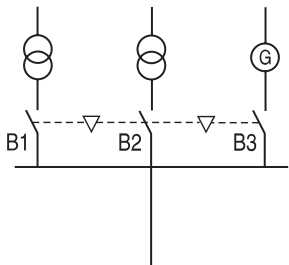
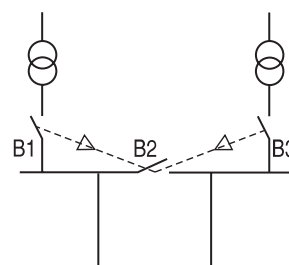
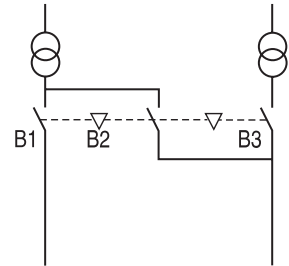
Any mix of current ratings / pole configurations can be accommodated.

Standard cable lengths available: 1.0, 1.6, 2.0, 2.5, 3.0, 3.5 and 4.0 meters.

(Please contact our technical customer service department if longer length is required.)

Interlocks

Mechanical interlocks can be fitted to the following electrical systems and can link 2 and/or 3 circuit breakers. Any nominal rating, frame size, number of poles or type (fixed pattern or withdrawable) can be interlocked.

Typical circuit	Interlock configuration	Possible combinations																								
	Type A 1 from 2 way interlock 2 cable configuration Interlocking between 2 circuit breakers. 1 normal power supply 1 generator (emergency) supply	<table><tr><th>B1</th><th>B2</th></tr><tr><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td></tr></table> <p>Circuit breaker B1 can only close if B2 is open</p> <p>Circuit breaker B2 can only close if B1 is open</p>	B1	B2	0	0	1	0	0	1																
B1	B2																									
0	0																									
1	0																									
0	1																									
	Type B 1 from 3 way interlock 6 cable configuration Interlocking between 3 circuit breakers. 3 power supplies (generator or transformers) feeding the same busbar but parallel operation is prevented.	<table><tr><th>B1</th><th>B2</th><th>B3</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td></tr></table> <p>Only 1 from 3 breakers can be closed</p>	B1	B2	B3	0	0	0	1	0	0	0	1	0	0	0	1									
B1	B2	B3																								
0	0	0																								
1	0	0																								
0	1	0																								
0	0	1																								
	Type C 2 from 3 way interlock 6 cable configuration Interlocking between 3 circuit breakers. 2 bus sections can be powered by a single transformer (bus coupler closed) or by both transformers (bus coupler open).	<table><tr><th>B1</th><th>B2</th><th>B3</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td></tr></table> <p>Any 2 from 3 breakers can be closed</p> <p>Any 1 from 3 breakers can be closed</p> <p>2 breakers must be closed to prevent the 3rd breaker from closing</p>	B1	B2	B3	0	0	0	1	0	0	0	0	1	0	1	0	1	1	0	0	1	1	1	0	1
B1	B2	B3																								
0	0	0																								
1	0	0																								
0	0	1																								
0	1	0																								
1	1	0																								
0	1	1																								
1	0	1																								
	Type D 1 from 3 way interlock variant 4 cable configuration (2 cables for bus coupler) Interlocking between 3 circuit breakers. 2 normal power supplies not set in parallel 1 power supply may assist the priority circuit	<table><tr><th>B1</th><th>B2</th><th>B3</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td></tr></table> <p>Circuit breaker B1 and/or B3 can be closed only if B2 is open</p> <p>Circuit breaker B2 can only be closed if B1 & B3 are both open</p>	B1	B2	B3	0	0	0	1	0	0	0	0	1	1	0	1	0	1	0						
B1	B2	B3																								
0	0	0																								
1	0	0																								
0	0	1																								
1	0	1																								
0	1	0																								

Accessories Performance Data

		Operating voltage (V)		Operating range	Power consumption		Rating (Amps resistive)
		AC	DC		VA max.	Watt max.	
Auxiliary and carriage swtich	Frame 1 & 2	250		-	-	-	10
			125	-	-	-	5
			250	-	-	-	0.25
Carriage switch	Frame 3	400		-	-	-	10
			110	-	-	-	6
Motor operator	Frame 1 & 2	220 - 250	220 - 250	0.85 to 1.1 times rated voltage	-	-	-
		110 - 127	110 - 127		-	-	-
			42 - 48		-	350	-
		24 - 30	-		-	-	
Closing coil	Frame 1 & 2	220 - 250	220 - 250	0.85 to 1.1 times rated voltage			-
		110 - 130	110 - 130				-
			40 - 48			410	-
		24 - 30				-	
Shunt trip	Frame 1 & 2	220 - 250	220 - 250	0.70 to 1.1 times rated voltage			-
		110 - 130	110 - 130				-
			40 - 48			410	-
		24 - 30				-	
Instantaneous undervoltage release	Frame 1 & 2	380 - 440	110 - 130				-
		220 - 250	42 - 48			400	-
		110 - 130	24 - 30				-
						-	
						-	
Auxiliary power unit	Frame 1 & 2	95 - 265	24 - 264	-	-	12	-

Frame 1 & 2

Electrical accessories



FTCCMP RO optional features		Range	Voltage	Cat. No.	Ref. No.
Shunt trip (ST)		24/30V	DC	FTCCST30	F101378
		48V	DC	FTCCST48	F101379
		110/130V	AC/DC	FTCCST130	F101380
		220/250V	AC/DC	FTCCST250	F101381
		380/440V	AC/DC	FTCCST440	F101382
Motor operator (MOP)		24/30V	DC	FTCCMOP30	F101383
		48V	DC	FTCCMOP48	F101384
		110/130V	AC	FTCCMOP130A	F101385
		110/130V	DC	FTCCMOP130D	F101386
		220/250V	AC/DC	FTCCMOP250A	F101387
Closing coil (CC)		24/30V	DC	FTCCCC30	F101388
		48V	DC	FTCCCC48	F101389
		110/130V	AC/DC	FTCCCC130	F101390
		220/250V	AC/DC	FTCCCC250	F101391
Under voltage release (UV)		24/30V	DC	FTCCUV30	F101392
		48V	DC	FTCCUV48	F101393
		110/130V	AC	FTCCUV130A	F101394
		110/130V	DC	FTCCUV130D	F101395
		220/250V	AC	FTCCUV250	F101396
		380/440V	AC	FTCCUV440	F101397
Under voltage release time delayed (UVTd)		48V	DC	FTCCU VTD48	F101398
		110/130V	AC	FTCCU VTD130	F101399
		220/250V	AC	FTCCU VTD250	F101400
		380/440V	AC	FTCCU VTD440	F101401
Carriage switch	Factory fitted	250V	AC/DC	FTCCCSWFF	F101402
	Loose kit form	250V	AC/DC	FTCCCSWL	F101403
Springs charged signal (x 1 n/o)				FTCCS CC	F101404
Springs charged contact (x 1 c/o)				FTCC2WPFC	F101405
Trip circuit supervision (shunt trip required)				FTCCTRI PCS	F101406

Rear connections



Frame size	Rating (A)	Poles	Withdrawable or cassettes			Fixed pattern		
			Cat. No.	Ref. No.	Type	Cat. No.	Ref. No.	Type
1	400 to 1600	3	FTCCR T1HOR	F101407	Horizontal	FTCCR T1SVFIX	F101415	Vertical
		4	FTCCR T1HOR	F101408	Horizontal	FTCCR T1SVFIX	F101416	Vertical
1	400 to 1600	3	FTCCR T1VER	F101409	Vertical	-	-	-
		4	FTCCR T1VER	F101410	Vertical	-	-	-
1	2000 & 2500	3	FTCCR T1UNI	F101411	Universal	FTCCR T1SNVFIX	F101417	Vertical
		4	FTCCR T1UNI	F101412	Universal	FTCCR T1SNVFIX	F101418	Vertical
2	800 to 3200	3	FTCCR T2UNI	F101413	Universal	FTCCR T2SNHVFIX	F101419	Vertical
		4	FTCCR T2UNI	F101414	Universal	FTCCR T2SNHVFIX	F101420	Vertical
2	4000	3	N/A	N/A	Vertical	FTCCR T2SNHVFIX	F101421	Vertical
		4	N/A	N/A	Vertical	FTCCR T2SNHVFIX	F101422	Vertical

Rear Connections specified in multiples of 3, 4, 6 or 8 dependant on 3 or 4 pole configuration - top and / or bottom connections.

Frame 1, 2

Type A: order 1 interlock kit and 1 cable per ACB

Type B: order 1 interlock kit and 2 cable per ACB

Type C: order 1 interlock kit and 2 cable per ACB

Type D: order 1 interlock kit and 1 cable per **Supply** breaker plus 1 interlock kit for the **Control** breaker and 2 cables

For type D configuration 2 Supply Breakers and one Control Breaker are required.

Mechanical accessories

2 way Interlocking			Type A - 2 way interlock / Cable		Type B - 1 from 3 way interlock / Cable	
Frame size	Version	Poles	Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	Withdrawable	3	FTC2 WCI3PW	F101423	FTCCB13 WCI3PW	F101433
		4	FTC2 WCI4PW	F101424	FTCCB13 WCI4PW	F101434
	Fixed	3	FTC2 WCI3PF	F101425	FTCCB13 WCI3PF	F101435
		4	FTC2 WCI4PF	F101426	FTCCB13 WCI4PF	F101436
2	Withdrawable	3	FTC2 WCIF23PW	F101427	FTCCB13 WCIF23PW	F101437
		4	FTC2 WCIF24PW	F101428	FTCCB13 WCIF24PW	F101438
	Fixed	3	FTC2 WCIF23PF	F101429	FTCCB13 WCIF23PF	F101439
		4	FTC2 WCIF24PF	F101430	FTCCB13 WCIF24PF	F101440
Type C - 2 from 3 way interlock / Cable						
Frame size	Version	Poles	Cat. No.	Ref. No.		
1	Withdrawable	3	FTCC2WCI3PW	F101441		
		4	FTCC2WCI4PW	F101442		
	Fixed	3	FTCC2WCI3PF	F101443		
		4	FTCCC23 WCI4PF	F101444		
2	Withdrawable	3	FTCCC23WCIF23PW	F101445		
		4	FTCCC23WCIF24PW	F101446		
	Fixed	3	FTCCC23WCIF23PF	F101447		
		4	FTCCC23WCIF24PF	F101448		
Type D - 1 from 3 way interlock/cable - Supply Breakers						
					Type D - 1 from 3 way interlock/cable - Control Breaker	
Frame size	Version	Poles	Cat. No.	Ref. No.	Cat. No.	Ref. No.
1	Withdrawable	3	FTCCD13 WCI3PW	F101449	FTCCD13 WCI3PWCON	F101457
		4	FTCCD13 WCI4PW	F101450	FTCCD13 WCI4PWCON	F101458
	Fixed	3	FTCCD13 WCI3PF	F101451	FTCCD13 WCI3PFCON	F101459
		4	FTCCD13 WCI4PF	F101452	FTCCD13 WCI4PFCON	F101460
2	Withdrawable	3	FTCCD13 WCIF23PW	F101453	FTCCD13 WCIF23PWCON	F101461
		4	FTCCD13 WCIF24PW	F101454	FTCCD13 WCIF24PWCON	F101462
	Fixed	3	FTCCD13 WCIF23PF	F101455	FTCCD13 WCIF23PFCON	F101463
		4	FTCCD13 WCIF24PF	F101456	FTCCD13 WCIF24PFCON	F101464

Cable for interlock (for Frame 1 & 2 only)

Length	Cat. No.	Ref. No. ⁽¹⁾
1.0 metre	FTCC100BCMCI	F101465
1.6 metre	FTCC160BCMCI	F101466
2.0 metre	FTCC200BCMCI	F101467
2.5 metre	FTCC250BCMCI	F101468
3.0 metre	FTCC300BCMCI	F101469
3.5 metre	FTCC350BCMCI	F101470
4.0 metre	FTCC400BCMCI	F101471

(1) Reference is for one cable

Frame 1, 2

Interlocks

Frame size	Item	Cat. No.	Ref. No.
1, 2	Castell key breaker interlock (supplied loose) ⁽¹⁾	FTCCASLOK	F101472
	Fortress key breaker interlock (supplied loose) ⁽¹⁾	FTCCFORLOK	F101473
	Profalux key breaker interlock (supplied loose) ⁽¹⁾	FTCCPROLOK	F101474
	Profalux key cassette interlock (supplied loose) ⁽¹⁾	FTCCPROCAS	F101475
	Ronis key breaker interlock (factory fitted) ⁽²⁾	FTCCRONLKEY	F101476
	Ronis key breaker interlock (supplied loose) ⁽²⁾	FTCCRONWKEY	F101477
	Ronis key breaker interlock (supplied loose) ⁽¹⁾	FTCCRONLOK	F101478
	Ronis key cassette interlock (factory fitted) ⁽²⁾	FTCCRONWKEYFF	F101479
	Ronis key cassette interlock (supplied loose) ⁽²⁾	FTCCRONCASLD	F101480
	Ronis key cassette interlock (supplied loose) ⁽¹⁾	FTCCRONCASNK	F101481
	Ronis key cassette interlock (factory fitted) ⁽¹⁾	FTCCRONCAS	F101482

Miscellaneous

Frame size	Item	Cat. No.	Ref. No.
1, 2	Operations counter	FTCCMOC	F101487
	Left hand door interlock - hinged right	FTCCDILHS	F101488
	Right hand door interlock - hinged left	FTCCDIRHS	F101489
	Mis-insertion device (factory fitted)	FTCCACBMID	F101490
	Mis-insertion device (supplied loose)	FTCCACBMIL	F101491
	IP54 door	FTCCIP54DOOR	F101492
	Handling (lifting) truck	FTCCACBLIFT	F101493
	Spare or replacement racking handle	FTCCMPRACKHAN	F101494

(1) Without lock and key

(2) With lock and key

Frame 1, 2

Spare parts



Neutral / Earth leg (4th)				Neutral (4th) Rogowski coil with mounting kit			
Current transformer with mounting kit							
Frame size	Rating (A)	Current transformer		Rogowski coil ⁽¹⁾			
		Cat. No.	Ref. No.	Cat. No.	Ref. No.		
1	800	FTCCELCT8001	F101496	FTCCRCMK8001	F101510		
2		FTCCELCT8002	F101497	FTCCRCMK8002	F101511		
1	1000	FTCCELCT10001	F101498	FTCCRCMK10001	F101512		
2		FTCCELCT10002	F101499	FTCCRCMK10002	F101513		
1	1250	FTCCELCT12501	F101500	FTCCRCMK12501	F101514		
2		FTCCELCT12502	F101501	FTCCRCMK12502	F101515		
1	1600	FTCCELCT16001	F101502	FTCCRCMK16001	F101516		
2		FTCCELCT16002	F101503	FTCCRCMK16002	F101517		
1	2000	FTCCELCT20001	F101504	FTCCRCMK20001	F101518		
2		FTCCELCT20002	F101505	FTCCRCMK20002	F101519		
1	2500	FTCCELCT25001	F101506	FTCCRCMK25001	F101520		
2		FTCCELCT25002	F101507	FTCCRCMK25002	F101521		
2	3200	FTCCELCT32002	F101508	FTCCRCMK32002	F101522		
2	4000	FTCCELCT40002	F101509	FTCCRCMK40002	F101523		

Spare items available as SINGLE unit ONLY