

# Back-up

## Notes for use

### Back-up protection

The tables given provide the value (in kA, referring to the breaking capacity according to the IEC 60947-2 Standard) for which the back-up protection among the combination of selected circuit-breakers is verified. The tables cover the possible combinations between ABB SACE Tmax series of moulded-case circuit-breakers and those between the above-mentioned circuit-breakers and the ABB series of miniature circuit-breakers.

The values indicated in the tables refer to the voltage:

- Vn of 230/240 V AC for coordination with miniature S9 circuit-breakers
- Vn of 400/415 V AC for all the other coordinations.

### Note

The following tables give the breaking capacities at 415 V AC for circuit-breakers SACE Tmax.

Tmax @ 415 V AC	
Version	I <sub>cu</sub> [kA]
B	16
C	25
N	36
S	50
H	70
L (for T2)	85
L (for T6)	100
L	120
V (for T7)	150
V	200

### Caption

MCB = miniature circuit-breakers (S9, S2, S800)

MCCB = moulded-case circuit-breakers (Tmax)

For moulded-case circuit-breakers:

TM = thermomagnetic release

– TMD

– TMA

M = magnetic only release

– MF

– MA

EL = electronic trip unit

– PR221DS - PR222DS

For miniature circuit-breakers:

B = trip characteristic (I<sub>m</sub>=3...5I<sub>n</sub>)

C = trip characteristic (I<sub>m</sub>=5...10I<sub>n</sub>)

D = trip characteristic (I<sub>m</sub>=10...20I<sub>n</sub>)

K = trip characteristic (I<sub>m</sub>=8...14I<sub>n</sub>)

Z = trip characteristic (I<sub>m</sub>=2...3I<sub>n</sub>)

### Caption of symbols



MCB



Tmax

For solutions not shown in these tables, please consult the website:

<http://bol.it.abb.com>

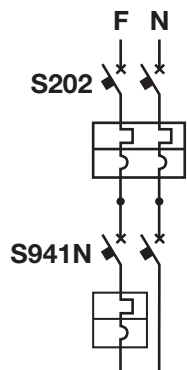
or contact ABB SACE

# Back-up

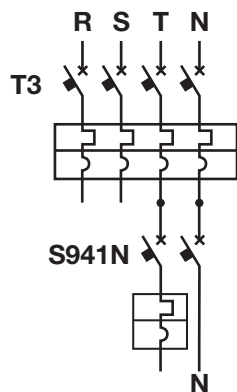
Notes for use

The following drawings show the possible combination between circuit-breakers in order to obtain the back-up value given in the coordination tables.

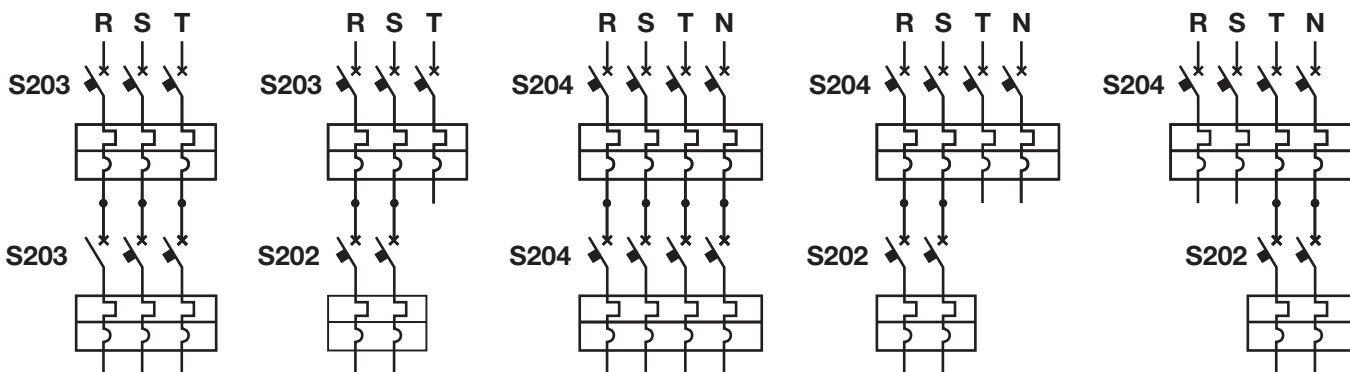
## MCB - MCB @ 240 V (Two-pole circuit-breakers)



## MCCB @ 415 V - MCB @ 240 V



## MCB - MCB @ 415 V

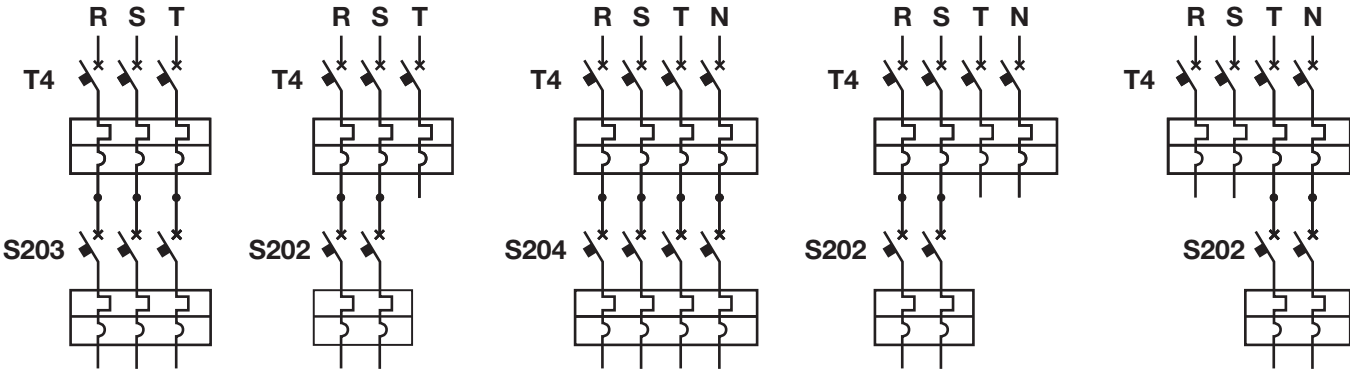


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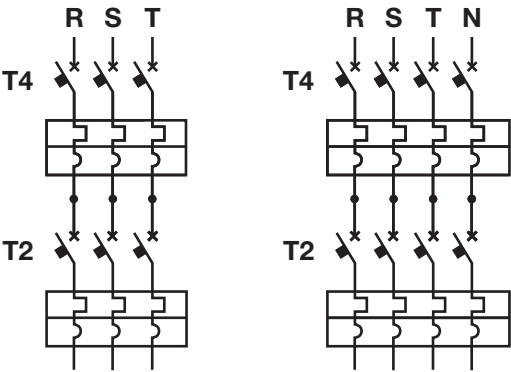
Notes for use

## MCCB - MCB @ 415 V

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## MCCB - MCCB @ 415 V



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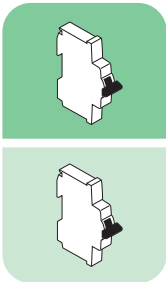
Supply side circuit-breaker: MCB

Load side circuit-breaker: MCB

MCB - MCB @ 240 V (Two-pole circuit-breakers)

Load S.	Char.	Supply S.		S200	S200M	S200P		S290	S800S
		I <sub>cu</sub> [kA]	I <sub>n</sub> [A]	B-C	B-C	B-C		C	B-C-D-K
				20	25	40	25	25	50
S931N	C	4.5	2..40	20	25	40	25	15	50
S941N	B,C	6	2..40	20	25	40	25	15	50
S951N	B,C	10	2..40	20	25	40	25	15	50
S971N	B,C	10	2..40	20	25	40	25	15	50
S200	B,C,K,Z	20	0.5..63		25	40	25		50
S200M	B,C	25	0.5..63			40			50
S200P	B,C, D,K,Z	40	0.5..25						50
		25	32..63						50
S290	C,D	25	80..125						

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# Back-up

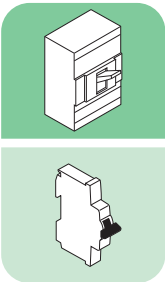
Supply side circuit-breaker: MCCB

Load side circuit-breaker: MCB

## MCCB @ 415 V - MCB @ 240 V

			Supply S. <sup>1</sup>	T1	T1	T1	T2	T3	T2	T3	T2	T2
			Version	B	C	N			S		H	L
Load S.	Char.	I <sub>n</sub> [A]	I <sub>cu</sub> [kA]	16	25	36			50		70	85
S931 N	C	2..25	4.5	16	16	16	20	10	20	10	20	20
		32, 40		10	10	10	16		16		16	16
S941 N	B,C	2..25	6	16	16	16	20	10	20	10	20	20
		32, 40		10	10	10	16		16		16	16
S951 N	B,C	2..25	10	16	16	16	25	16	25	16	25	25
		32, 40					16		16		16	16
S971 N	B,C	2..25	10	16	16	16	25	16	25	16	25	25
		32, 40					16		16		16	16

<sup>1</sup> Supply side circuit-breaker 4P (load side circuit branched between one phase and the neutral)



## Back-up

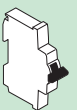
Supply side circuit-breaker: MCB

Load side circuit-breaker: MCB

### MCB - MCB @ 415 V

Load S.	Char.	Supply S.		S200	S200M	S200P		S280	S290	S800N	S800S
		I <sub>cu</sub> [kA]	I <sub>n</sub> [A]	B-C	B-C	B-C		B-C	C	B-C-D	B-C-D-K
				10	15	25	15	6	15	36	50
				0.5..63	0.5..63	0.5..25	32..63	80, 100	80..125	25..125	25..125
S200	B,C,K,Z	10	0.5..63		15	25	15		15	36	50
S200M	B,C	15	0.5..63			25				36	50
S200P	B,C, D,K,Z	25	0.5..25							36	50
		15	32..63							36	50
S280	B,C	6	80, 100								
S290	C,D	15	80..125								
S800N	B,C,D	36	10..125								
S800S	B,C,D,K	50	10..125								

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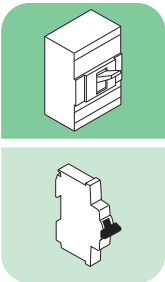
# Back-up

Supply side circuit-breaker: MCCB

Load side circuit-breaker: MCB

## MCCB - MCB @ 415 V

			Supply S.	T1	T1	T1	T2	T3	T4	T2	T3	T4	T2	T4	T2	T4	T4
			Version	B	C	N				S			H		L	L	V
Load S.	Char.	I <sub>n</sub> [A]	I <sub>cu</sub> [kA]	16	25	36				50			70		85	120	200
S200	B,C,K,Z	0.5..10	10	16	25	30	36	36	36	36	40	40	40	40	40	40	40
		16						16									
S200M	B,C	0.5..10	15	16	25	30	36	36	36	50	40	40	70	40	85	40	40
		25						25			60		60				
S200P	B,C, D,K,Z	0.5..10	25			30	36	36	36	50	40	40	70	40	85	40	40
		13..25				30	36	30	36	50	30	40	60	40	60	40	40
		32..63	15	16	25	30	36	25	36	50	25	40	60	40	60	40	40
S280	B,C	80, 100	6	16	16	16	36	16	30	36	16	30	36	30	36	30	30
S290	C,D	80..125	15	16	25	30	36	30	30	50	30	30	70	30	85	30	30
S800N	B,C,D	10..125	36										70	70	85	120	200
S800S	B,C,D,K	10..125	50										70	70	85	120	200



# Back-up

Supply side circuit-breaker: MCCB

Load side circuit-breaker: MCCB

## MCCB - MCCB @ 415 V

		Supply S.	T1	T1	T2	T3	T4	T5	T6	T2	T3	T4	T5	T6	T7	T2	T4	T5	T6	T7	T2	T4	T5	T6	T7	T4	T5	
		Version	C	N						S						H					L	L	L	L	V			
Load S.	Char.	I <sub>cu</sub> [kA]	25	36						50						65					85	120	100 <sup>1</sup>	200				
T1	B	16	25	36	36	36	30	30	30	50	50	36	36	36		70	40	40	40		85	50	50	50		85	65	
T1	C	25		36	36	36	36	36	36	50	50	40	40	50	50	70	65	65	65	50	85	85	85	70	50	130	100	
T1	N	36								50	50	50	50	50	50	70	65	65	65	50	85	100	100	70	50	200	120	
T2										50	50	50	50	50	50	70	65	65	65	65	85	100	100	85	85	200	120	
T3											50	50	50	50	50		65	65	65	50		100	100	100	50	200	120	
T4												50	50	50	50		65	65	65	50		100	100	65	65	200	120	
T5													50	50	50			65	65	50			100	85	65		120	
T6															50	40				65	40				70	50		
T2	S	50															70	70	70	70	85	100	100	85	85	200	130	
T3																		70	70	70			100	100	100		200	150
T4																		70	70	70	70		100	100	85	85	200	150
T5																			70	70	70			100	85	85		150
T6																				70					85	85		
T2	H	70																			85	120	120	85	85	200	150	
T4																							120	120	100	100	200	180
T5																								120	100	100		180
T6																									100	85		
T2	L	85																				120	120				200	180
T4		120																									200	200
T5																												200

<sup>1</sup> 120 kA for T7

