

Reference Guide Moulded Case Circuit Breakers Series MC9



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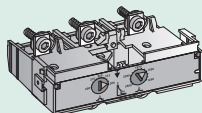
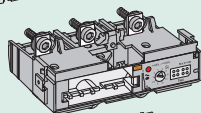
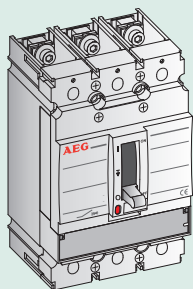
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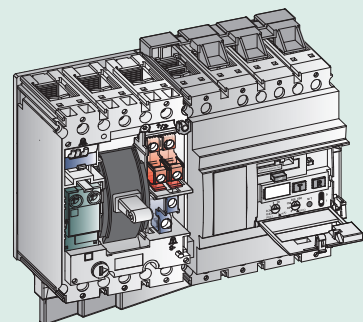
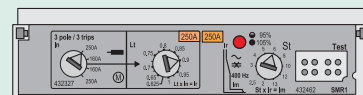
Overview

A complete line of selective and current limiting breakers



The MC9 family of circuit breakers has been developed as a line of aesthetically and technically coordinated protection devices for low voltage distribution and control applications. The circuit breakers are available in four sizes, each of which is tailored to the individual requirements associated with its application.

Circuit protection is provided by a combination of the devices' unique current limiting properties and integrated protection devices commonly referred to as trip units. The trip units are designed to protect circuits and/or the equipment connected to these circuits and exist as electromechanical or electronic devices.



The MC9 line of circuit breakers has been designed to comply with the following standards "EN60947 low-voltage switchgear and controlgear":

EN 60947-2: Circuit-breakers

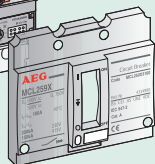
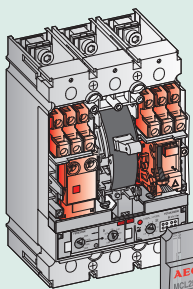
EN 60947-3: Switches, disconnectors, switch-disconnectors and fuse-combination units

EN 60947-4-1: Contactors and motor-starters

In order to meet the international standards mentioned above, the following European standards had to be fulfilled: BS, VDE, UTE, KEMA, CEI

Further tests are being undertaken at the moment to meet the requirements of the following regulatory authorities: UL, CSA, Germanischer Lloyd, Lloyd's Register of Shipping, RINA.

Internal accessories



The MC9 line of circuit breakers is complete with a range of internal accessories for all the breakers.

This internal accessories are: auxiliary switch, bell alarm, shunt trip and undervoltage release.

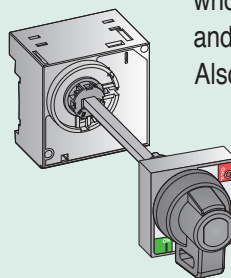
The internal accessories are designed for safe and easy mounting.

The breaker trips upon cover removal and remains tripped

until the cover is replaced. Cover removal provides access to a specifically designed, isolated compartment into which the accessories can be mounted easily and safely in conveniently marked areas.

Operators

It's available a complete series of manual and electrical operators. The design is universal for the whole breaker line and has the OFF, ON and TRIP position very easy to see.



Also the electrical operators are designed for easy mounting onto the breaker front and offer operating times of 80 milliseconds or lower. All the operators includes a padlocking or key-locking.

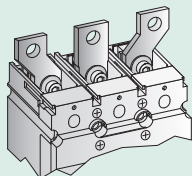
Overview

Versatile installation options

The MC9 connection facilities have been designed with the user in mind. Easy access to the area where the conductor must be placed, their generous dimensions and their inherent stability assure an easy connection.

A wide range of alternatives are available in kit form with rear and angular connectors, spreaders, customised ring terminal connectors and extenders. Single and multiple box clamps can be directly fitted to the breaker terminals or in combination with extenders and spreaders.

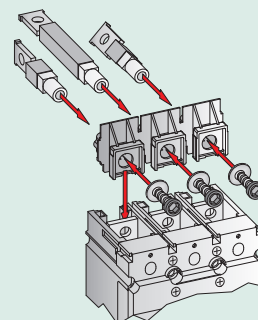
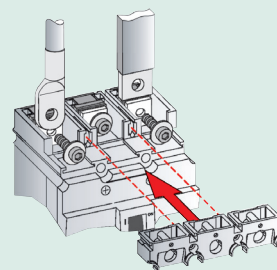
The breakers are equipped with front access terminals designed to allow the user to quickly and easily connect standard conductors.



The MM169 frame has box clamps suited for one or two cable cores or busbars while the MC169... MC1609, frame sizes are configured to allow for easy busbar connection.

A rear connection kit changes the standard connection configuration of a fixed, plug-in or draw-out breaker from front to rear access. Delivered as a multi-pole set they allow an easy and quick change in configuration of the

standard fixed-front connection breaker to a model where the connection is accessible from the rear. Each kit is supplied with a short terminal shield to warrant a IPXXB protection from the breaker front.



Plug-in and draw-out system

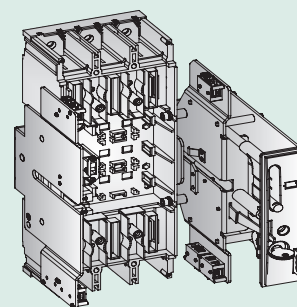
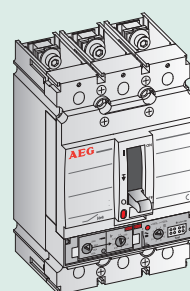
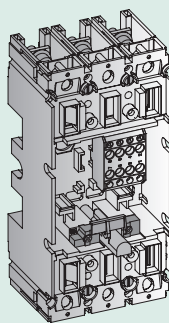
The MC9 plug-in version allows quick, safe and easy interchange of breakers. It is made up of a “standard” fixed-front-connection breaker, a set of plugs, a trip mechanism fitted to the breaker and a monoblock base into which the breaker is plugged.

The plug-in system is disponible from series MM169 to MC639, with front and rear connections. The system is compset of a mobile part that is fitted to the breaker is made up of a multi-pole set of plugs that displace the standard front connection. It also includes a trip interlock, that, when mounted, trips the breaker on its removal from the base.

MM169, MC169... MC639 frame sizes equipped with “bottom mounted RCD unit” can also be transformed into the plug-in version.

From MC169/259 up to 1600A, The draw-out device is supplied as complete entity including a mobile and fixed part allowing the conversion of a standard fixed front connection breaker to a draw-out type.

The fixed component of the kit includes an integrated standard plug-in base encapsulated in a sturdy metal chassis. The base is connected by re-utilising the nut inserts and connection bolts supplied with the breaker. All standard terminal shields terminals, rear connection facilities & lugs available for the standard fixed front conection breaker can be used with this plug-in base.



Technical data

EN 60947-2													
		MM169 (1 Pole)		MM169						MC169			
		L	S	R	L	N	S	H	X	S	H	X	
Number of poles		1		3/4			2 ⁽¹⁾ - 3 - 4			3/4			
Rated insulation voltage Ui (V)		750		500	500	690	750			750			
Rated impulse withstand voltage Uimp (kV)		3		6			8			8			
Rated operating voltage Ue AC (V)		240		500	500	500	690			690			
DC (V)		250		-	-	440	500			500			
Line protection device													
Category of use		A		A			A			A			
Suitable for use as a isolator		yes		yes			yes			yes			
Rated current Ith = Ie a 40°C (A)		160		160			160			160			
Ultimate breaking capacity Icu		230/240V AC (kA)	25	50	25	40	50	85	100	200	85	100	200
		400/415V AC (kA)	-	-	18	25	36	50	80	150	50	80	150
		440V AC (kA)	-	-	12	14	25	30	65	130 ⁽⁴⁾	42	65	130
		500V AC (kA)	-	-	10	12	18	22	36	50 ⁽⁴⁾	30	50	100
		690V AC (kA)	-	-	-	-	2	4,5	6	10	10	22	75
		250V DC 1 polo (kA)	-	50	-	-	25	40	65	100	50	85	100
		440V DC 2 poli (kA)	-	-	-	-	25	40	65	100 ⁽²⁾	50	85	100 ⁽²⁾
		500V DC 2 poli (kA)	-	-	-	-	-	40	65 ⁽²⁾	100 ⁽²⁾	50	85 ⁽²⁾	100 ⁽²⁾
Service breaking capacity Ics ≤ 500V (%)		100%	100%	75%	75% ⁽⁵⁾	100% ⁽⁵⁾	100%	100%	100%	100%	100%	100%	100%
690V AC (%)		-	-	-	-	-	100%	75%	50%	100%	75%	25%	
Single phase breaking capacity I _{tr}		230V AC (kA)	25	50	16	25	30	50	80	150	50	80	150
		400/415V AC (kA)	-	-	-	-	-	4,5	6	10	15	22	36
Endurance (CO operations)		Mechanical	10000		10000			25000			40000		
		Electrical at In	5000		5000			10000			20000		
		Electrical at In/2	10000		10000			20000			30000		
Endurance (On-Tripped operations)		Mechanical	4000		4000			10000			16000		
Trip units		Interchangeable	no		no			no			yes		
		Thermal magnetic line	LTM			LTMD			LTM				
		Thermal magnetic selective				GTM			GTM				
		Magnetic only				Mag Break™			Electronic SI				
		Electronic selective							LSI, LSIG				
		Electronic enhanced											
EN 60947-3 standard													
		MMT169 (1 Poles)		MMT169		MMT169		MMT169		MCT169			
Non automatic breaker (Switch)													
Rated current In (class AC23)		220V AC a 690V AC (A)	160		63		160		160		160		
Rated making capacity Icm		Icm (kA peak) (kA)	2,8		1,7		2,8		2,8		4,9		
Short-term withstand current Icw		Icw eff. 1 second (kA)	2		1,2		2		2		3		
		Icw eff. 3 second (kA)	2		1,2		2		2		3		
EN 60947-4 standard													
								MM169		MC169			
								S		H		X	
Use in motor circuits													
Rated current Ith		at 65°C (A)					100		150				
Endurance (CO operations)		Mechanical					25000		40000				
		Electrical at In class AC23					10000		20000				
		Operation per hour					120		120				
Protection		Short-circuit only (separate overload device)					Mag Break™		Electronic SI				
		Overload class 10 and short-circuit							LSI				
		Max In (A) class 10					100		160				
		Max In (A) class 30					80		-				
		Earth fault unit (differential)					Tipo D../MM9 (optional)		Tipo DB../M91 (optional)				
Installation													
		MM169 (1 Poles)		MM169		MM169		MM169		MC169			
Mounting		On simmetrical DIN rail	yes		yes		yes		yes		no		
		Fixed	yes		yes		yes		yes		yes		
		Plug in	no		yes		yes		yes		yes		
		Draw out	no		no		no		no		yes		
Connection		Front	yes		yes		yes		yes		yes		
		Rear	no		yes		yes		yes		yes		
Dimensions (w x h x d)		3P fixed front conn. (mm)	27 x 130 x 85		81 x 130 x 85		81 x 130 x 85		81 x 130 x 85		105 x 170 x 95		
		4P fixed front conn. (mm)			108 x 130 x 85		108 x 130 x 85		108 x 130 x 85		140 x 170 x 95		
Weights		3P fixed front conn. (kg)	0,4		0,9		0,9		0,9		1,5		
		4P fixed front conn. (kg)			1,3		1,3		1,3		2		

(1) S type only

(2) Use 3 poles

(3) Use 2 poles

(4) 160A rating only; 65kA at 440V
36kA at 500V

(5) 160A rating only; type L Ics 40%
type N Ics 25%

(6) 350 and 500A executions only

(7) On request

Technical data

EN 60947-2

MC259				MC409				MC639				MC809				MC1259				MC1609			
N	S	H	X	S	H	X		S	H	X		S	H	X		S	H	X		S	H		
3/4		3/4			3/4				3/4				3/4				3/4				3/4		
690		750			750				750				1000				1000				1000		
8		8			8				8				8				8				8		
500		690			690				690				690				690				690		
440		500			-				-				500				500				500		
Line protection device																							
	A				B ⁽⁶⁾				B ⁽⁶⁾				B				B				B		
	yes				yes				yes				yes				yes				yes		
	250				400				630				800				1250				1600		
65	85	100	200	85	100	200		85	100	200		85	100	170		85	100	170		85	100		
36	50	80	150	50	80	150		50	80	150		50	80	100		50	80	100		50	80		
25	42	65	130	42	65	130		42	65	130		42	65	80		42	65	80		42	65		
18	30	50	100	30	50	100		30	50	100		36	42	50		36	42	50		36	42		
-	10	15	22	10	22	75		10	22	40		20	25	30		20	25	30		20	25		
25	50	85	100	-	-	-		-	-	-		50 ⁽³⁾	60 ⁽³⁾	80 ⁽³⁾		50 ⁽³⁾	60 ⁽³⁾	80 ⁽³⁾		-	-		
25	50	85	100 ⁽²⁾	-	-	-		-	-	-		36 ⁽²⁾	50 ⁽²⁾	60 ⁽²⁾		36 ⁽²⁾	50 ⁽²⁾	60 ⁽²⁾		-	-		
-	50	85 ⁽²⁾	100 ⁽²⁾	-	-	-		-	-	-		36 ⁽²⁾	50 ⁽²⁾	60 ⁽²⁾		36 ⁽²⁾	50 ⁽²⁾	60 ⁽²⁾		-	-		
100%	100%	100%	100%	100%	100%	100%		100%	100%	100%		100%	75%	50%		100%	75%	50%		100%	75%		
-	100%	75%	50%	100%	45%	25%		100%	45%	25%		100%	75%	50%		100%	75%	50%		100%	75%		
36	50	80	150	50	80	150		50	80	150		50	80	100		50	80	100		50	80		
-	10	15	22	10	(7)	(7)		(7)	(7)	36		20	25	30		20	25	30		20	25		
10000	25000				20000				20000				10000				10000				10000		
5000	10000				7500				5000				4000				3000				2000		
10000	20000				15000				10000				8000				6000				4000		
4000	10000				8000				8000				4000				3000				2000		
yes	yes				yes				yes				no				no				no		
LTM													LTM				LTM						
	GTM																						
	Electronic SI				Electronic SI				Electronic SI														
	LSI, LSIG				LSI, LSIG				LSI, LSIG				SMR1e				SMR1e				SMR1e		
					SMR2				SMR2				SMR1s, SMR1q				SMR1s, SMR1q				SMR1s, SMR1q		

EN 60947-3 standard

MCT259				MCT409				MCT639				MCT809				MCT1259				MCT1609			
	250				400				630				800				1250				1600		
	6,4				8,5				11,3				14,1				21,2				28,3		
	4				5				6,5				10				15				20		
	4				5				6,5				10				15				20		

EN 60947-4 standard

MC259				MC409				MC639				MC809				MC1259				MC1609			
S	H	X		S	H	X		S	H	X		S	H	X		S	H	X		S	H		
	225				350				500				720				1000						
	25000				20000				20000				10000				10000						
	10000				7500				5000				4000				3000						
	120				120				60				60				60						
	Electronic SI				Electronic SI				Electronic SI				Mag Break™				Mag Break™						
	LSI				LSI o SMR2				LSI o SMR2														
	250				400				630				720				1000						
	-				350				500				720				1000						
	Type DB./M92 (optional)				Type DB./M96 (optional)				Type DB./M96 (optional)														

Installation

	MC259	MC409	MC639	MC809	MC1259	MC1609
	no	no	no	no	no	no
	yes	yes	yes	yes	yes	yes
	yes	yes	yes	no	no	no
	yes	yes	yes	yes	yes	yes
	yes	yes	yes	yes	yes	yes
	yes	yes	yes	yes	yes	yes
	105 x 170 x 95	140 x 265 x 115	140 x 265 x 115	210 x 320 x 160	210 x 320 x 160	210 x 320 x 160
	140 x 170 x 95	185 x 265 x 115	185 x 265 x 115	280 x 320 x 160	280 x 320 x 160	280 x 320 x 160
	1,6	4,5	4,5	12,2	18,0	18,0
	2,1	6,0	6,0	15,1	23,4	23,4

Series MM169



The breakers type MM169 have a modular front design and they are suitable to be mounted beside the breakers serie Elfa 90. The rated current is from 16 to 160A and the short circuit capacity is very high, up to 150kA.

The breakers are available as 3 or 4 pole version, with many protection combinations: Line thermomagnetic, Generator, Magnetic Motor protection, Isolator.

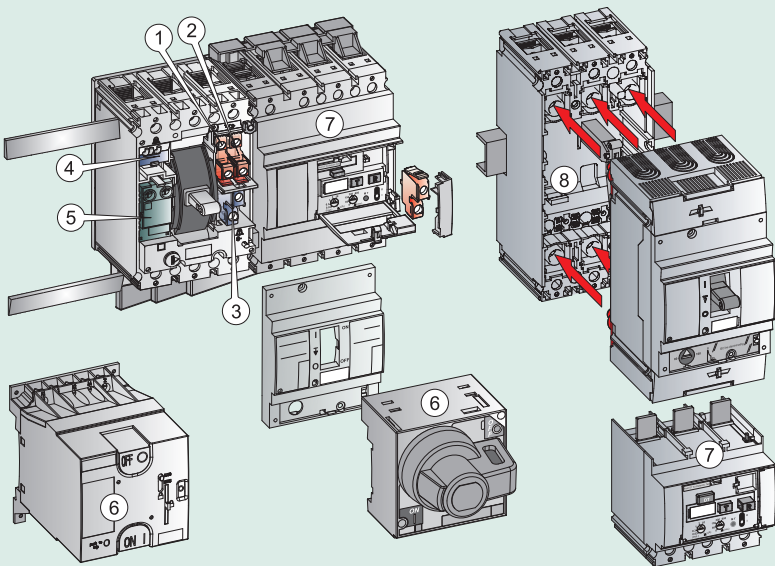
The serie MM169 has also a complete set of accessories as rear and front connections, plug in base, add on RCD, Motor operation, shunt trip, under voltage trip, auxiliary contacts etc.

The breakers are equipped with terminals for connections of flexible cables up to 95mm².

Protection	Series	Rated corrent In (A)	Thermal setting Ir (A)	Magnetic setting Im (A)	Breaking capacity Icu (kA at 415V AC)					
Line	MML169	16... 125	08... 1 In	fixed 10 In	18	25	36	50	80	150
		160	0,8... 1 In	fixed 8 In	18	25	36	50	80	150
Generator	MMG169	25... 63	0,8... 1 In	fixed 5 In	-	-	-	50	80	-
		80... 160	0,8... 1 In	fixed 4 In	-	-	-	50	80	-
Motor	MMM169	100	-	10... 15 In	-	-	-	50	80	150

Accessories:

- 1:Auxiliary contact left mounted (1NO or 1NC)
- 2:Auxiliary contact right mounted (1NO or 1NC)
- 3:Bell alarm trip unit (1NO or 1NC)
- 4:Bell alarm mechanism (1CO)
- 5:Shunt or Undervoltage release
- 6:Electrical operator or Rotary handle
- 7:Residual Current Devices: side or bottom mounted
- 8:Plug-in system ⁽¹⁾



(1) from breaker with Icu = 36kA up to 125A

MM169: Moulded Case Circuit Breakers modular up to 160A

Line protection (thermal magnetic)			
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
18	16	MML169R3016	MML169R4016
18	20	MML169R3020	MML169R4020
18	25	MML169R3025	MML169R4025
18	32	MML169R3032	MML169R4032
18	40	MML169R3040	MML169R4040
18	50	MML169R3050	MML169R4050
18	63	MML169R3063	MML169R4063
18	80	MML169R3080	MML169R4080
18	100	MML169R3100	MML169R4100
18	125	MML169R3125	MML169R4125
18	160	MML169R3160	MML169R4160
25	16	MML169L3016	MML169L4016
25	20	MML169L3020	MML169L4020
25	25	MML169L3025	MML169L4025
25	32	MML169L3032	MML169L4032
25	40	MML169L3040	MML169L4040
25	50	MML169L3050	MML169L4050
25	63	MML169L3063	MML169L4063
25	80	MML169L3080	MML169L4080
25	100	MML169L3100	MML169L4100
25	125	MML169L3125	MML169L4125
25	160	MML169L3160	MML169L4160
36	16	MML169N3016	MML169N4016
36	20	MML169N3020	MML169N4020
36	25	MML169N3025	MML169N4025
36	32	MML169N3032	MML169N4032
36	40	MML169N3040	MML169N4040
36	50	MML169N3050	MML169N4050
36	63	MML169N3063	MML169N4063
36	80	MML169N3080	MML169N4080
36	100	MML169N3100	MML169N4100
36	125	MML169N3125	MML169N4125
36	160	MML169N3160	MML169N4160
50	16	MML169S3016	MML169S4016
50	20	MML169S3020	MML169S4020
50	25	MML169S3025	MML169S4025
50	32	MML169S3032	MML169S4032
50	40	MML169S3040	MML169S4040
50	50	MML169S3050	MML169S4050
50	63	MML169S3063	MML169S4063
50	80	MML169S3080	MML169S4080
50	100	MML169S3100	MML169S4100
50	125	MML169S3125	MML169S4125
50	160	MML169S3160	MML169S4160
80	16	MML169H3016	MML169H4016
80	20	MML169H3020	MML169H4020
80	25	MML169H3025	MML169H4025
80	32	MML169H3032	MML169H4032
80	40	MML169H3040	MML169H4040
80	50	MML169H3050	MML169H4050
80	63	MML169H3063	MML169H4063
80	80	MML169H3080	MML169H4080
80	100	MML169H3100	MML169H4100
80	125	MML169H3125	MML169H4125
80	160	MML169H3160	MML169H4160
150	25	MML169X3025	MML169X4025
150	32	MML169X3032	MML169X4032
150	40	MML169X3040	MML169X4040
150	50	MML169X3050	MML169X4050
150	63	MML169X3063	MML169X4063
150	80	MML169X3080	MML169X4080
150	100	MML169X3100	MML169X4100
150	125	MML169X3125	MML169X4125
150	160	MML169X3160	MML169X4160

Motor protection (magnetic only)			
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	7	MMM169S3007	MMM169S4007
50	12,5	MMM169S3012	MMM169S4012
50	20	MMM169S3020	MMM169S4020
50	30	MMM169S3030	MMM169S4030
50	50	MMM169S3050	MMM169S4050
50	80	MMM169S3080	MMM169S4080
50	100	MMM169S3100	MMM169S4100
80	7	MMM169H3007	MMM169H4007
80	12,5	MMM169H3012	MMM169H4012
80	20	MMM169H3020	MMM169H4020
80	30	MMM169H3030	MMM169H4030
80	50	MMM169H3050	MMM169H4050
80	80	MMM169H3080	MMM169H4080
80	100	MMM169H3100	MMM169H4100
150	20	MMM169X3020	MMM169X4020
150	30	MMM169X3030	MMM169X4030
150	50	MMM169X3050	MMM169X4050
150	80	MMM169X3080	MMM169X4080
150	100	MMM169X3100	MMM169X4100

Generator protection (thermal magnetic)			
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	25	MMG169S3025	MMG169S4025
50	32	MMG169S3032	MMG169S4032
50	40	MMG169S3040	MMG169S4040
50	50	MMG169S3050	MMG169S4050
50	63	MMG169S3063	MMG169S4063
50	80	MMG169S3080	MMG169S4080
50	100	MMG169S3100	MMG169S4100
50	125	MMG169S3125	MMG169S4125
50	160	MMG169S3160	MMG169S4160
80	25	MMG169H3025	MMG169H4025
80	32	MMG169H3032	MMG169H4032
80	40	MMG169H3040	MMG169H4040
80	50	MMG169H3050	MMG169H4050
80	63	MMG169H3063	MMG169H4063
80	80	MMG169H3080	MMG169H4080
80	100	MMG169H3100	MMG169H4100
80	125	MMG169H3125	MMG169H4125
80	160	MMG169H3160	MMG169H4160

Non-automatic Breaker			
	In (A)	3 Poles	4 Poles
	63	MMT1693063	MMT1694063
	160	MMT1693160	MMT1694160

Residual Current Device (see also accessories)			
	Un (V)	3 Poles	4 Poles
Side mounting on DIN rail right mounted	440	DG3/MM9-2	DG4/MM9-2
	690	DG3/MM9-4	DG4/MM9-4
	Multidirectional supply kit		
Side connection only on DIN rail right mounted	440	DD3/MM9-2 ⁽¹⁾	DD4/MM9-2 ⁽¹⁾
	Interconnection kit for top or bottom use		
Bottom mounted	440	DB3/MM9-2	DB4/MM9-2
	690	DB3/MM9-4	DB4/MM9-4
Idn settings (A) 0,030 - 0,300 - 1 - 3 - 10			
Delay (ms) instantaneous - 60 - 150 - 300 - 600			
(1) Add on 1 FDKD4 (kit per montaggio su guida DIN 4 poli)			

Series MC169 and MC259



The MC169 and MC259 breakers have respectively 160A and 250A rated current, in the same size.

They can be equipped with thermomagnetic or electronic protection relay, type Line protection, Generator, Magnetic motor protection, isolator.

The electronic protection is a new generation of trip unit, with a very wide range of threshold (from 0,3 to 1 In), and many functions like LS (Long time delay, Short time delay), LSI (with additional Istantaneous protection channel), LSIG (with Ground protection channel).

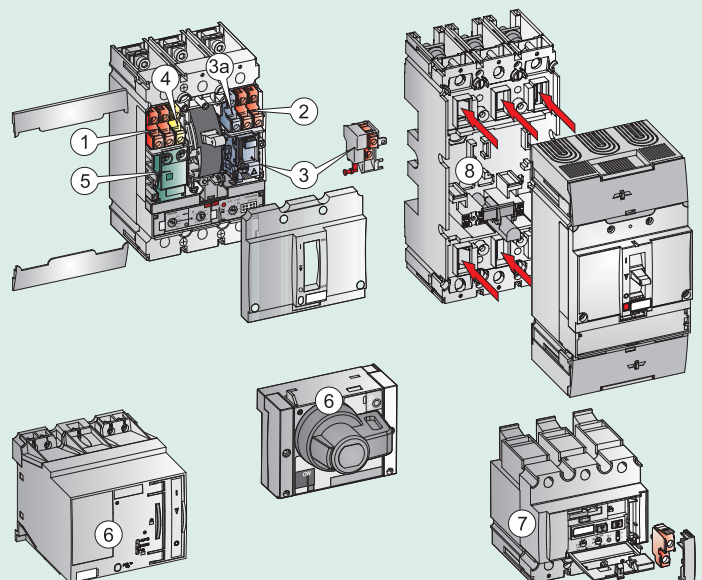
On the front of the trip unit, there is a micro USB port where it is possible to connect a PC and supply the unit to check the tripping functions.

All the electronic type breakers have the possibility to adjust the Neutral protection as 0%, 50%, 100% of the rated current.

Protection	Series	Rated current In (A)	Thermal setting Ir (A)	Magnetic setting Im (A)	Emergency setting I (A)	Canale di terra G Ir (A)	Breaking capacity (Icu at 415V AC)
Line	MCL169, MCS259	25... 63	0,8... 1In	fixed 8In	-	-	50 80 150
		80... 250	0,8... 1In	5... 10In	-	-	50 80 150
Generator	MCG169 / 259	40... 100	0,8... 1In	fixed 4In	-	-	50 80 150
		125... 250	0,8... 1In	3... 5In	-	-	50 80 150
Electronic LSI	MCA169 / 259	25... 250	0,3... 1In	2... 13Ir	fixed 14Ir	-	50 80 150
Electronic SI	MCB169 / 259	25... 250	-	2... 13Ir	fixed 14Ir	-	50 80 150
Electronic LSIG	MCC169 / 259	25... 250	0,3... 1In	2... 13Ir	fixed 14Ir	0,4... 1Ir	50 80 150

Accessories:

- 1: Auxiliary contact left mounted (NO o NC),
1 or 2 pieces
- 2: Auxiliary contact right mounted (NO o NC),
1 or 2 pieces
- 3: Bell alarm thermal magnetic trip unit (NO o NC)
- 3a: Bell alarm electronic trip unit
(NO o NC)
- 4: Bell alarm mechanism (1CO)
- 5: Shunt or Undervoltage release
- 6: Electrical operator or Rotary handle
- 7: Residual Current Devices: bottom mounted
(below trip unit) (insert indicates bell alarm countact
mounting)
- 8: Plug-in or draw-out system



MC169: Moulded Case Circuit Breakers up to 160A

Line protection (thermal magnetic)			
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	25	MCL169S3025	MCL169S4025
50	32	MCL169S3032	MCL169S4032
50	40	MCL169S3040	MCL169S4040
50	50	MCL169S3050	MCL169S4050
50	63	MCL169S3063	MCL169S4063
50	80	MCL169S3080	MCL169S4080
50	100	MCL169S3100	MCL169S4100
50	125	MCL169S3125	MCL169S4125
50	160	MCL169S3160	MCL169S4160
80	25	MCL169H3025	MCL169H4025
80	32	MCL169H3032	MCL169H4032
80	40	MCL169H3040	MCL169H4040
80	50	MCL169H3050	MCL169H4050
80	63	MCL169H3063	MCL169H4063
80	80	MCL169H3080	MCL169H4080
80	100	MCL169H3100	MCL169H4100
80	125	MCL169H3125	MCL169H4125
80	160	MCL169H3160	MCL169H4160
150	25	MCL169X3025	MCL169X4025
150	32	MCL169X3032	MCL169X4032
150	40	MCL169X3040	MCL169X4040
150	50	MCL169X3050	MCL169X4050
150	63	MCL169X3063	MCL169X4063
150	80	MCL169X3080	MCL169X4080
150	100	MCL169X3100	MCL169X4100
150	125	MCL169X3125	MCL169X4125
150	160	MCL169X3160	MCL169X4160

Generator protection					
(thermal magnetic)					
Breaking capacity (kA)	In (A)	3 Poles		4 Poles	
50	100	MCG169S3100		MCG169S4100	
50	125	MCG169S3125		MCG169S4125	
50	160	MCG169S3160		MCG169S4160	
80	100	MCG169H3100		MCG169H4100	
80	125	MCG169H3125		MCG169H4125	
80	160	MCG169H3160		MCG169H4160	
150	100	MCG169X3100		MCG169X4100	
150	125	MCG169X3125		MCG169X4125	
150	160	MCG169X3160		MCG169X4160	

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Line protection (LSI)			<i>(electronic)</i>
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	25	MCA169S3025	MCA169S4025
50	63	MCA169S3063	MCA169S4063
50	125	MCA169S3125	MCA169S4125
50	160	MCA169S3160	MCA169S4160
80	25	MCA169H3025	MCG169H4025
80	63	MCA169H3063	MCA169H4063
80	125	MCA169H3125	MCA169H4125
80	160	MCA169H3160	MCA169H4160
150	25	MCA169X3025	MCA169X4025
150	63	MCA169X3063	MCA169X4063
150	125	MCA169X3125	MCA169X4125
150	160	MCA169X3160	MCA169X4160

Motor protection (SI)		<i>(electronic only magnetic)</i>	
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	25	MCB169S3025	MCB169S4025
50	63	MCB169S3063	MCB169S4063
50	125	MCB169S3125	MCB169S4125
50	160	MCB169S3160	MCB169S4160
80	25	MCB169H3025	MCB169H4025
80	63	MCB169H3063	MCB169H4063
80	125	MCB169H3125	MCB169H4125
80	160	MCB169H3160	MCB169H4160
150	25	MCB169X3025	MCB169X4025
150	63	MCB169X3063	MCB169X4063
150	125	MCB169X3125	MCB169X4125
150	160	MCB169X3160	MCB169X4160

Line protection and ground fault (LSIG)				<i>(electronic)</i>
Breaking capacity (kA)	In (A)	3 Poles	4 Poles	
50	25	MCC169S3025	MCC169S4025	
50	63	MCC169S3063	MCC169S4063	
50	125	MCC169S3125	MCC169S4125	
50	160	MCC169S3160	MCC169S4160	
80	25	MCC169H3025	MCC169H4025	
80	63	MCC169H3063	MCC169H4063	
80	125	MCC169H3125	MCC169H4125	
80	160	MCC169H3160	MCC169H4160	
150	25	MCC169X3025	MCC169X4025	
150	63	MCC169X3063	MCC169X4063	
150	125	MCC169X3125	MCC169X4125	
150	160	MCC169X3160	MCC169X4160	

Residual Current Device		<i>(see also Accessories)</i>	
	Un (V)	3 Poles	4 Poles
Bottom mounting	440	DB3/M91-2	DB4/M91-2
	690	DB3/M91-4	DB4/M91-4
Idn settings (A)		0,030 - 0,300 - 1 - 3 - 10	
Delay (ms)		instantaneous - 60 - 150 - 300 - 600	

MC259: Moulded Case Circuit Breakers up to 250A

Line protection (thermal magnetic)			
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	125	MCS259S3125	MCS259S4125
50	160	MCS259S3160	MCS259S4160
50	200	MCS259S3200	MCS259S4200
50	250	MCS259S3250	MCS259S4250
80	125	MCS259H3125	MCS259H4125
80	160	MCS259H3160	MCS259H4160
80	200	MCS259H3200	MCS259H4200
80	250	MCS259H3250	MCS259H4250
150	125	MCS259X3125	MCS259X4125
150	160	MCS259X3160	MCS259X4160
150	200	MCS259X3200	MCS259X4200
150	250	MCS259X3250	MCS259X4250

Line protection (LSI) (electronic)			
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	125	MCA259S3125	MCA259S4125
50	160	MCA259S3160	MCA259S4160
50	250	MCA259S3250	MCA259S4250
80	160	MCA259H3125	MCA259H4125
80	125	MCA259H3160	MCA259H4160
80	250	MCA259H3250	MCA259H4250
150	63	MCA259X3125	MCA259X4125
150	160	MCA259X3160	MCA259X4160
150	250	MCA259X3250	MCA259X4250

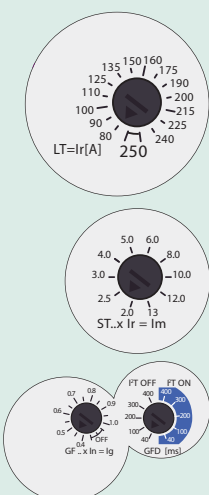
Generator protection (thermal magnetic)			
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	160	MCG259S3160	MCG259S4160
50	200	MCG259S3200	MCG259S4200
50	250	MCG259S3250	MCG259S4250
80	160	MCG259H3160	MCG259H4160
80	200	MCG259H3200	MCG259H4200
80	250	MCG259H3250	MCG259H4250
150	160	MCG259X3160	MCG259X4160
150	200	MCG259X3200	MCG259X4200
150	250	MCG259X3250	MCG259X4250

Motor protection (SI) (electronic only magnetic)			
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	125	MCB259S3125	MCB259S4125
50	160	MCB259S3160	MCB259S4160
50	250	MCB259S3250	MCB259S4250
80	160	MCB259H3125	MCB259H4125
80	125	MCB259H3160	MCB259H4160
80	250	MCB259H3250	MCB259H4250
150	63	MCB259X3125	MCB259X4125
150	160	MCB259X3160	MCB259X4160
150	250	MCB259X3250	MCB259X4250

Non-automatic Breaker			
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	250	MCT2593250	MCT2594250

Residual Current Device (see also Accessories)			
	Un (V)	3 Poles	4 Poles
Bottom mounting	440	DB3/M92-2	DB4/M92-2
	690	DB3/M92-4	DB4/M92-4
Idn settings (A) 0,030 - 0,300 - 1 - 3 - 10			
Relay (ms) instantaneous - 60 - 150 - 300 - 600			

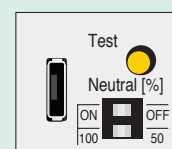
Line protection and ground fault (LSIG) (electronic)			
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	125	MCC259S3125	MCC259S4125
50	160	MCC259S3160	MCC259S4160
50	250	MCC259S3250	MCC259S4250
80	160	MCC259H3125	MCC259H4125
80	125	MCC259H3160	MCC259H4160
80	250	MCC259H3250	MCC259H4250
150	63	MCC259X3125	MCC259X4125
150	160	MCC259X3160	MCC259X4160
150	250	MCC259X3250	MCC259X4250



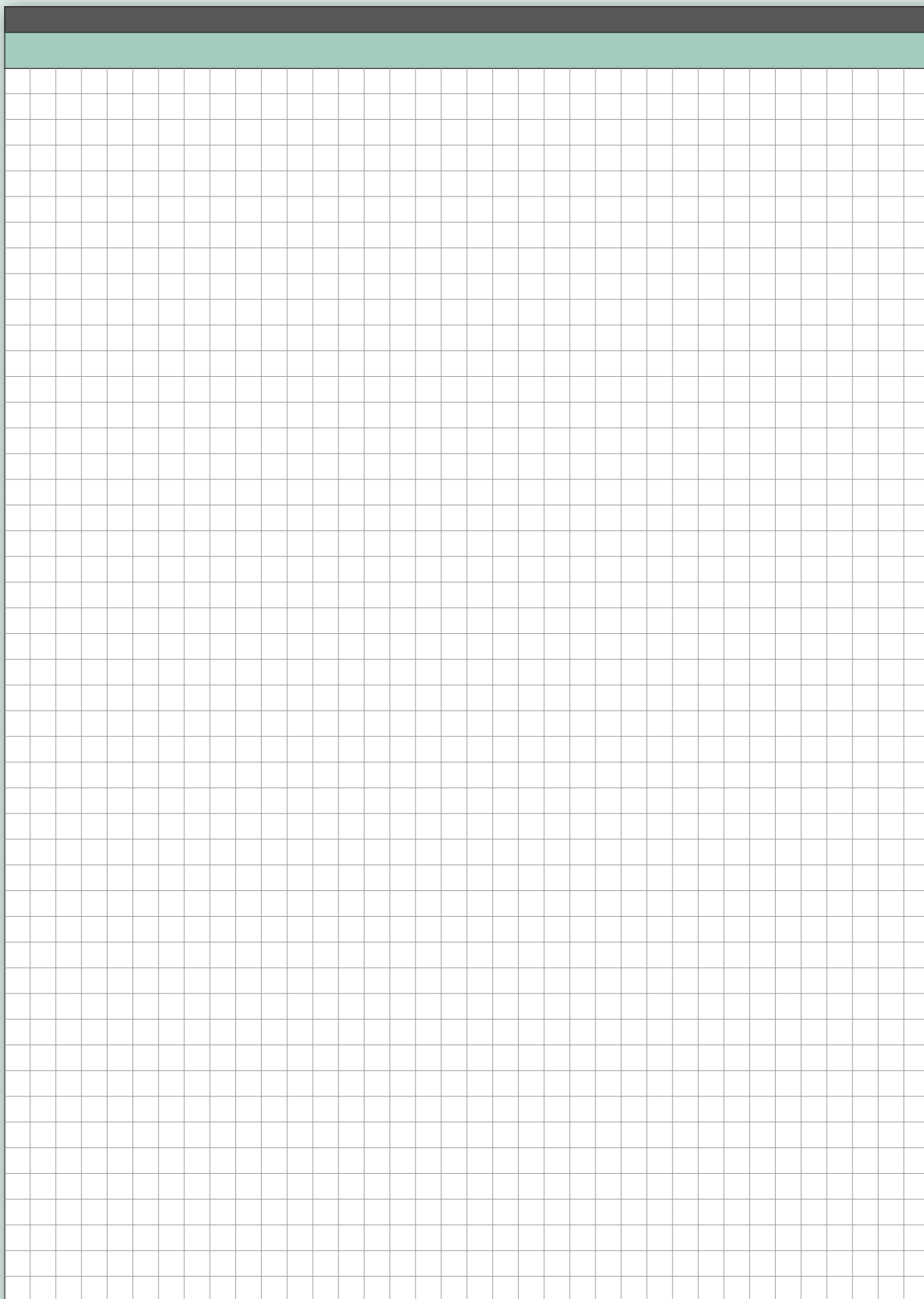
- An overload protection (LT) with a range of 0.3 to 1 times the chosen trip unit rating. Each of the possible 15 positions has a rating mentioned in Amps.
- A delayed short-circuit protection (ST) with a wide setting band of 2 to 13 times the LT device setting or Ir value. A fixed time setting per breaker size is applied.
- A selective instantaneous device (I) set at a fixed value of 14 times the chosen trip unit rating, using waveform recognition to assure selectivity.
- An optional ground fault protection device (GF) (residual principle) can be set from 0.4 to 1 times the chosen trip unit rating and be used with multiple delay and/or I²t settings.

Each device is equipped with a LED indicator that flashes when the current reaches 0.95 times Ir and illuminates constantly when an overload trip is imminent (at 1.05 times Ir). The electronics also continuously perform self diagnostics and warn the user of any defect by the LED indicator.

An integrated temperature sensor prevents the electronic components from reaching temperatures that could damage the breaker or its surroundings. Simply connect a standard mobile phone charger to the micro USB port and the "TEST" button goes live. Depress it and it checks the full electronic circuit and then trips the connected breaker.



Note



Series MC409 and MC639



The MC409 and MC639 breakers have respectively 400A and 630A rated current, in the same size.

They can be equipped with two type of electronic protection trip unit: the standard type and the SMR2 type.

The standard electronic protection is a new generation of trip unit, with a very wide range of threshold (from 0,3 to 1 In), and many functions like LS (Long time delay, Short time delay), LSI (with additional Istantaneous protection channel), LSIG (with Ground protection channel).

On the front of the trip unit, there is a micro USB port where it is possible to connect a PC and supply the unit to check the tripping functions.

All the standard electronic type breakers have the possibility to adjust the Neutral protection as 0%, 50%, 100% of the rated current.

The SMR2 trip unit is used when it is necessary to adjust the time delay of the protection. It has also many additional modules to increase communication or protections.

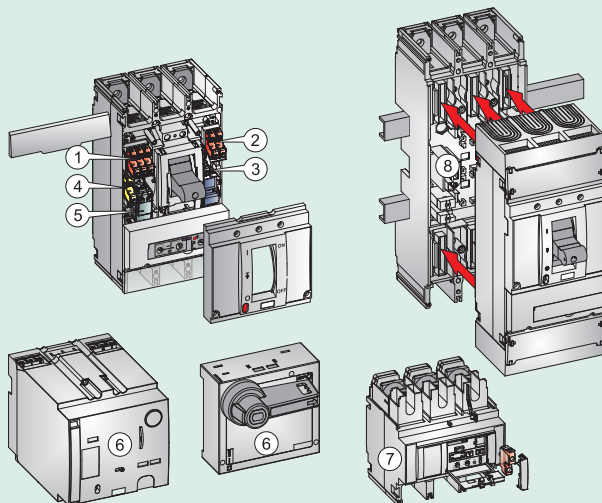
Protection	Series	Rated current In (A)	Protezione sovraccarico L (A)	Protezione cortocircuito Im (A)	Emergency setting I (A)	Canale di terra G Ir (A)	Breaking capacity (Icu a 415V AC)
Electronic LSI	MCA409	250, 400	0,3... 1In	2... 13Ir	fissa 14Ir	-	50 80 150
	MCA639	400, 630	0,3... 1In	2... 10Ir	fissa 11Ir	-	50 80 150
Electronic SI	MCB409	250, 400	-	2... 13Ir	fissa 14Ir	-	50 80 150
	MCB639	400, 630	-	2... 10Ir	fissa 11Ir	-	50 80 150
Electronic LSIG	MCC409	250, 400	0,3... 1In	2... 13Ir	fissa 14Ir	0,4... 1Ir	50 80 150
	MCC639	400, 630	0,3... 1In	2... 10Ir	fissa 11Ir	0,4... 1Ir	50 80 150
Electronic SMR2 ¹	MCF409	250, 350	0,4... 1In	1,5... 12Ir	2... 13Ir	0,2... 1Ir ²	50 80 150
		400	0,4... 1In	1,5... 10Ir	2... 11Ir	0,2... 1Ir ²	50 80 150
Electronic SMR2 ¹	MCF639	400, 500	0,4... 1In	1,5... 12Ir	2... 13Ir	0,2... 1Ir ²	50 80 150
		630	0,4... 1In	1,5... 10Ir	2... 11Ir	0,2... 1Ir ²	50 80 150

1) la protezione tipo SMR2 è dotata di regolazione del tempo di intervento per canali L e S

2) con modulo di espansione

Accessories:

- 1: Auxiliary contact left mounted (NO o NC), 1, 2 or 3 pieces
- 2: Auxiliary contact right mounted (NO o NC), 1 or 2 pieces
- 3: Bell alarm thermal magnetic trip unit (NO o NC)
- 4: Bell alarm mechanism (1CO)
- 5: Shunt or Undervoltage release
- 6: Electrical operator or Rotary handle
- 7: Residual Current Devices: bottom mounted (below trip unit) (insert indicates bell alarm countact mounting)
- 8: Plug-in or draw-out system



MC409: Moulded Case Circuit Breakers up to 400A

Line protection (LSI) (electronic)			
Capacità di rottura (kA)	In (A)	3 Poles	4 Poles
50	250	MCA409S3250	MCA409S4250
50	400	MCA409S3400	MCA409S4400
80	250	MCA409H3250	MCA409H4250
80	400	MCA409H3400	MCA409H4400
150	250	MCA409X3250	MCA409X4250
150	400	MCA409X3400	MCA409X4400

Selective electronic trip unit type SMR2 (without rating plug)			
Capacità di rottura (kA)	In (A)	3 Poles	4 Poles
50	250	MCF409S3250	MCF409S4250
50	350	MCF409S3350	MCF409S4350
50	400	MCF409S3400	MCF409S4400
80	250	MCF409H3250	MCF409H4250
80	350	MCF409H3350	MCF409H4350
80	400	MCF409H3400	MCF409H4400
150	250	MCF409X3250	MCF409X4250
150	350	MCF409X3350	MCF409X4350
150	400	MCF409X3400	MCF409X4400

Motor protection (SI) (electronic only magnetic)			
Capacità di rottura (kA)	In (A)	3 Poles	4 Poles
50	250	MCB409S3250	MCB409S4250
50	400	MCB409S3400	MCB409S4400
80	250	MCB409H3250	MCB409H4250
80	400	MCB409H3400	MCB409H4400
150	250	MCB409X3250	MCB409X4250
150	400	MCB409X3400	MCB409X4400

Rating plugs ⁽¹⁾ (for trip unit type SMR2)			
	In (A)	3 Poles	4 Poles
Line/Motor protection, adjustable	160	RPF43250-160	RPF44250-160
	250	RPF43250-250	RPF44250-250
	250	RPF43350-250	RPF44350-250
Ir=0,64÷1xIn	350 ⁽¹⁾	RPF43400-350	RPF44400-350
	400 ⁽²⁾	RPF43400-400	RPF44400-400

(1) Specifica per protezione motori

(2) In = 400A for line protection only

Line protection and ground fault (LSIG) (electronic)			
Capacità di rottura (kA)	In (A)	3 Poles	4 Poles
50	250	MCC409S3250	MCC409S4250
50	400	MCC409S3400	MCC409S4400
80	250	MCC409H3250	MCC409H4250
80	400	MCC409H3400	MCC409H4400
150	250	MCC409X3250	MCC409X4250
150	400	MCC409X3400	MCC409X4400

Extension modules (for trip unit SMR2)	
Description	Catalogue number
Ammeter with digital display	FAMAM2
Bell alarm earth fault + Modbus communication (Rtu)	FAMGAM2
Bell alarm earth fault + 2 channel load shedding device	FAMGAS2
Bell alarm earth fault + fault type indicators	FAMGAT2
Groundfault protection + Modbus communication (Rtu)	FAMGFM2
Groundfault protection + 2 channel load shedding device	FAMGFS2
Groundfault protection + fault type indicators	FAMGFT2
2 channel load shedding device + Modbus communication (Rtu)	FAMSM2
2 channel load shedding device + fault type indicators	FAMST2
Fault type indicators + Modbus communication (Rtu)	FAMMT2
Spare filler module	FAMB2
External communications module	FAMECM

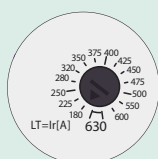
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Non-automatic breakers			
	In (A)	3 Poles	4 Poles
	400	MCT4093400	MCT4094400

Residual Current Device (see also Accessories)			
	Un (V)	3 Poles	4 Poles
Bottom mounting	440	DB3/M96-2	DB4/M96-2
	690	DB3/M96-4	DB4/M96-4

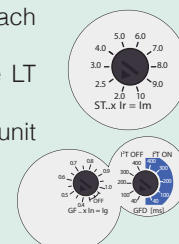
Idn settings (A) 0,030 - 0,300 - 1 - 3 - 10

Delay (ms) istantaneous - 60 - 150 - 300 - 600



- An overload protection (LT) with a range of 0.3 to 1 times the chosen trip unit rating. Each of the possible 15 positions has a rating mentioned in Amps.
- A delayed short-circuit protection (ST) with a wide setting band of 2 to 13 times the LT device setting or Ir value. A fixed time setting per breaker size is applied.
- A selective instantaneous device (I) set at a fixed value of 14 times the chosen trip unit rating, using waveform recognition to assure selectivity.

- An optional ground fault protection device (GF) (residual principle) can be set from 0.4 to 1 times the chosen trip unit rating and be used with multiple delay and/or I²t settings.



MC639: Moulded Case Circuit Breakers up to 630A

Line protection (LSI) (electronic)			
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	400	MCA639S3400	MCA639S4400
50	630	MCA639S3630	MCA639S4630
80	400	MCA639H3400	MCA639H4400
80	630	MCA639H3630	MCA639H4630
150	400	MCA639X3400	MCA639X4400
150	630	MCA639X3630	MCA639X4630

Selective electronic trip unit type SMR2 (without rating plug)			
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	400	MCF639S3400	MCF639S4400
50	500	MCF639S3500	MCF639S4500
50	630	MCF639S3630	MCF639S4630
80	400	MCF639H3400	MCF639H4400
80	500	MCF639H3500	MCF639H4500
80	630	MCF639H3630	MCF639H4630
150	400	MCF639X3400	MCF639X4400
150	500	MCF639X3500	MCF639X4500
150	630	MCF639X3630	MCF639X4630

Motor protection (SI) (electronic only magnetic)			
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	400	MCB639S3400	MCB639S4400
50	630	MCB639S3630	MCB639S4630
80	400	MCB639H3400	MCB639H4400
80	630	MCB639H3630	MCB639H4630
150	400	MCB639X3400	MCB639X4400
150	630	MCB639X3630	MCB639X4630

Rating plugs ⁽¹⁾ (for trip unit type SMR2)			
	In (A)	3 Poles	4 Poles
Line/Motor protection, adjustable	250	RPF63400-250	RPF64400-250
Ir=0,64÷1xIn	400	RPF63400-400	RPF64400-400
	400	RPF63500-400	RPF64500-400
	500 ⁽¹⁾	RPF63500-500	RPF64500-500
	630 ⁽²⁾	RPF63630-630	RPF64630-630

(1) Specifica per protezione motori

(2) Motor protection mode limited to 500A

Line protection and ground fault (LSIG) (electronic)			
Breaking capacity (kA)	In (A)	3 Poles	4 Poles
50	400	MCC639S3400	MCC639S4400
50	630	MCC639S3630	MCC639S4630
80	400	MCC639H3400	MCC639H4400
80	630	MCC639H3630	MCC639H4630
150	400	MCC639X3400	MCC639X4400
150	630	MCC639X3630	MCC639X4630

Extension modules (for trip unit SMR2)	
Description	Catalogue number
Ammeter with digital display	FAMAM2
Bell alarm earth fault + Modbus communication (Rtu)	FAMGAM2
Bell alarm earth fault + 2 channel load shedding device	FAMGAS2
Bell alarm earth fault + fault type indicators	FAMGAT2
Groundfault protection + Modbus communication (Rtu)	FAMGFM2
Groundfault protection + 2 channel load shedding device	FAMGFS2
Groundfault protection + fault type indicators	FAMGFT2
2 channel load shedding device + Modbus communication (Rtu)	FAMSM2
2 channel load shedding device + fault type indicators	FAMST2
Fault type indicators + Modbus communication (Rtu)	FAMMT2
Spare filler module	FAMB2
External communications module	FAMECM

Ciascun codice include un modulo di espansione e dove richiesto il necessario per la connessione

Non-automatic breakers			
	In (A)	3 Poles	4 Poles
	630	MCT6393630	MCT6394630

Residual Current Device (see also Accessories)			
	Un (V)	3 Poles	4 Poles
Bottom mounting	440	DB3/M96-2	DB4/M96-2
	690	DB3/M96-4	DB4/M96-4

Idn settings (A) 0,030 - 0,300 - 1 - 3 - 10

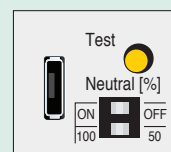
Delay (ms) instantaneous - 60 - 150 - 300 - 600



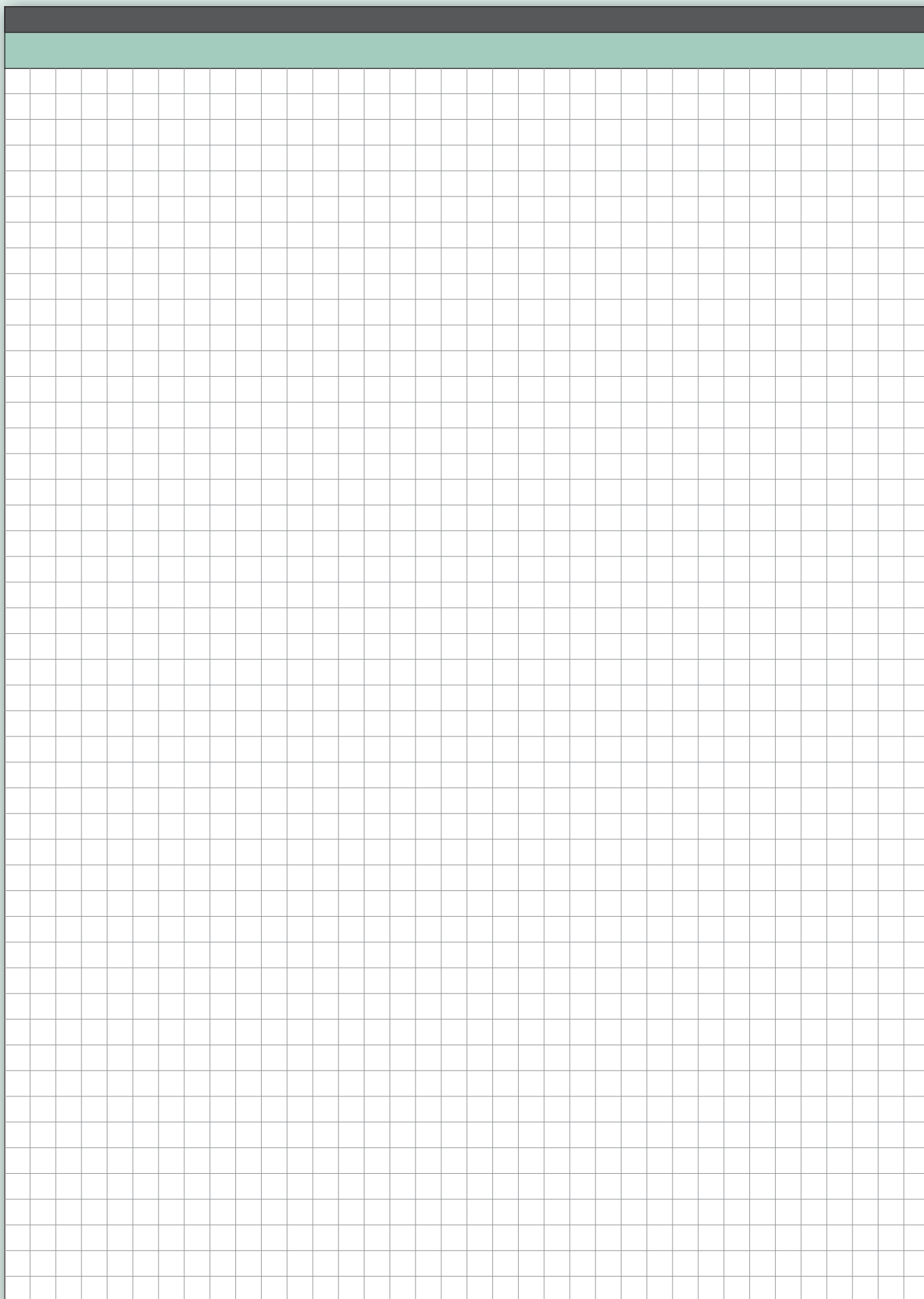
Each device is equipped with a LED indicator that flashes when the current reaches 0.95 times Ir and illuminates constantly when an overload trip is imminent (at 1.05 times Ir). The electronics also continuously perform self diagnostics and warn the user of any defect by the LED indicator.

An integrated temperature sensor prevents the electronic components from reaching temperatures that could damage the breaker or its surroundings.

Simply connect a standard mobile phone charger to the micro USB port and the "TEST" button goes live. Depress it and it checks the full electronic circuit and then trips the connected breaker.



Note



Series MC809, MC1259 and MC1609



The MC809, MC1259 and MC1609 breakers have respectively 800A, 1250A and 1600A rated current, in the same size.

They can be equipped with thermomagnetic or electronic protection relay, type Line protection, Generator, Magnetic motor protection, isolator.

The electronic protection has three different versions: SMR1e for LT and ST channels, SMR1s with adjustable delay time, SMR1g with ground protection channel.

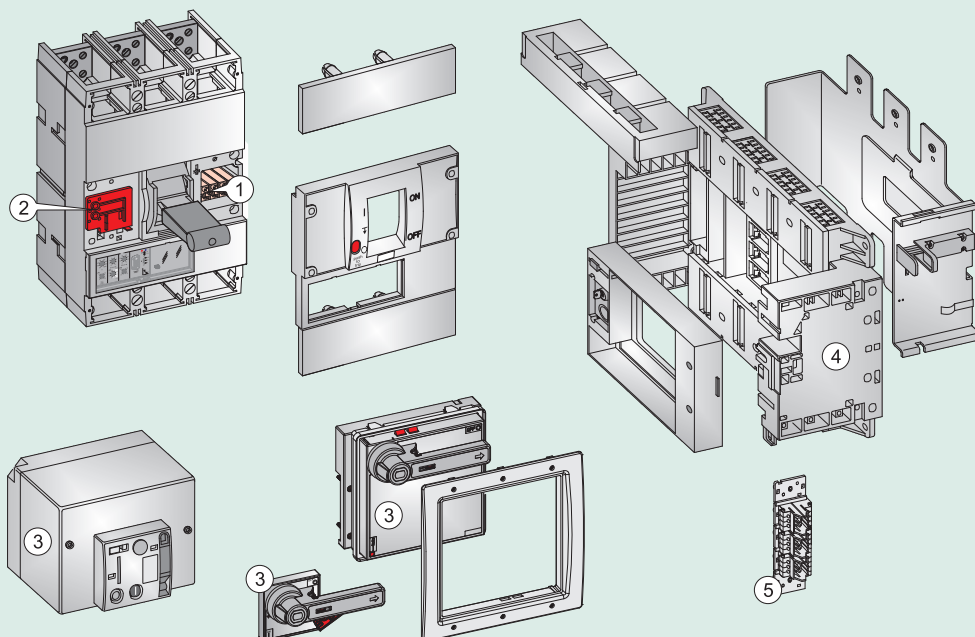
The breakers are available as 3 or 4 poles version with neutral protection as 0%, 50%, 100% of the rated current.

The size and overall dimensions are the same for all breakers from 800A to 1600A.

Protection	Series	Rated current In (A)	Thermal setting Ir (A)	Magnetic setting Im (A)	Breaking capacity Icu (kA a 415V AC)		
Line	MCL809/1259/ -	800 / 1250 / -	08... 1 In	5... 10 In	50	80	100
Motor	MCM809/1259/ -	800 / 1250 / -	-	5... 10 In	50	80	100
Electronic SMR1e	MCE809/1259/1609	800 / 1250 / 1600	0,4... 1 In	1,5... 10 Ir	50	80	100
Electronic SMR1s	MCE809/1259/1609	800 / 1250 / 1600	0,4... 1 In	1,5... 10 Ir	50	80	-
Electronic SMR1g	MCE809/1259/1609	800 / 1250 / 1600	0,4... 1 In	1,5... 10 Ir	50	80	-

Accessories:

- 1: Bell alarm contact with a maximum of 3 auxiliary contact (1CO)
- 2: Shunt or Undervoltage release
- 3: Electrical operator or Rotary handle
- 4: Draw-out system
- 5: Connectors for auxiliary wiring



MC809: Moulded Case Circuit Breakers up to 800A

Line protection (thermal magnetic)			
Breaking capacity (kA)	In (A)	3 Poles	3 Poles + N
50	630	MCL809S3630	MCL809S4630
50	800	MCL809S3800	MCL809S4800
80	630	MCL809H3630	MCL809H4630
80	800	MCL809H3800	MCL809H4800
100	630	MCL809X3630	MCL809X4630
100	800	MCL809X3800	MCL809X4800

Motor protection (magnetic only)			
Breaking capacity (kA)	In (A)	3 Poles	3 Poles + N
50	800	MCM809S3800	MCM809S4800
80	800	MCM809H3800	MCM809H4800
100	800	MCM809X3800	MCM809X4800

Non-automatic Breaker			
	In (A)	3 Poles	4 Poles
	800	MCT8093800	MCT8094800

Electronic trip unit type SMR1e			
Breaking capacity (kA)	In (A)	3 Poles	3 Poles + N selectable ⁽¹⁾
50	800	MCE809S3800	MCE809S4800
80	800	MCE809H3800	MCE809H4800
100	800	MCE809X3800	MCE809X4800

Electronic trip unit type SMR1s			
Breaking capacity (kA)	In (A)	3 Poles	3 Poles + N selectable ⁽¹⁾
50	800	MCE809S3800D	MCE809S4800D
80	800	MCE809H3800D	MCE809H4800D

Electronic trip unit type SMR1g			
Breaking capacity (kA)	In (A)	3 Poles	3 Poles + N selectable ⁽¹⁾
50	800	MCE809S3800G	MCE809S4800G
80	800	MCE809H3800G	MCE809H4800G

MC1259: Moulded Case Circuit Breakers up to 1250A

Line protection (thermal magnetic)			
Breaking capacity (kA)	In (A)	3 Poles	3 Poles + N
50	1000	MCL1259S31000	MCL1259S41000
50	1250	MCL1259S31250	MCL1259S41250
80	1000	MCL1259H31000	MCL1259H41000
80	1250	MCL1259H31250	MCL1259H41250
100	1000	MCL1259X31000	MCL1259X41000
100	1250	MCL1259X31250	MCL1259X41250

Motor protection (magnetic only)			
Breaking capacity (kA)	In (A)	3 Poles	3 Poles + N
50	1250	MCM1259S31250	MCM1259S41250
80	1250	MCM1259H31250	MCM1259H41250
100	1250	MCM1259X31250	MCM1259X41250

Non-automatic Breaker			
	In (A)	3 Poles	4 Poles
	1000	MCT125931000	MCT125941000
	1250	MCT125931250	MCT125941250

Electronic trip unit type SMR1e			
Breaking capacity (kA)	In (A)	3 Poles	3 Poles + N selectable ⁽¹⁾
50	1000	MCE1259S31000	MCE1259S41000
50	1250	MCE1259S31250	MCE1259S41250
80	1000	MCE1259H31000	MCE1259H41000
80	1250	MCE1259H31250	MCE1259H41250
100	1000	MCE1259X31000	MCE1259X41000
100	1250	MCE1259X31250	MCE1259X41250

Electronic trip unit type SMR1s			
Breaking capacity (kA)	In (A)	3 Poles	3 Poles + N selectable ⁽¹⁾
50	1000	MCE1259S31000D	MCE1259S41000D
50	1250	MCE1259S31250D	MCE1259S41250D
80	1000	MCE1259H31000D	MCE1259H41000D
80	1250	MCE1259H31250D	MCE1259H41250D

Electronic trip unit type SMR1g			
Breaking capacity (kA)	In (A)	3 Poles	3 Poles + N selectable ⁽¹⁾
50	1000	MCE1259S31000G	MCE1259S41000G
50	1250	MCE1259S31250G	MCE1259S41250G
80	1000	MCE1259H31000G	MCE1259H41000G
80	1250	MCE1259H31250G	MCE1259H41250G

(1) Neutral protection selectable at 0% 50% 100%

MC1609: Moulded Case Circuit Breakers up to 1600A

Electronic trip unit type SMR1e

Breaking capacity (kA)	In (A)	3 Poles	3 Poles + N selectable ⁽¹⁾
50	1600	MCE1609S31600	MCE1609S41600
80	1600	MCE1609H31600	MCE1609H41600

Electronic trip unit type SMR1g

Breaking capacity (kA)	In (A)	3 Poles	3 Poles + N selectable ⁽¹⁾
50	1600	MCE1609S31600G 4.086,50	MCE1609S41600G
80	1600	MCE1609H31600G 4.411,31	MCE1609H41600G

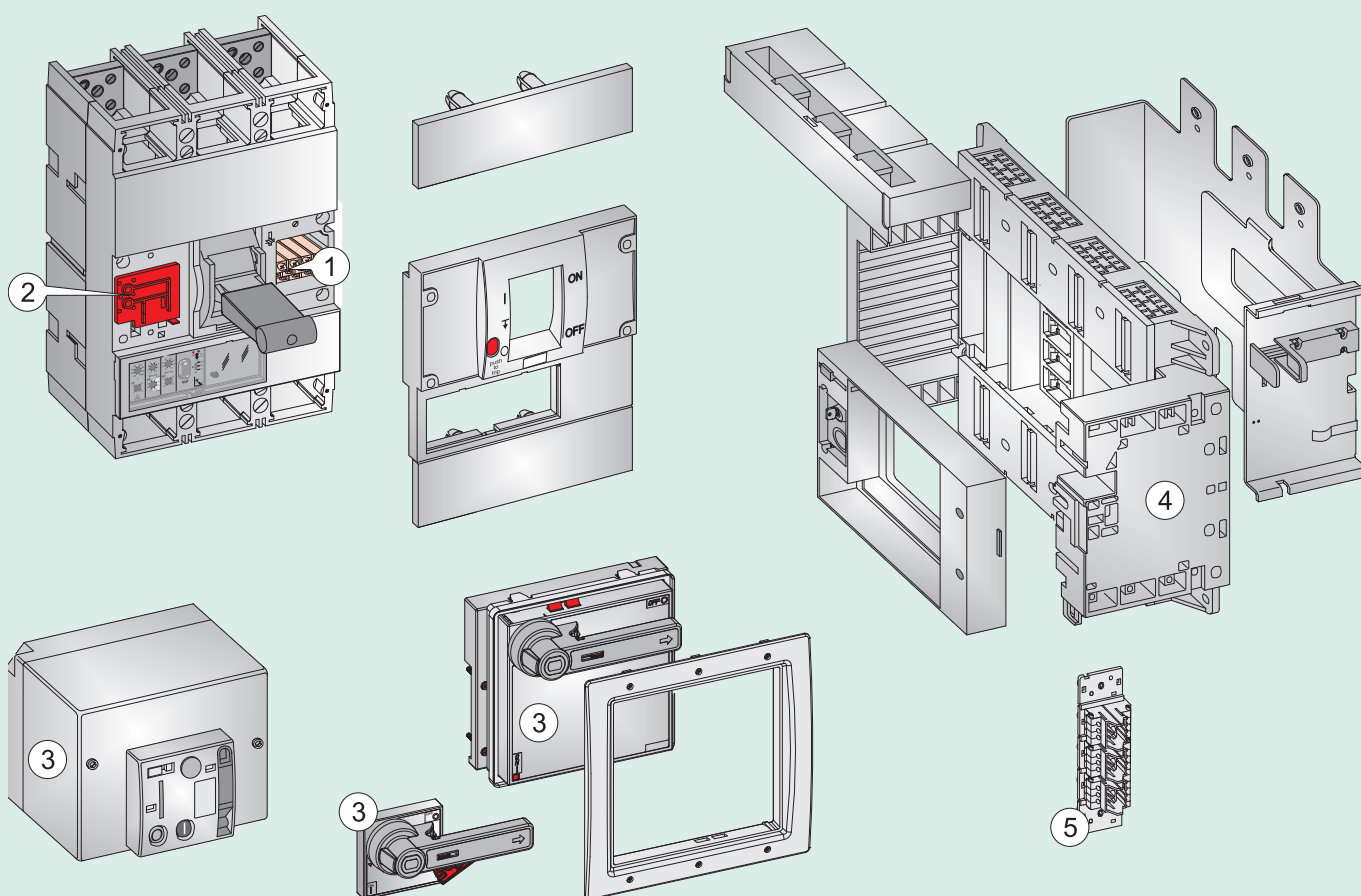
Electronic trip unit type SMR1s

Breaking capacity (kA)	In (A)	3 Poles	3 Poles + N selectable ⁽¹⁾
50	1600	MCE1609S31600D	MCE1609S41600D
80	1600	MCE1609H31600D	MCE1609H41600D

Non-automatic Breaker

In (A)	3 Poles	4 Poles
1600	MCT160931600	MCT160941600

(1) Neutral protection selectable at 0% 50% 100%

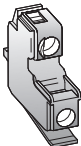
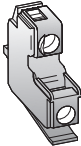


Accessories:

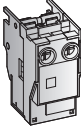
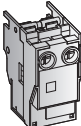
- 1: Bell alarm contact with a maximum of 3 auxiliary contact (1CO)
- 2: Shunt or Undervoltage release
- 3: Electrical operator or Rotary handle
- 4: Draw-out system
- 5: Connectors for auxiliary wiring

Accessories

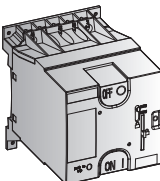
Auxiliary contacts

	Description	For mounting with circuit breaker type							
		MM169		MC169 MC259		MC409 MC639		MC809 MC1259 MC1609	
	Auxiliary contact right mounted 1NO	FAS10R		FAS10R		FAS10R			
	Auxiliary contact left mounted 1NO	FAS10L		FAS10L		FAS10L			
	Bell alarm electronic trip unit 1NO			FABAT10		FABAT10			
	Bell alarm thermal magnetic trip unit 1NO	FABAT10		FEBAT10		FEBAT10			
	Bell alarm mechanism 1NO			FABAM10		FABAM10			
	Bell alarm RCD device 1NO	FABAT10		FABAT10		FABAT10			
	Auxiliary contact right mounted 1NC	FAS01R		FAS01R		FAS01R			
	Auxiliary contact left mounted 1NC	FAS01L		FAS01L		FAS01L			
	Bell alarm electronic trip unit 1NC			FABAT01		FABAT01			
	Bell alarm thermal magnetic trip unit 1NC	FABAT01		FEBAT01		FEBAT01			
	Bell alarm mechanism 1NC			FABAM01		FABAM01			
	Bell alarm RCD device 1NC	FABAT01		FABAT01		FABAT01			
	Bell alarm mechanism 1CO	FDBAM11							
	Auxiliary contact right mounted 1CO							FNS11R	
	Cont. scattato relè destro 1CO							FNBA11R	

Releases

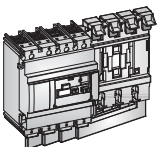
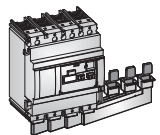
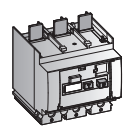
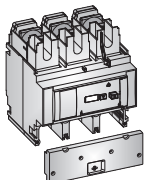
	Description	For mounting with circuit breaker type							
		MM169		MC169 MC259		MC409 MC639		MC809 MC1259 MC1609	
	Shunt trip								
	12V DC	FASHTB		FASHTB		FASHTB			
	24V AC/DC	FASHTD		FASHTD		FASHTD		FNSHTD	
	48V AC/DC	FASHTF		FASHTF		FASHTF		FNSHTF	
	110/130V AC/DC	FASHTJ		FASHTJ		FASHTJ		FNSHTJ	
	220/240V AC 250V DC	FASHTN		FASHTN		FASHTN		FNSHTN	
	400/480V AC	FASHTU		FASHTU		FASHTU			
	380/440V AC/DC							FNSHT8	
	Undervoltage relay								
	24V AC							FNUVR1	
	24V DC							FNUVRD	
	24V AC/DC	FAUVRD		FAUVRD		FAUVRD			
	48V DC							FNUVRF	
	48V AC/DC	FAUVRF		FAUVRF		FAUVRF			
	110/130V AC/DC	FAUVRJ		FAUVRJ		FAUVRJ			
	con ritardo 110V AC							FNUVRJ	
	230V AC							FNUVR6	
	220/240V AC 250V DC	FAUVRN		FAUVRN		FAUVRN			
	400V AC							FNUVR8	
	400/480V AC	FAUVRU		FAUVRU		FAUVRU			
	con ritardo 220/240V AC	FAUVDN		FAUVDN		FAUVDN			
	con ritardo 230V AC							FNUVD6	

Electrical operators

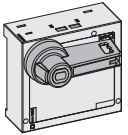
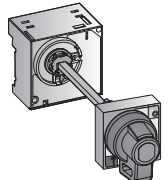
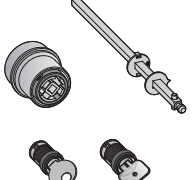
	Description	For mounting with circuit breaker type							
		MM169		MC169 MC259		MC409 MC639		MC809 MC1259	MC1609
	Motor 24V AC/DC	F/MM9-24U		F/M92-24U		F/M96-24U			F/M9K-24A
	Motor 24V AC							F/M98-24A	
	Motor 48V AC/DC	F/MM9-48U		F/M92-48U		F/M96-48U			F/M9K-48A
	Motor 48V AC							F/M98-48A	
	Motor 60V AC/DC	F/MM9-60U		F/M92-60U		F/M96-60U			
	Motor 110V AC/DC	F/MM9-110U		F/M92-110U		F/M96-110U			F/M9K-110A
	Motor 110V AC							F/M98-110A	
	Motor 220/250 AC/DC	F/MM9-220U		F/M92-220U		F/M96-220U			
	Motor 230V AC/DC								F/M9K-230A
	Motor 230V AC							F/M98-230A	
	Motor 400/440V AC	F/MM9-400A		F/M92-400A		F/M96-400A			
	Mounting kit 3P							FKUE3	FKUE3
	Mounting kit 4P							FKUE4	FKUE4
	Keylock type Ronis	FD1BRE		FE1BRE		FG1BRE		FN1BRE	FN1BRE
	Keylock type Profalux					FG1BPE		FN1BPE	FN1BPE

Accessories

Residual Current Devices

	Description	For mounting with circuit breaker type							
		MM169		MC169 MC259		MC409 MC639		MC809 MC1259 MC1609	
	Side mounting on DIN rail 440V 3P ⁽¹⁾	DG3/MM9-2							
	Side mounting on DIN rail 440V 4P ⁽¹⁾	DG4/MM9-2							
	Side mounting on DIN rail 690V 3P ⁽¹⁾	DG3/MM9-4							
	Side mounting on DIN rail 690V 4P ⁽¹⁾	DG4/MM9-4							
	Side connection on DIN rail 440V 3P ⁽²⁾	DD3/MM9-2							
	Side connection on DIN rail 440V 4P ⁽²⁾	DD4/MM9-2							
	Bottom mounted 440V 3P	DB3/MM9-2				DB3/M96-2			
	Bottom mounted 440V 3P x MC169			DB3/M91-2					
	Bottom mounted 440V 3P x MC259			DB3/M92-2					
	Bottom mounted 440V 4P	DB4/MM9-2				DB4/M96-2			
	Bottom mounted 440V 4P x MC169			DB4/M91-2					
	Bottom mounted 440V 4P x MC259			DB4/M92-2					
	Bottom mounted 690V 3P	DB3/MM9-4				DB3/M96-4			
	Bottom mounted 690V 3P x MC169			DB3/M91-4					
	Bottom mounted 690V 3P x MC259			DB3/M92-4					
	Bottom mounted 690V 4P	DB4/MM9-4				DB4/M96-4			
	Bottom mounted 690V 4P x MC169			DB4/M91-4					
	Bottom mounted 690V 4P x MC259			DB4/M92-4					
(1) Multidirectional supply kit									
(2) Interconnection kit for top or bottom use									

Rotary Handles

	Description	For mounting with circuit breaker type							
		MM169		MC169 MC259		MC409 MC639		MC809 MC1259 MC1609	
	Rotary handle, direct on device, grey	MDG/MM9		MDG/M92		MDG/M96		MDG/M9K	
	Rotary handle, direct on device, red	MDR/MM9		MDR/M92		MDR/M96		MDR/M9K	
	Rotary handle for use through door/cover, grey	MDBG/MM9		MDBG/M92		MDBG/M96		MDBG/M9K	
	Rotary handle for use through door/cover, red	MDBR/MM9		MDBR/M92		MDBR/M96		MDBR/M9K	
	Rotary handle for use through door/cover, grey + auxiliary contact 2NO	MDBHG/MM9		MDBHG/M92		MDBHG/M96		MDBHG/M9K	
	Rotary handle for use through door/cover, red + auxiliary contact 2NO	MDBHR/MM9		MDBHR/M92		MDBHR/M96		MDBHR/M9K	
	Rotary handle, panel or door mounted, grey (P max 350mm)	MRBG/MM9		MRBG/M92		MRBG/M96		MRBG/M9K	
	Rotary handle, panel or door mounted, red (P max 350mm)	MRBR/MM9		MRBR/M92		MRBR/M96		MRBR/M9K	
	Rotary handle, panel or door mounted, grey + auxiliary contact 2NO	MRBHG/MM9		MRBHG/M92		MRBHG/M96		MRBHG/M9K	
	Rotary handle, panel or door mounted, red + auxiliary contact 2NO	MRBHR/MM9		MRBHR/M92		MRBHR/M96		MRBHR/M9K	
	Extension shaft kit (P max 600mm)	FDNRE		FDNRE		FGNRE		FNNRE	
	Adaptor for draw-out			ADW/M92		ADW/M96		ADW/M9K	
	Keylock type Ronis	FA1BRH		FA1BRH		FA1BRH		FA1BRH	

Accessories

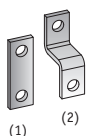
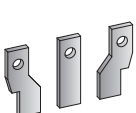
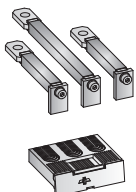
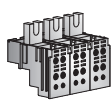
Installation accessories

	Description	For mounting with circuit breaker type							
		MM169		MC169 MC259		MC409 MC639		MC809 MC1259 MC1609	
	Terminal shields, long, 3P (2 pcs)	FDJL3		FEJL3				FNJL3	
	Terminal shields, long, 4P (2 pcs)	FDJL4		FEJL4				FNJL4	
	Terminal shields, medium, 3P (2 pcs)					FGJM3			
	Terminal shields, medium, 4P (2 pcs)					FGJM4			
	Terminal shields, short, 3P (2 pcs)	FDJS3		FEJS3		FGJS3			
	Terminal shields, short, 4P (2 pcs)	FDJS4		FEJS4		FGJS4			
	Phase separators (12 pcs)	FDJP		FEJP		FGJP		FNJP	
	Backplate (2 pcs)	FDJB		FEJB		FGJB			
	Finger protection IPXXB (12pcs)	FDJK							
	Covers, cut-out adaptor, breaker + trip unit 3P	FDUF3							
	Covers, cut-out adaptor, breaker + trip unit 4P	FDUF4							
	Cut-out filler for cover plate (64mm) L = 1,2m	FBF6		FBF6		FBF6			
	Padlocking removeable							FN1PR	
	Padlocking fixed	FD1PF		FE1PF		FG1PF			
	Set 20 blank labels	FAC		FAC		FAC		FAC	
	Heightning set (18 modules) for breakers series Elfa 90 (L = 354mm)	FDKE							
	Breaker front face, 3P	FDFF3		FEFF3					
	Breaker front face, 4P	FDFF4		FEFF4					
	RCD front face, 3P	FDFF3		FEFF3					
	RCD front face, 4P	FDFF4		FEFF4					
	Door flanges front face toggle handle area			FEFT		FGFT		FNFT	
	Door flanges for rotary handle	FDFH		FDFH		FGFH		FNFH	
	Door flanges for electrical operator	FDFE		FEFE		FGFE		FNFE	
	DIN rail adaptor kit, 3P	FDKD3 (a)							
	DIN rail adaptor kit, 4P	FDKD4 (a)							
	Spare toggle handle (5 pcs)	FDUT (b)		FEUT (b)		FGUT (b)		FNUT (c)	
	Finishing cover (2 pcs) 3P	FDUA3 (d)		FEUA3 (d)		FGUA3 (d)		FNUA3 (d)	
	Finishing cover (2 pz.) 4P	FDUA4 (d)		FEUA4 (d)		FGUA4 (d)		FNUA4 (d)	

Accessories for electronics trip units

	Description	For mounting with circuit breaker type							
		MM169		MC169 MC259		MC409 MC639		MC809 MC1259 MC1609	
	USB cable for MCA9, MCB9, MCC9			FAUSB		FAUSB			
	Rating plug tool			FAR		FAR			
	Battery test device			FAT		FAT		FNT	
	Ground fault sensor 800A							FNGS0800	
	Ground fault sensor 1000A							FNGS1000	
	Ground fault sensor 1250A							FNGS1250	

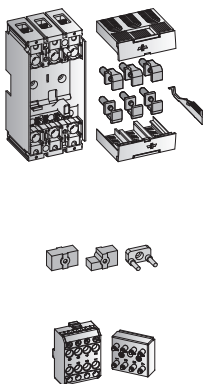
Accessories

Connections								
	Description	For mounting with circuit breaker type						
		MM169		MC169 MC259		MC409 MC639		MC809 MC1259 MC1609
  	Extenders, standard flat type 3P (1) *	FDBES3		FEBES3		FGBES3		
	Extenders, standard flat type 3P (1) * for MC809 - MC1259							FNBES3P
	Extenders, standard flat type 3P (1) * for MC1259 - MC1609							FNBES3R
	Extenders, standard flat type 4P (1) *	FDBES4		FEBES4		FGBES4		
	Extenders, standard flat type 4P (1) * for MC809 - MC1259							FNBES4P
	Extenders, standard flat type 4P (1) * for MC1259 - MC1609							FNBES4R
	Extenders, heightened type 3P (2) *	FDBEH3		FEBEH3		FGBEH3		
	Extenders, heightened type 4P (2) *	FDBEH4		FEBEH4		FGBEH4		
	Extenders, twisted 90° type 3P (3) *	FDBEA3		FEBEA3		FGBEA3		
	Extenders, twisted 90° type 4P (3) *	FDBEA4		FEBEA4		FGBEA4		
	Extenders, angled 90° type 3P (4) *			FEBE93				
	Extenders, angled 90° type 4P (4) *			FEBE94				
	Extenders, angled 45° type 3P (5) *			FEBE43				
	Extenders, angled 45° type 4P (5) *			FEBE44				
Nota: per un equipaggiamento completo dell'interruttore ordinare 2 confezioni								
	Spreaders flat, pole spacing 3P*	FDBSS3		FEBSS3		FGBSS3		
	Spreaders flat, pole spacing 3P for MC809-MC1259*							FNBSS3P
	Spreaders flat, pole spacing 3P for MC1259-MC1609*							FNBSS3R
	Spreaders flat, pole spacing 4P*	FDBSS4		FEBSS4		FGBSS4		
	Spreaders flat, pole spacing 4P for MC809-MC1259*							FNBSS4P
	Spreaders flat, pole spacing 4P for MC1259-MC1609*							FNBSS4R
Nota: per un equipaggiamento completo dell'interruttore ordinare 2 confezioni								
	Rear connections, 3P (2 short, 1 long)	FDBRC3		FEBRC3		FGBRC3		FNBRC3
	Rear connections, 4P (2 short, 2 long)	FDBRC4		FEBRC4		FGBRC4		FNBRC4
	Rear connections, 3P (3 short)			FEBRCS3		FGBRCS3		FNBRC3S
	Rear connections, 4P (4 short)			FEBRCS4		FGBRCS4		FNBRC3S
	Replacement kit for 2 rear connections short	FDBRCS2						
	Replacement kit for 2 rear connections long	FDBRCL2						
Nota: per un equipaggiamento completo dell'interruttore ordinare 2 confezioni								
 	Internal box clamps 2,5-95mm² 3P			FETCA1316				
	Internal box clamps 2,5-95mm² 4P			FETCA1416				
	Internal box clamps 16-150mm² 3P			FETCA1320				
	Internal box clamps 16-150mm² 4P			FETCA1420				
	Internal box clamps 1 x 240 + 1 x 300mm² 3P					FGTCA230B		
	Internal box clamps 1 x 240 + 1 x 300mm² 4P					FGTCA240B		
	Internal box clamps 2 x 70-240mm² 3P							FNTCA2327
	Internal box clamps 2 x 70-240mm² 4P							FNTCA2427
	Internal box clamps 4 x 70-240mm² 3P							FNTCA4327
	Internal box clamps 4 x 70-240mm² 4P							FNTCA4427
Nota: per un equipaggiamento completo dell'interruttore ordinare 2 confezioni								
	Morsetti a mantello esterni 2,5-95mm² 3P *	FDTCA1316						
	Morsetti a mantello esterni 2,5-95mm² 4P *	FDTCA1416						
	Morsetti a mantello esterni 25-185mm² 3P *			FETCA1323				
	Morsetti a mantello esterni 25-185mm² 4P *			FETCA1423				
Nota: per un equipaggiamento completo dell'interruttore ordinare 2 confezioni								
	External connections 3P 6 cable/pole 4 x 35mm² + 2 x 25mm²			FETCA630A				
	External connections 4P 6 cable/pole 4 x 35mm² + 2 x 25mm²			FETCA640A				

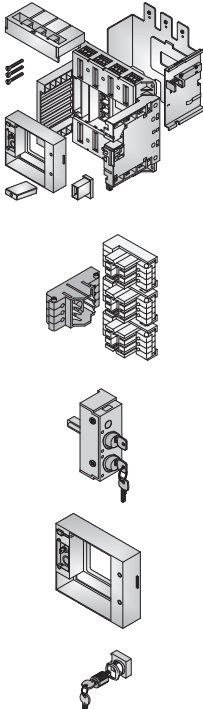
* da ordinare unitamente ai separatori di fase codice FDJP, FEJP, FGJP o FNJP

Accessories

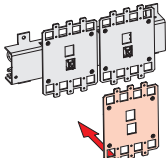
Plug-in System

	Description	For mounting with circuit breaker type							
		MM169 *		MC169 MC259		MC409 MC639		MC809 MC1259 MC1609	
	Complete set for breaker 3P	RC3/MM9		RC3/M92		RC3/M96			
	Complete set for breaker 4P	RC4/MM9		RC4/M92		RC4/M96			
	Fixed part for breaker 3P	RF3/MM9		RF3/M92		RF3/M96			
	Fixed part for breaker 4P	RF4/MM9		RF4/M92		RF4/M96			
	Fixed part for breaker 3P MCCB + RCB	RFR3/MM9		RFR3/M92					
	Fixed part for breaker 4P MCCB + RCB	RFR4/MM9		RFR4/M92					
	Mobile part for breaker 3P	RM3/MM9		RM3/M92		RM3/M96			
	Mobile part for breaker 4P	RM4/MM9		RM4/M92		RM4/M96			
	Insertion prevention kit			FAPIP		FAPIP			
	Auxiliary disconnects complete set (8 Poles)	FAPFM		FAPFM		FAPFM			
	Auxiliary disconnects complete set (10 Poles)	FAPPS		FAPPS		FAPPS			
	Auxiliary disconnects fixed part set (8 Poles)	FAPF8		FAPF8		FAPF8			
	Auxiliary disconnects mobile part set (8 Poles)	FAPM8		FAPM8		FAPM8			
* for type MM169 rated current max. 125A									

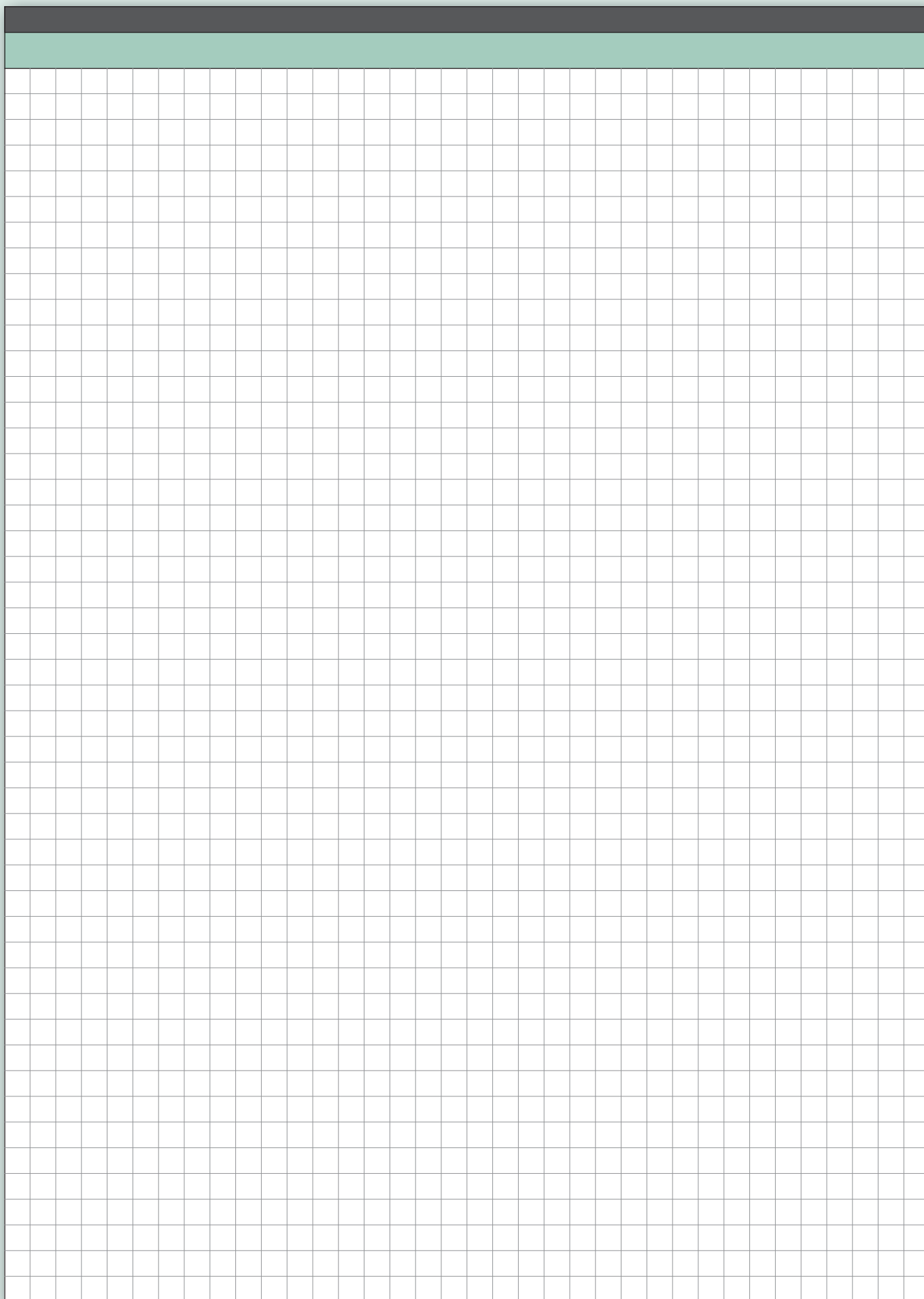
Draw-out System

	Description	For mounting with circuit breaker type							
		MM169	Euro	MC169 MC259	Euro	MC409 MC639	Euro	MC809 MC1259 MC1609	Euro
	Complete set 3P			EEN3/M92		EEN3/M96			
	Complete set 3P for MC809 rear connection							EEA3/M98	
	Complete set 3P for MC1259 - MC1609 rear connection							EEA3/M9K	
	Complete set 3P for MC809 rear connection							EED3/M98	
	Complete set 3P for MC1259 - MC1609 rear connection							EED3/M9K	
	Complete set 4P			EEN4/M92		EEN4/M96			
	Complete set 4P for MC809 front connection							EEA4/M98	
	Complete set 4P for MC1259 - MC1609 front connection							EEA4/M9K	
	Complete set 4P for MC809 rear connection							EED4/M98	
	Complete set 4P for MC1259 - MC1609 rear connection							EED4/M9K	
	Auxiliary disconnects, complete set (6 Poles)							FNPFM	
	Keylock system Profalux in draw-out pos.			FA1BPWD		FA1BPWD			
	Keylock system Ronis in draw-out pos.			FA1BRWD		FA1BRWD			
	Keylock in chasis, pos. 1, Ronis key							FN1BRW1	
	Keylock in chasis, pos. 2, Ronis key							FN1BRW2	
	Set contatti indicazione 3NO			FAS3OW		FAS3OW			
	Set contatti indicazione 3NO+3NC			FAS33W		FAS33W			
	Position indication contact 1C0							FNS11L	
	Doorflange specific for draw-out type							FNFW	
	Keylock in doorflanges, pos. 1, Ronis key							FN1BRY1	
	Keylock in doorflanges, pos. 2, Ronis key							FN1BRY2	

Mechanical interlocking of two breakers

	Description	Catalogue number	
	Mechanical interlocking of two breakers MC169/MC259 + MC169/MC259	FE112	
	Mechanical interlocking of two breakers MC409/MC639 + MC409 or MC639	FG112	
	Mechanical interlocking of two breakers MC169/MC259 + MC409/MC639	FG114	
	Mechanical interlocking of two breakers MC809... MC1609 + MC809... MC1609	FN112F	
	Mechanical interlocking of two breakers MC809... MC1609 + MC409 or MC639	FN114F	
Assembled at the factory: orde 2 breakers + mechanical interblocking			

Note



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**APPARECCHIATURE
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