GE Energy
Industrial Solutions

WORLDWIDE PARTNER

M Pact **New**

Air Circuit Breaker 400-4000A

GE imagination at work

Rated from 400 to 4000A the M Pact circuit breaker has been designed to meet the most stringent demands in fault detection and safe interruption thereof.

Available in 2 frame sizes:
- frame size 1 ranging from 400 to 2500A
- frame size 2 ranging from 800 to 4000A

The range has been developed to be aesthetically and technically co-ordinated with other protective devices within the GE Power Controls industrial product ranges.

The breaker range has a common height and depth and is available in both fixed pattern and drawout versions which can be manually or electrically operated.

Designed to offer multiple mains connection options, it also comes with a wide range of easy-to-install accessories.

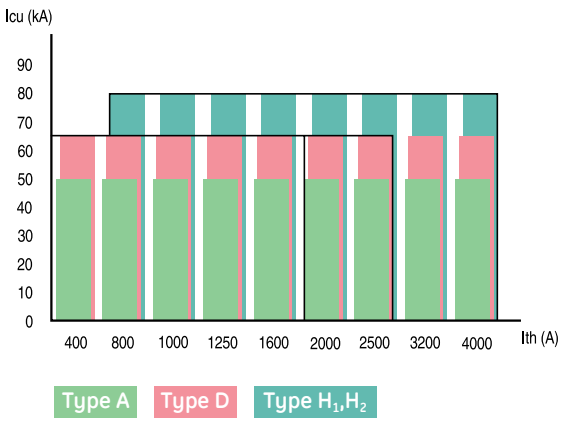
Specification

M Pact Air Circuit Breakers comply with the following specifications for Low Voltage Switchgear:
- IEC 60947-1
- IEC 60947-2
- IEC 60947-3
- Utilisation category B

Approvals

KEMA certification in accordance with IEC 60947-2
CCC certification in accordance with GB14048-2
CCS certification in accordance with China Certification of shipping

3 performance ranges*
A -50 kA (Icu)
D -65 kA (Icu)
H1, H2 -80 kA (Icu)
*Ratings shown at 415V AC
2 compact frame sizes
Frame size 1 - 400 to 2500A
Frame size 2 - 800 to 4000A
Fixed and withdrawable versions
3 or 4 pole configuration
Front and rear access connections (horizontal/vertical)
Devices provided with or without protection relay
Manual or electrical operation
Common height and depth dimensions
Built-in safety features e.g. safety shutters
Wide range of protection settings offering full selectivity
Combinations of earth fault protection
Easy-to-install accessories, common to entire range
Simple and efficient servicing on site



Characteristics

Performance data

Characteristic	Symbol	Units															
Rated current (40°C)				400		800				1000				1250			
Endurance (number of operating cycles)																	
Mechanical (with maintenance)				20000		20000				20000				20000			
Mechanical (without maintenance)				10000		10000				10000				10000			
Electrical (at rated current)				5000		5000				5000				5000			
Rated service voltage (50/60 Hz)	Ue	V		415	690	415	690	415	690	415	690	415	690	415	690	415	690
Rated insulation voltage (50/60 Hz)	Ui	V		1000		1000				1000				1000			
Rated impulse withstand voltage	Uimp	V		8000		8000				8000				8000			
Number of poles				3 & 4		3 & 4				3 & 4				3 & 4			
Rating of 4th pole				100%		100%				100%				100%			
ACB type				A	D	A	D	H1	H2	A	D	H1	H2	A	D	H1	H2
Frame size				1	1	1	1	2	2	1	1	2	2	1	1	2	2
Rated ultimate short-circuit	Icu	kA (rms)	220V	50	65	50	65	80	80	50	65	80	80	50	65	80	80
breaking capacity			415V	50	65	50	65	80	80	50	65	80	80	50	65	80	80
			500V	-	65	-	65	-	80	-	65	-	80	-	65	-	80
			600V	-	50	-	50	-	65	-	50	-	65	-	50	-	65
			690V	-	40	-	40	-	60	-	40	-	60	-	40	-	60
Rated service short-circuit	Ics	kA (rms)	220V	50	65	50	65	80	80	50	65	80	80	50	65	80	80
breaking capacity			415V	50	65	50	65	80	80	50	65	80	80	50	65	80	80
			500V	-	65	-	65	-	80	-	65	-	80	-	65	-	80
			600V	-	50	-	50	-	65	-	50	-	65	-	50	-	65
			690V	-	40	-	40	-	60	-	40	-	60	-	40	-	60
Rated short time withstand current																	
1 second	Icw	kA (rms)		50	50	50	50	65	80	50	50	65	80	50	50	65	80
3 seconds	Icw	kA (rms)		40	50	40	50	50	50	40	50	50	50	40	50	50	50
Rated short-circuit making capacity	Icm	kA (peak)	415V	105	143	105	143	176	176	105	143	176	176	105	143	176	176
			500V	-	143	-	143	-	176	-	143	-	176	-	143	-	176
			600V	-	105	-	105	-	143	-	105	-	143	-	105	-	143
			690V	-	84	-	84	-	105	-	84	-	105	-	84	-	105
Power dissipation at In (Fixed breaker)		Watts		15	10	63	43	23	20	106	68	36	32	175	105	60	53
Power dissipation at In (Withdrawable)		Watts		30	21	127	86	49	43	211	135	77	68	351	211	128	113

Design and specifications are subject to changes without notice.

Selectivity

The following table shows the conditions to satisfy full selectivity between UP-STREAM and DOWN-STREAM devices.

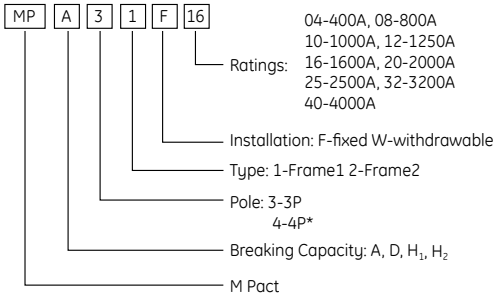
Up-stream: M Pact

Down-stream: M Pact

ST delay 50 ms minimum between up-stream and downstream ACB Multiplication coefficient between LT-ratings≥1,56

	Down-stream									
Up-stream	-	400	800	1000	1250	1600	2000	2500	3200	4000
	400	-	-	-	-	-	-	-	-	-
	800	Full	-	-	-	-	-	-	-	-
	1000	Full	-	-	-	-	-	-	-	-
	1250	Full	Full	-	-	-	-	-	-	-
	1600	Full	Full	Full	-	-	-	-	-	-
	2000	Full	Full	Full	Full	-	-	-	-	-
	2500	Full	Full	Full	Full	Full	Full	-	-	-
	3200	Full	Full	Full	Full	Full	Full	-	-	-
	4000	Full	Full	Full	Full	Full	2000	Full	-	-

Catalog No. configuration



* Letter 'L' & 'R' only for type selection, not shown on nameplate.

	1600				2000				2500				3200				4000			
	20000				20000				20000				20000				20000			
	10000				10000				10000				10000				10000			
	5000				5000				5000				5000				5000			
	415	690	415	690	415	690	415	690	415	690	415	690	415	415	415	690	415	415	415	690
	1000				1000				1000				1000				1000			
	8000				8000				8000				8000				8000			
	3 & 4				3 & 4				3 & 4				3 & 4				3 & 4			
	100%				100%				100%				100%				100%			
	A	D	H1	H2	A	D	H1	H2	A	D	H1	H2	A	D	H1	H2	A	D	H1	H2
	1	1	2	2	1	1	2	2	1	1	2	2	2	2	2	2	2	2	2	2
	50	65	80	80	50	65	80	80	50	65	80	80	50	65	80	80	50	65	80	80
	50	65	80	80	50	65	80	80	50	65	80	80	50	65	80	80	50	65	80	80
	-	65	-	80	-	65	-	80	-	65	-	80	-	-	-	80	-	-	-	80
	-	50	-	65	-	50	-	65	-	50	-	65	-	-	-	65	-	-	-	65
	-	40	-	60	-	40	-	60	-	40	-	60	-	-	-	60	-	-	-	60
	50	50	65	80	50	65	80	80	50	65	80	80	50	65	80	80	50	65	80	80
	50	50	65	80	50	65	80	80	50	65	80	80	50	65	80	80	50	65	80	80
	-	50	-	80	-	65	-	80	-	65	-	80	-	-	-	80	-	-	-	80
	-	50	-	65	-	50	-	65	-	50	-	65	-	-	-	65	-	-	-	65
	-	40	-	60	-	40	-	60	-	40	-	60	-	-	-	60	-	-	-	60
	50	50	65	65	80	65	65	80	50	65	65	80	50	65	65	80	50	65	65	80
	40	40	50	50	50	50	50	50	40	50	50	50	40	50	50	50	40	50	50	50
	105	105	143	176	176	143	176	176	105	143	176	176	105	143	176	176	105	143	176	176
	-	105	-	143	-	143	-	176	-	143	-	176	-	-	-	176	-	-	-	176
	-	105	-	105	-	105	-	143	-	105	-	143	-	-	-	143	-	-	-	143
	-	84	-	84	-	84	-	105	-	84	-	105	-	-	-	105	-	-	-	105
	284	284	196	98	86	224	163	143	351	351	255	223	418	418	418	366	571	571	571	571
	574	574	392	209	184	490	347	306	765	765	542	478	888	888	888	783	1224	1224	1224	1224

Weights (kg)

		A range		D range		H range	
Fixed pattern ACB	Frame	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
400 to 1600A	1	39	49	39	49	/	/
2000 to 2500A	1	43	54	43	54	/	/
800 to 3200A	2	53	68	53	68	53	68
4000A	2	53	68	53	68	53	68
Withdrawable ACB	Frame	3 Pole	4 Pole	3 Pole	4 Pole	3 Pole	4 Pole
400 to 1600A	1	68	79	68	79	/	/
2000 to 2500A	1	74	85	74	85	/	/
800 to 3200A	2	90	109	90	109	90	109
4000A	2	113	128	113	128	113	128

Recommended minimum copper size

In accordance with IEC 60947-2

Rating (A)	Copper / phase
400	2 x 50 x 5
800	2 x 50 x 5
1000	2 x 60 x 5
1250	2 x 100 x 5
1600	2 x 100 x 5
2000	3 x 100 x 5
2500	4 x 100 x 5
3200	4 x 100 x 10
4000	4 x 100 x 10 + 1 x 100 x 5

Dimensions in mm

Frame Size	Rating (A)	Poles	Type	Height[1]	Width	Depth[2]
1	400 to 2500	3	Withdrawable	440	329	422
			Fixed	430	342	352
		4	Withdrawable	440	429	422
			Fixed	430	442	352
2	800 to 4000	3	Withdrawable	440	419	424
			Fixed	430	432	352
		4	Withdrawable	440	549	424
			Fixed	430	562	352

(1) Height is from mounting surface to highest part of the ACB.
(2) Depth is from the cubicle door to the back of terminals.
* 4P, Neutral on the left or right Please specified on selection form, the default option is neutral on night.

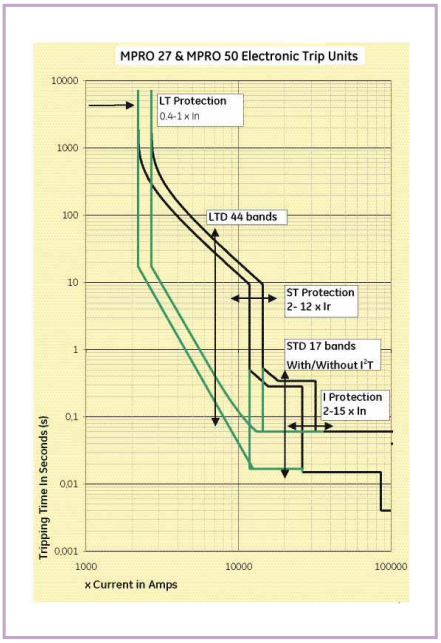
State-of-the-art electronic trip units

- A range offering a new range of electronic trip units designed to extend and/or upgrade the functionality offered by the existing M Pact Plus Air Circuit Breaker.
- Two types are available. The simple and effective M Pro-27 and M Pro-50 offering extended functionality .
- Each has a LCD screen with ammeter and a menu driven setting interface, allowing a simple and accurate setting of all parameters.
- This global line of electronic trip units uses the most recent technology to offer each user an unique combination of selectivity speed and functionality.

Plug-n-play

Electronic trip units are normally supplied factory fitted. However spares are available that can be simply plugged in to breakers installed in the field.

Each trip unit then needs to be adjusted to the required settings. If the installation is not powered up, the installed battery pack or the seperately available test kit with Power Pack can be used as alternate power source.



M Pro-27 & M Pro-50

The basic M Pro-27 type has been designed to replace the existing M Pro-17 and M Pro-18 plus units offering an extended functionality and a standard ammeter.

The M Pro-50 type replaces the existing M Pro-30 and M Pro-40 designs covering an extended functionality with protection devices as fuse links, overload protection and reduced instantaneous (RELT). Each M Pro-50 comes with a simple to connect 4 wire modbus communciation option.

Main adjustment options

- LT-LTD protection

  Each device has an overload setting range of 0.4 to 1 a times In and offer a choice of 22 time bands designed for use with circuit breakers.

  A second set of 22 time bands shaped to match the time current curves of fuses is available on the M Pro-50 type.

- ST-STD protection

  A timed delayed short circuit protection is installed with a current setting of 2 to 12 times the set LT current value. The short circuit protection time can be set, at one of 17 bands ranging from 90 milliseconds to 1 second.

  Optionaly this device can be set to one of three I^2t curves.

- I-protection

  A switchable and selective instantaneous protection with a setting range of 2 to 15 times the breaker rating that is programmed to wait one half cycle until the downstream device has reacted.

- Other protection features

  A host of other protection devices is available including Ground Fault sum and Ground Fault source return (allowing UEF, SEF & REF) and a reduced instantaneous device. The reduced instantaneous device allows the user to conditionally programme the breaker to trip faster and at lower short circuit settings than it would on the standard instantaneuos device.

  This RELT device allows the user to reduce the short circuit current level and its time span, thus reducing the amount of electrical energy in the direct vicinity of the breaker.

Trip unit	M Pro-27	M Pro-50
Setting interface		
LCD screen allowing access to 4 distinct menu's	X	X
Touch pad adjustments	X	X
Multilingual	X	X
Adjustable manual or automatic RESET option	X	X
Long time or overload current protection		
13 current settings Ir 1, 0.95, 0.9. 0,85, 0.8, 0.75, 0.7, 0.65, 0.6, 0.55, 0.5, 0.45 & 0.4 x breaker rating In	X	X
22 thermal protection (C type) time bands available ranging from class 0.5 to 40 (bands at 7.2 x Ir)	X	X
22 I^2t protection (F type {fuse}) time bands available	-	X
Neutral protection 0-50%-63%-100%	X	X
Possibility to switch OFF	-	X
Cooling function and thermal memory	X	X
Short time short-circuit current protection		
Setting range from 1.5 to 12 x Ir (LT setting)	X	X
Steps of 0.5 (a total of 22 settings)	X	X
Possibility to switch OFF	-	X
17 time delay settings (STDB) ranging from 30 to 940 milliseconds delay setting result in a 90 to 1000 milliseconds	X	X
Clearance times to IEC 40979-1 and IEC 60364		
3 I^2t Protection time bands available		
Instantaneous short-circuit current		
• Standard		
Ii setting range from 2 to 15 x breaker rating In	X	X
Steps of 0.5 (a total of 28 settings)	X	X
Possibility to switch OFF	X	X
Selective execution	X	X
Fixed instantaneous or HSIOC protection	X	X
• Reduced		
Ii setting range from 1.5 to 15 x Ie (primary setting)	-	X
Steps of 0.5 (a total of 29 settings)	-	X
Possibility to switch OFF	-	X
Remote and local ON and OFF with position indication signal	-	X
Ground or earth fault protection		
Setting range from 0.1 to 1 x In (breaker rating) (1)	•(1)	•(1)
Steps of 0.01 (a total of 92 settings)	•	•
Possibility to switch OFF	•	•
14 time delay settings (GFDB) ranging from 50 to 840 milliseconds delay setting resulting in a 110 to 900 milliseconds	•	•
Clearance times to IEC 40979-1 and IEC 60364	•	•
3 I^2t protection time bands available	•	•
1 I^4t protection time bands available	•	•
Residual principle (UEF application possible)	•	•
Source ground return principle	-	•
UEF, REF and SEF applications possible	-	•
Combinations of UEF, REF and SEF applications possible	-	•
Other functions		
Current measurement (L1, L2, L3, N)	X	X
Trip target (trip reason indication)	X	X
Trip info (magnitude / phase)	X	X
Trip counter	X	X
Event logger (trip events)	X	X
General inputs (4 availble)	-	X
General relay outputs (4 available)	-	X
Relay based on current level (load shedding)	-	X
Good & bad health indicator	-	X
Watchdog	-	X
Communication 2 way	-	X
Modbus	-	X
24V DC auxiliary power supply	X	X
Test kit with power support function	•	•

(1) A 24V auxiliary power supply is required.

Key X = Present • = Optional - = Not possible

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