



Moulded Case Circuit Breakers MF2 Series



5. Technical Data

5.1 Parameters

MF2 circuit breaker Thermal-magnetic		MF2-125 Frame 1						MF2-250 Frame 2						MF2-400 Frame 3						MF2-630 Frame 3						MF2-800 Frame 4						MF2-1250 Frame 4																							
Electric characteristics as per IEC 60947-2 and EN60947-2																																																							
Rated current(A) In		16, 20, 25, 32, 40, 50, 63, 80, 100, 125						100, 125, 160, 180, 200, 225, 250						250, 315, 350, 400						250, 315, 350, 400, 500						630, 700, 800						800, 1000, 1250																							
Rated insulation voltage (V) Ui		750						750						750						750						750						750																							
Rated impulse withstand voltage (kV) Uimp		8						8						8						8						8						8																							
Rated operational voltage (V) Ue		AC 50/60Hz DC						690 500						690 500						690 500						690 500						690 500																							
Number of poles		2		3		4		2		3		4		3		4		3		4		3		4		3		4		3		4																							
Breaking capacity code		H		S		H		R		S		H		H		S		H		R		S		H		S		H		R		S		H		S		H		R		S		H		S		H		R		S		H	
Rated ultimate short-circuit breaking capacity (kA RMS) Icu		AC 220V/230V/240V		100		85		100		150		85		100		100		85		100		150		85		100		100		85		100		150		85		100		100		85		100		150		85		100					
		AC 380V/400V/415V		100		50		100		150		50		100		100		50		100		150		50		100		100		50		100		150		50		100		100		50		100		150		50		100					
		AC 440V		100		50		100		130		50		100		100		50		100		130		50		100		100		85		130		50		100		100		85		130		50		100									
		AC 500V		50		35		50		70		35		50		50		35		50		70		35		50		50		35		50		70		35		50		50		35		50		70		35		50					
		AC 660V/690V		6		5		6		8		5		6		8		6		8		10		6		8		10		12		15		10		12		10		12		10		20		10		20							
		DC 250V (1P)		35		25		35		50		25		35		35		25		35		50		25		35		25		35		50		25		35		50		25		35		50		25		35							
		DC 500V (2P)		35		25		35		50		25		35		35		25		35		50		25		35		25		35		50		25		35		50		25		35		50		25		35							
Rated service breaking capacity Ics= (%Icu)		100						100						100 ^①						100 ^①						50						50																							
Suitability for isolation		■						■						■						■						■						■																							
Utilization category		A						A						A						A						A						A																							
Safety of insulation		■						■						■						■						■						■																							
Life(CO recycle)		Mechanical		20000		20000		20000		15000		15000		10000		10000		10000		10000		15000		15000		10000		10000		10000		10000		10000		10000		10000		10000		10000		10000											
		Electrical		20000		20000		20000		6000		4000		4000		4000		4000		4000		6000		4000		4000		4000		4000		4000		4000		4000		4000		4000		4000													
Protection		Thermo-magnetic						Thermo-magnetic						Thermo-magnetic						Thermo-magnetic						Thermo-magnetic						Thermo-magnetic																							
Release units		■						■						■						■						■						■																							
Over-load protection		■						■						■						■						■						■																							
Short-circuit protection		■						■						■						■						■						■																							
Residual current protection		Added on residual current protection module		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■													
Mounting and connection																																																							
Fixed		Front connection		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■									
		Rear connection		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■											
DIN rail		Front connection		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■											
		Rear connection		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■											
Auxiliaries for control and indication																																																							
Manual		Handle		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■													
		Direct or extended rotary handle		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■													
Motor-driven mechanism																																																							
Manual, remote operated automatic source changeover systems																																																							
Shunt and under-voltage release																																																							
Auxiliary and alarm contact																																																							
Pad locking system																																																							
Mounting and connection accessories																																																							
Connection terminal																																																							
Front connection plate																																																							
Rear connection plate																																																							
DIN rail adaptor																																																							
Plug-in type connection accessories																																																							
Terminal covers																																																							
Interphase barrier																																																							
Dimension and weight																																																							
Dimension(mm)W×H×L		Fixed type-front connection		62×140×79		90×140×79		120×140×79		70×157×88		105×157×88		140×157×88		140×255×113		185×255×113		140×255×113		185×255×113		210×370×196		280×370×196		210×370×196		280×370×196		210×370×196		280×370×196		210×370×196		280×370×196																	
Weight(kg)		Fixed type-front connection		0.85		1.2		1.6		1.5		2.1		2.8		7.5		10		7.5		10		17.5		23		17.5		23		17.5		23		17.5		23																	

Note: ① When Ue is ≥660V, Ics=50% Icu.

MF2S circuit breaker Electronic type		MF2S-125 Frame 1						MF2S-250 Frame 1						MF2S-400 Frame 2						MF2S-630 ^① Frame 2						MF2S-800 Frame 3						MF2S-1250 Frame 3													
Electric characteristics as per IEC 60947-2 and EN60947-2																																													
Rated current(A) In		40, 100, 125						100, 160, 200, 250						250, 315, 350, 400						250, 315, 350, 400, 500, 630						630, 700, 800						800, 1000, 1250													
Rated insulation voltage (V) Ui		750						750						750						750						750						750													
Rated impulse withstand voltage (kV) Uimp		8						8						8						8						8						8													
Rated operational voltage (V) Ue		AC 50/60Hz DC						690 500						690 500						690 500						690 500						690 500													
Number of poles		3		4		3		4		3		4		3		4		3		4		3		4		3		4		3		4		3		4		3		4		3		4	
Breaking capacity code		S		H		R		S		H		S		H		S		H		R		S		H		S		H		R		S		H		S		H		R		S		H	
Rated ultimate short-circuit breaking capacity (kA RMS) Icu		AC 220V/230V/240V		85		100		150		85		100		100		85		100		100		85		100		100		85		100		100		85		100		100		85		100			
		AC 380V/400V/415V		50		70		100		50		70		70		100		50		70		70		100		50		70		70		100		50		70		70		100		50		70	
		AC 440V		50		70		100		50		70		50		70		100		50		70		50		70		50		70		50		70		50		70		50		70			
		AC 500V		35		50		70		35		50		35		50		70		35		50		35		50		35		50		35		50		35		50		35		50			
		AC 660V/690V		6		8		10		6		8		10		12		15		10		12		10		12		10		12		10		12		10		12		10		12			
		DC 250V (1P)		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-			
		DC 500V (2P)		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-		-			
Rated service breaking capacity Ics= (%Icu)		100						100						100 ^①						100 ^①						50						50													
Suitability for isolation		■						■						■						■						■						■													
Utilization category		A						A						A						A						A						A													
Safety of insulation		■						■						■						■						■						■													
Life(CO recycle)		Mechanical		20000		20000		15000		15000		10000		10000		10000		15000		15000		10000		10000		10000		10000		10000		10000		10000		10000		10000		10000					
		Electrical		20000		20000		6000		4000		4000		4000		4000		6000		4000		4000		4000		4000		4000		4000		4000		4000		4000		4000							
Protection		Electronic						Electronic						Electronic						Electronic						Electronic																			
Release units		■						■						■						■						■																			
Over-load protection		■						■						■						■						■																			
Short-circuit protection		■						■						■						■						■																			
Residual current protection		Added on residual current protection module		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■					
Mounting and connection																																													
Fixed		Front connection		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■					
		Rear connection		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■					
DIN rail		Front connection		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■		■					
		Rear connection																																											

MF2M circuit breaker	Magnetic only	MF2M-125						MF2M-		
4 Frame		Frame 1						Frame 2		
Electric characteristics as per IEC 60947-2										
Rated current(A)	I_n	16,20,25,32,40,50,63,80,100,125			16,20,25,32,40,50,63,80,100,125			125,160,180,200,250		
Rated insulation voltage (V)	U_i	750			750			750		
Rated impulse withstand voltage (kV)	U_{imp}	8			8			8		
Rated operational voltage (V)	U_e	AC 50/60Hz			690			690		
		DC			500			500		
Number of poles		3			4			3		
										
Breaking capacity code		S	H	R	S	H	S	H	R	
Rated ultimate short-circuit breaking capacity (kA RMS) I_{cu}	AC 220V/230V/240V	85	100	125	85	100	85	100	125	
	AC 380V/415V	50	100	125	50	100	50	100	125	
	AC 440V	50	100	125	50	100	50	100	125	
	AC 500V	35	50	70	35	50	35	50	70	
	AC 660V/690V	8	10	20	8	10	8	10	20	
	DC 250V (1P)	-	50	-	-	-	-	-	50	-
	DC 500V (2P)	-	50	-	-	-	-	-	50	-
	DC 750V (3P)	-	50	-	-	-	-	50	-	
Rated service breaking capacity $I_{cs} = (\%I_{cu})$		100			100			100		
Suitability for isolation		■			■			■		
Utilization category		A			A			A		
Safety of insulation		■			■			■		
Life(CO recycle)	Mechanical	20000			20000			20000		
	Electrical	20000			20000			20000		
Protection		Thermo-magnetic			Intelligent			Thermo-magnetic		
Release units		■			■			■		
Short-circuit protection		■			■			■		
Residual current protection	Added on residual	■			■			■		
	current protection module	■			■			■		
Mounting and connection		■			■			■		
Fixed	Front connection	■			■			■		
	Rear connection	■			■			■		
DIN rail	Front connection	■			■			■		
	Rear connection	■			■			■		
Plug-in	Front connection	■			■			■		
	Rear connection	■			■			■		
Auxiliaries for control and indication		■			■			■		
Manual	Handle	■			■			■		
	Direct or extended rotary handle	■			■			■		
Motor-driven mechanism		■			■			■		
Manual, remote operated automatic source changeover systems		■			■			■		
Shunt and under-voltage release		■			■			■		
Auxiliary and alarm contact		■			■			■		
Pad locking system		■			■			■		
Mounting and connection accessories		■			■			■		
Connection terminal		■			■			■		
Front connection plate		■			■			■		
Rear connection plate		■			■			■		
DIN rail adaptor		■			■			■		
Plug-in type connection accessories		■			■			■		
Terminal covers		■			■			■		
Interphase barrier		■			■			■		
Dimension and weight		■			■			■		
Dimension(mm)W×L×H		90×140×79			120×140×79			105×127×88		
Weight(kg)		1.2			1.6			2.1		

5.2 Special applications

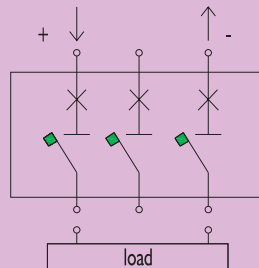
Use of DC apparatus

To obtain the number of poles in series needed to guarantee the required breaking capacity at the various operating voltages, suitable connection diagrams must be used. For the breaking capacity (I_{cu}), according to the voltage and the number of poles connected in series with reference to the connection diagrams.

Protection and isolation of the circuit with three-pole circuit-breakers

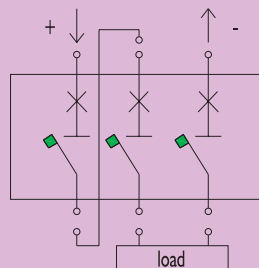
$I_{cs}=I_{cu}=10\text{kA}$ with any one connection in the following diagrams.

Diagram A: Interruption with one pole for polarity



Note: Without negative polarity connected to earth, the installation method must be such as to make the probability of a second earth fault negligible.

Diagram B: Interruption with two poles in series for one polarity and one pole for the other polarity.



Note: Without negative polarity connected to earth, the installation method must be such as to make the probability of a second earth fault negligible.

Diagram C: Interruption with three poles in series for polarity.

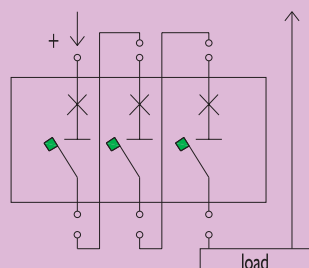


Diagram D: Interruption with four poles in series for one polarity

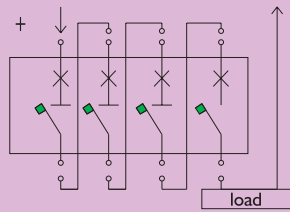
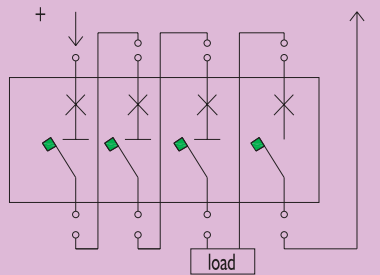
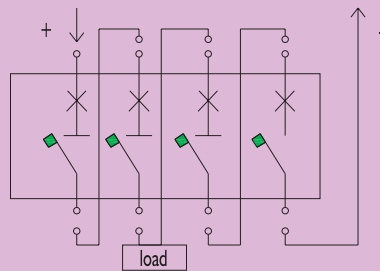


Diagram E: Interruption with three poles in series on one polarity and one pole on the other polarity



Note: Without negative polarity connected to earth, the installation method must be such as to make the probability of a second earth fault negligible.

Diagram F: Interruption with two poles in series for polarity



Note: Without negative polarity connected to earth, the installation method must be such as to make the probability of a second earth fault negligible.

The following table shows which connection diagram to use according to the number of poles to be connected in series to obtain the required breaking capacity, in relation to the type of distribution network:

Rated voltage V	protection function	Isolation	Earth-insulated network	Network with one polarity ⁽¹⁾ earthed	Network with a middle point earthed
≤250	■	■	A	A	A
	■	-	-	-	-
≤500	■	■	A	B	A
	■	-	-	C	-

Notes:

a The risk of double earth fault is nil, therefore the fault current only involves a part of the interruption poles.

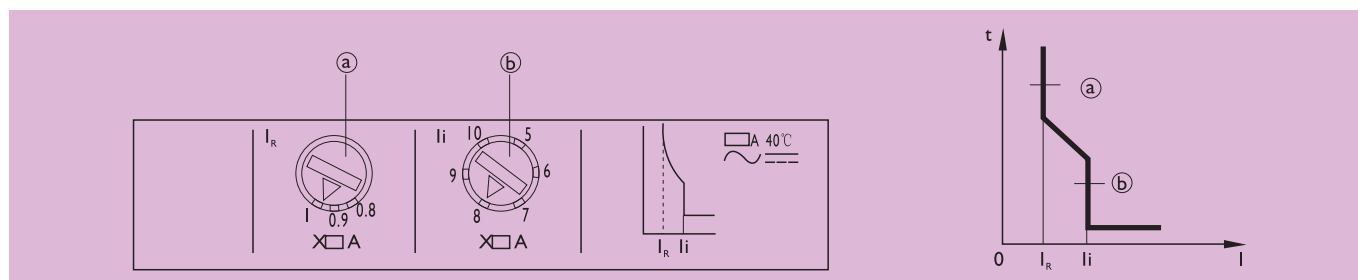
b For rated voltages higher than 750V, the 1000V range for direct current is required.

c For connection with four poles in series, circuit-breakers with neutral at 100% of the phase settings must be used.

6. Release

6.1 Thermo-magnetic release

6.1.1 Thermo-magnetic release of MF2-125、250、630 and 1250 breakers can be set to meet protection requirements



Adjustable setting of over-load protection (a)

Adjustable setting of short-circuit protection or fixed (b)

Thermo-magnetic release	MF2-125	MF2-250	MF2-400	MF2-630	MF2-800	MF2-1250
Rated value (A) In 55°C	16, 20, 25, 32, 40, 50, 63, 80, 100, 125	100, 125, 160, 180, 200, 225, 250	250, 315, 350, 400	250, 315, 350, 400, 500, 630	630, 700, 800	630, 700, 800, 1000, 1250
Over-load protection	Thermo protection					
Tripping current I_r (A)	Adjustable range 0.8~1XIn	Adjustable range 0.8~1XIn	Adjustable range 0.8~1XIn	Adjustable range 0.8~1XIn	Adjustable range 0.8~1XIn	Adjustable range 0.8~1XIn
N-pole protection (A) 4A, 4B 4C, 4D 4E, 4F	Without protection 1.0XIn 0.5 XIn	Without protection 1.0XIn 0.5 XIn	Without protection 1.0XIn 0.5 XIn	Without protection 1.0XIn 0.5 XIn	Without protection 1.0XIn 0.5 XIn	Without protection 1.0XIn 0.5 XIn
Short-circuit protection	Magnetic protection					
Tripping current I_i (A)	10In (for power distribution protection) 12In (for motor protection)	Adjustable range 5~12 XIn 12In (for motor protection)	Adjustable range 5~12 XIn 12In (for motor protection)	Adjustable range 5~12 XIn 12In (for motor protection)	Adjustable range 5~10XIn 12In (for motor protection)	Adjustable range 5~10XIn 12In (for motor protection)

6.1.2 Characteristic of thermo protection operation of thermo-magnetic release for power distribution

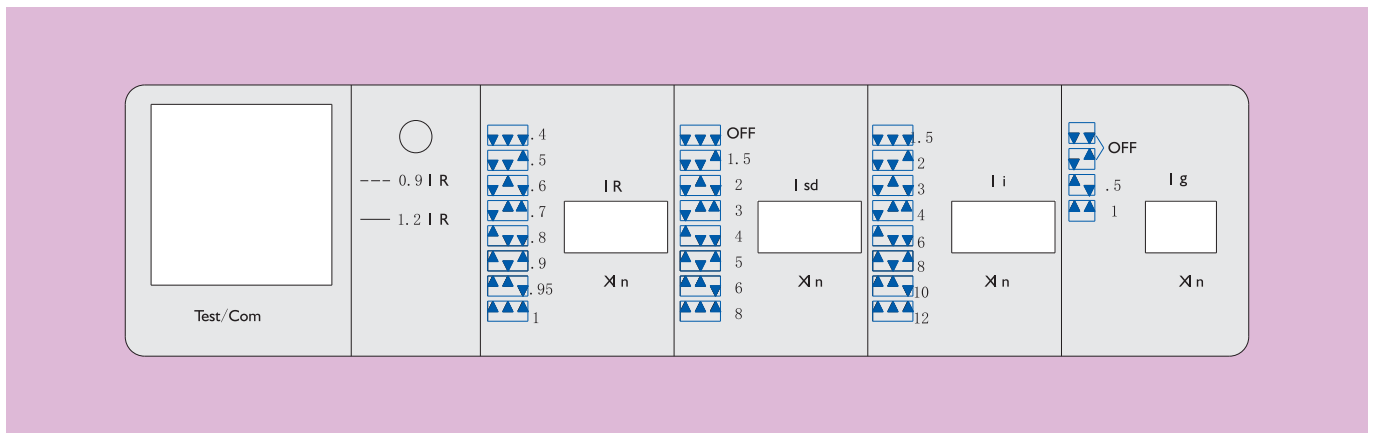
Serial No.	Test current	I/In	Conventional time	Initial status
1	Conventional non-tripping current	1.05	> 1h (In ≤ 63A) > 2h (In > 63A)	Cold status
2	Conventional tripping current	1.3	≤ 1h (In ≤ 63A) ≤ 2h (In > 63A)	Right after test 1

6.1.3 Characteristic of thermo protection operation of thermo-magnetic release for motor protection

Serial No.	Test current	I/In	Conventional time	Initial status
1	Conventional non-tripping current	1.0	> 2h	Cold status
2	Conventional tripping current	1.2	≤ 2h	Right after test 1
		1.5	≤ 4min	
		7.2	4s ≤ T ≤ 10s	

6.2 Electronic Release

6.2.1 MF2S-125, 250 electronic release is an universal module. It is of 6 current specifications: 40A, 100A, 125A, 160A, 200A, and 250A to adjust setting values and to meet protection requirements.

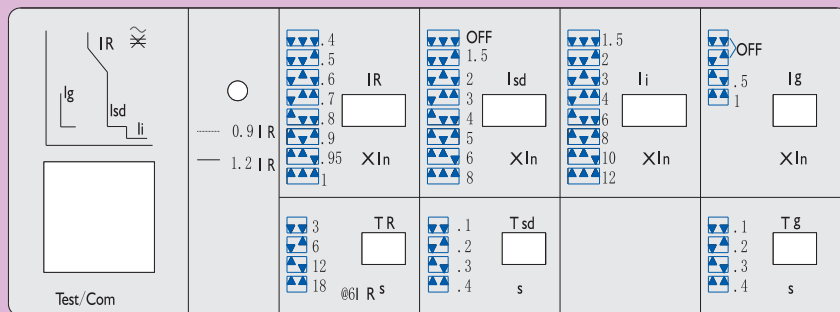


The indicator light flashes, when single-phase operational current is ≤ 90% I_R.

The indicator light is always lit, when single-phase operational current is ≥ 115% I_R.

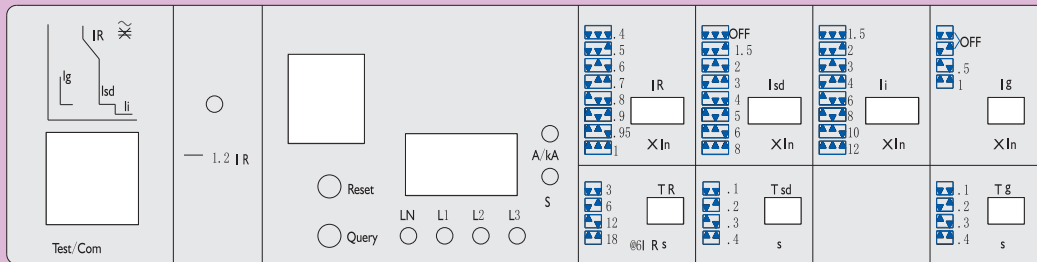
Electronic release	MF2S-125	MF2S-250
Rated value I_n (A) 20~75°C	40, 100, 125	100, 160, 200, 250
Over-load protection	Thermal protection	
Tripping current I_R	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1X I_n	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1X I_n
Tripping time		
$1.05 I_R$	> 2h non tripping	> 2h non tripping
$1.3 I_R$	≤ 1 h	≤ 1 h
$1.5 I_R$	96s	96s
$6 I_R$	6s	6s
N-line protection tripping current I_g	Adjustable range OFF, 0.5, 1X I_n	Adjustable range OFF, 0.5, 1X I_n
Tripping current I_i	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12X I_n	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12X I_n
Short time-delay short current protection tripping current I_{sd}	Adjustable range OFF, 1.5, 2, 3, 4, 6, 8X I_n	Adjustable range OFF, 1.5, 2, 3, 4, 6, 8X I_n

6.2.2 MF2S-400, 630 electronic release is an universal module. It is of 6 current specifications: 250A, 315A, 350A, 400A, 500A, and 630A to adjust setting values and to meet protection requirements. The release is of wide setting range and multi-functional modules can be selected. MF2S-400, 630 electronic release



MF2S-800, 1250 electronic release

MF2S-800, 1250 electronic release is an universal module. It is of 5 current specifications: 630A, 700A, 800A, 1000A, and 1250A to adjust setting values and to meet protection requirements. The release is of wide setting range and multi-functional modules can be selected.



Tripping current I_R , I_{sd} , I_i should be set with three-digit switch or rotary knob as per current.

● **LT (long time-delay) setting of over-load protection**

I_R could be adjusted as per customers' requirements, and T_R , tripping time at the status of $6I_R$ can be set as per customers' requirements.

	$1.05 I_R$	$1.3 I_R$	$1.5 I_R$ (s)	$2.0 I_R$ (s)	$6 I_R$ (s)
MF2S-400, 630	>2h non-tripping	< 1h tripping	48,96, 192, 288	27, 54, 108, 162	3, 6, 12, 18
MF2S-800, 1250	>2h non-tripping	< 1h tripping	48, 96, 192, 1288	27, 54, 108, 162	3, 6, 12, 18

LT (long time-delay) indicator light for over-load status indication

The indicator light flashes, when single-phase operational current is $< 90\%I_R$

The indicator light is always lit, when single-phase operational current is $\geq 115\%I_R$

● **ST (short time-delay) setting of short-circuit protection and tripping time**

Setting value of current I_{sd} could be adjusted as per customers' requirements and OFF stands for status without ST protection;

T_{sd} , the tripping time could be adjusted as per customers' requirements.

● **(Instantaneous) setting of short-circuit protection**

Value of setting current could be adjusted as per customers' requirements

● **(N-line) setting of protection operations**

As a 4P circuit breaker with N-line protection, setting value of current I_i could be adjusted as per customers' requirements and OFF stands for status without protection of N-pole; T_g , the operating time of N-pole could be adjusted as per customers' requirements.

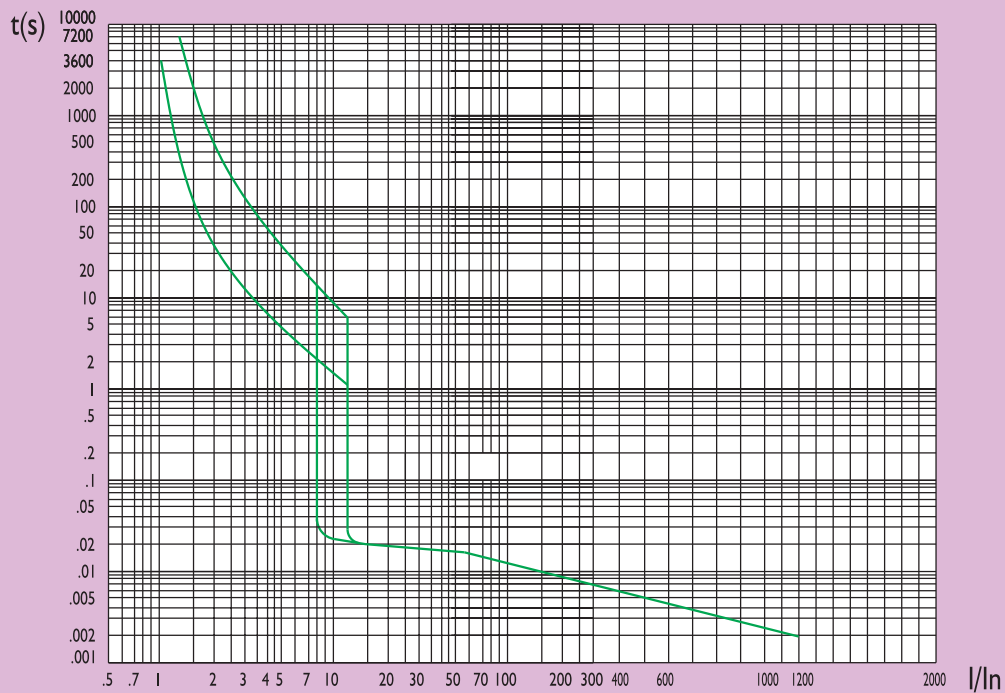
Electronic release	MF2S-400	MF2S-630	MF2S-800	MF2S-1250
Rated value A In 20~75°C	250, 315, 350, 400	250, 315, 350, 400, 500, 630	630, 700, 800	630, 700, 800, 1000, 1250
long time-delay over-load protection (thermal protection)				
Tripping current I_R (A)	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn	Adjustable range 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, 1XIn
Tripping time $6I_R$ (s)	Adjustable range 3, 6, 12, 18	Adjustable range 3, 6, 12, 18	Adjustable range 3, 6, 12, 18	Adjustable range 3, 6, 12, 18

Electronic release	MF2S-400	MF2S-630	MF2S-800	MF2S-1250
short time-delay short-circuit protection				
Tripping current I_{sd} (A)	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8 I_n	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8 I_n	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8 I_n	Adjustable range OFF, 1.5, 2, 3, 4, 5, 6, 8 I_n
Tripping time T_{sd} (s)	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4
(Instantaneous) short-circuit protection				
Tripping current I_i (A)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12 I_n 12 I_n (for motor protection)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12 I_n 12 I_n (for motor protection)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12 I_n 12 I_n (for motor protection)	Adjustable range 1.5, 2, 3, 4, 6, 8, 10, 12 I_n 12 I_n (for motor protection)
(N-line) protection				
Tripping current I_g (A)	Adjustable range OFF, 0.5, 1 I_n	Adjustable range OFF, 0.5, 1 I_n	Adjustable range OFF, 0.5, 1 I_n	Adjustable range OFF, 0.5, 1 I_n
Tripping time T_g (s)	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4	Adjustable range 0.1, 0.2, 0.3, 0.4

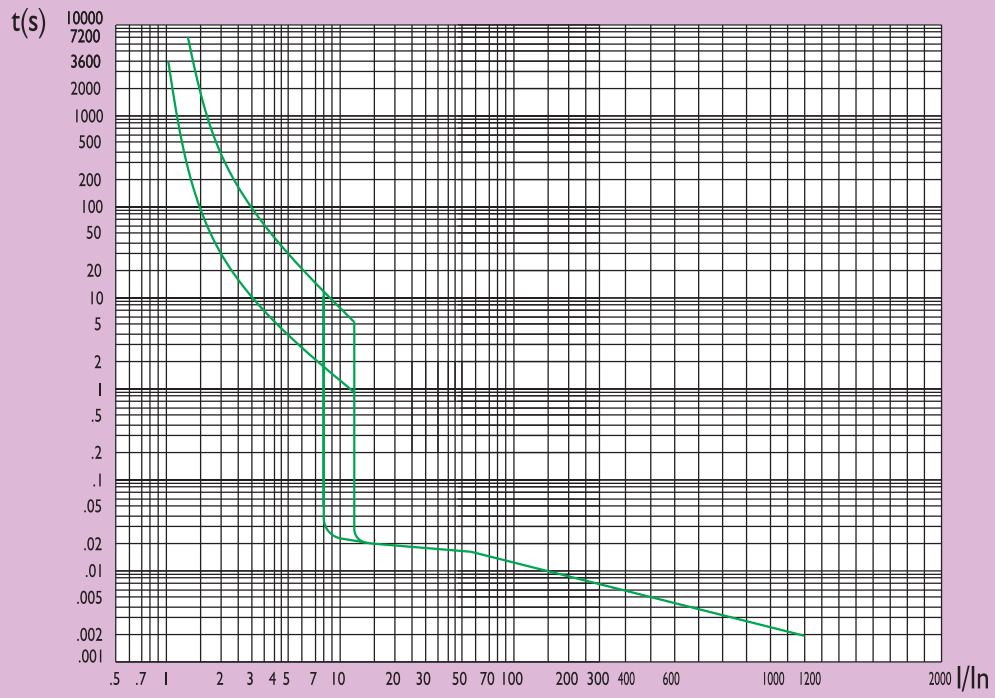
7. Curves

7.1 Tripping curve (ambient temperature +55°C)

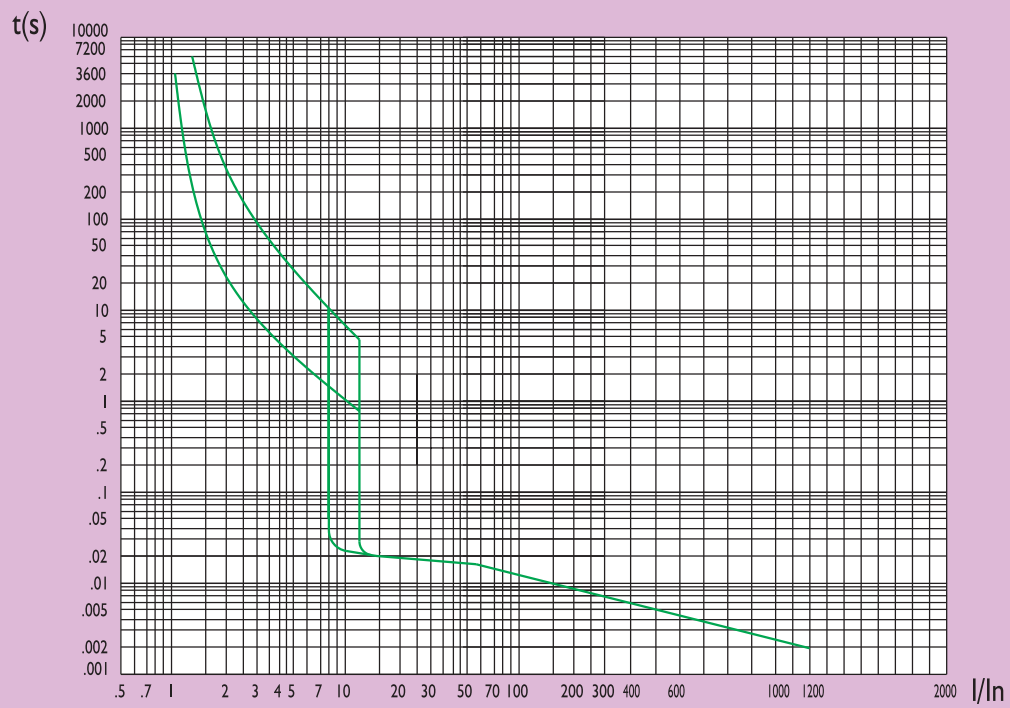
MF2-125(16A, 20A)



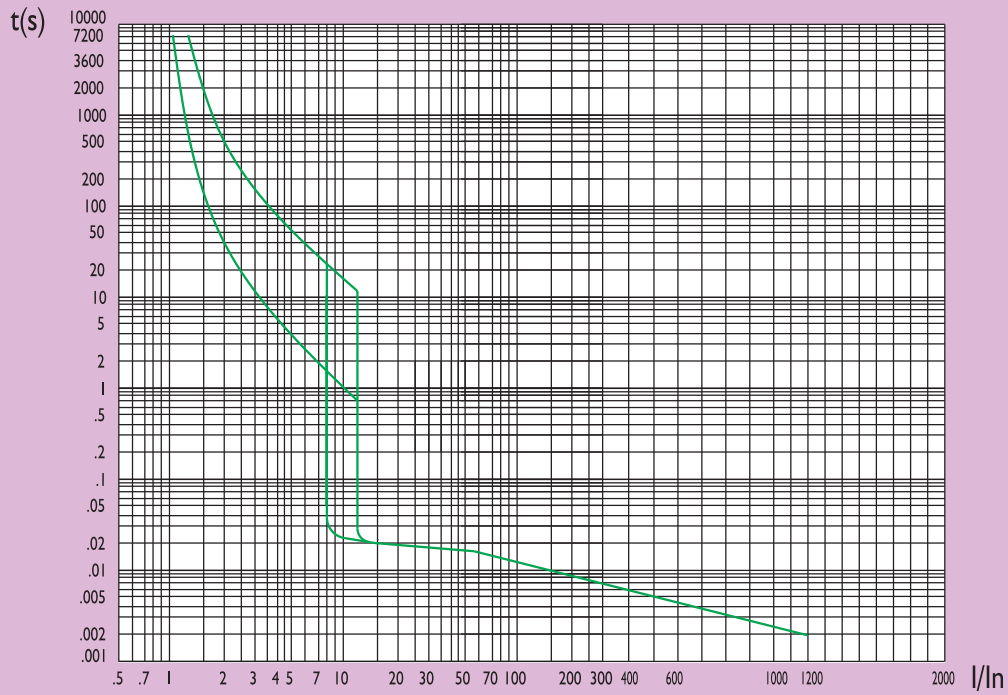
MF2-125(25A, 32A)



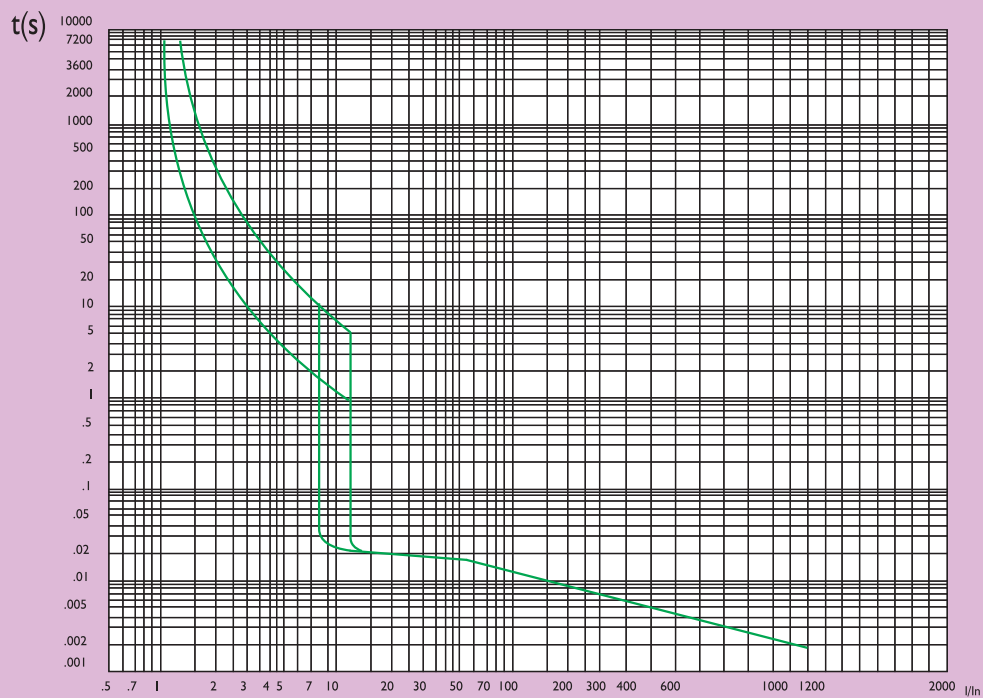
MF2-125(40A, 50A)

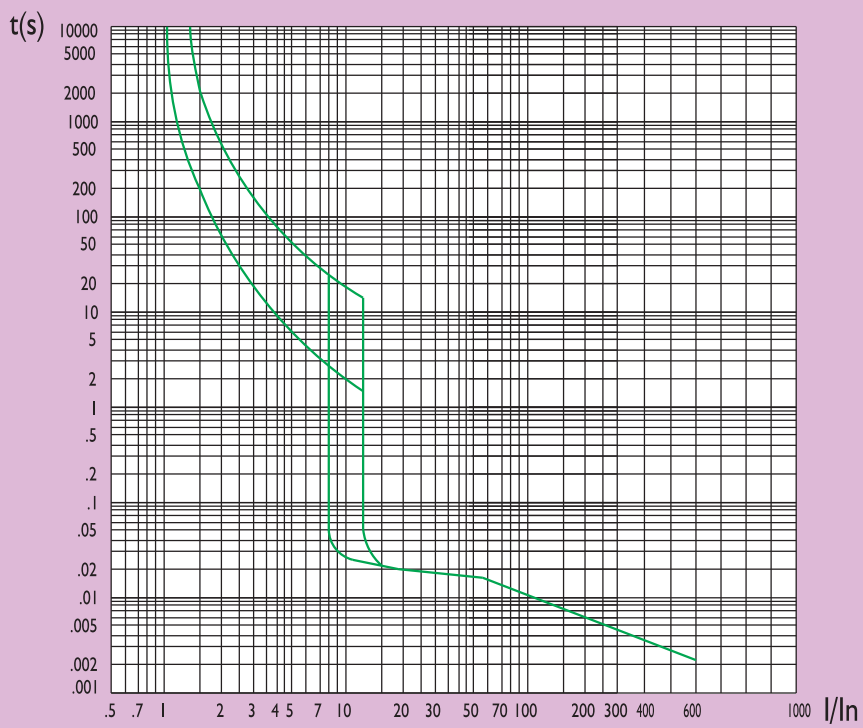
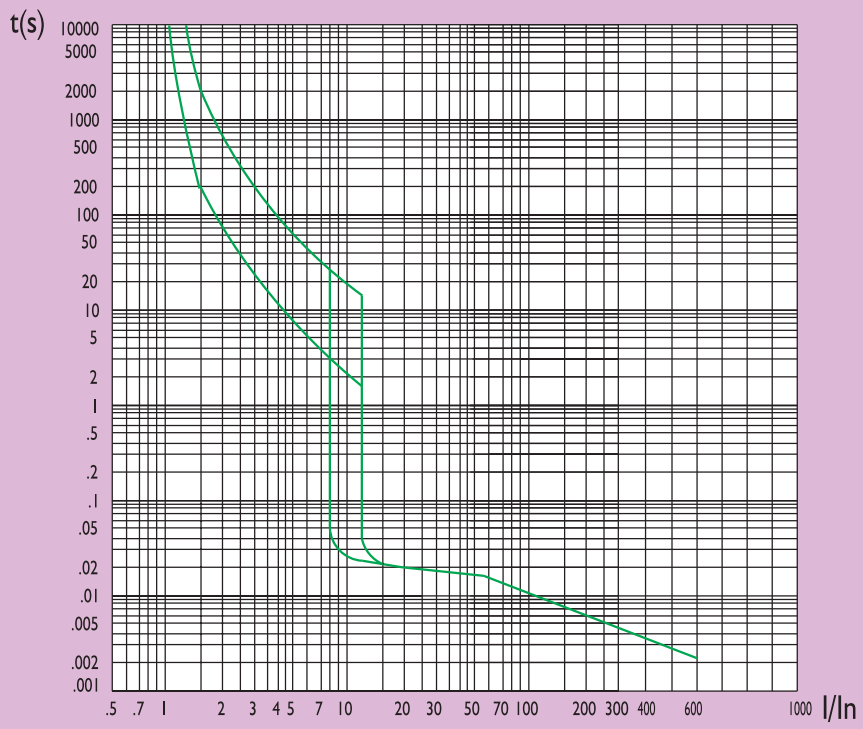


MF2-125(63A, 80A, 100A)

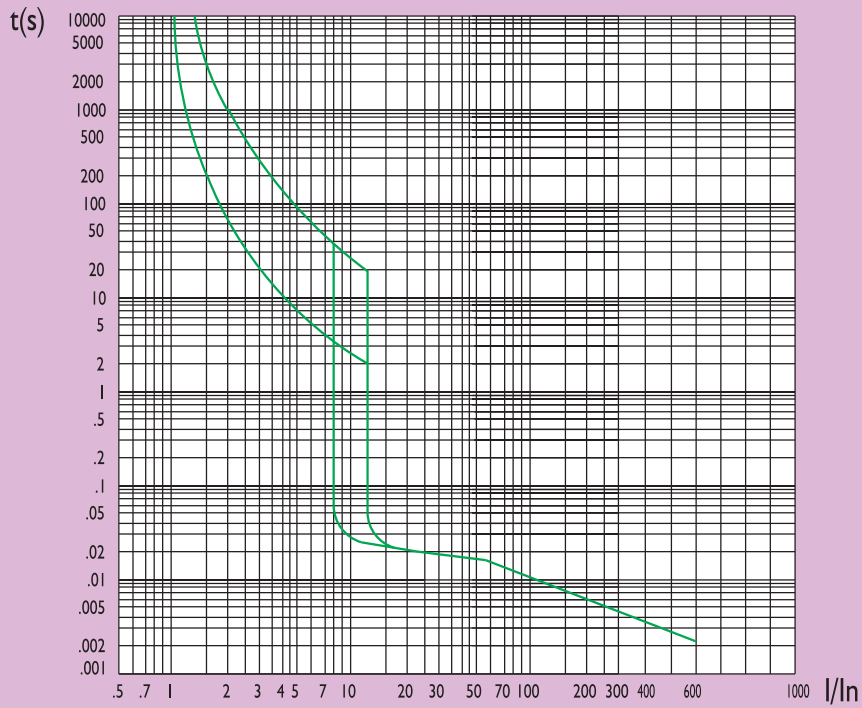


MF2-125(125A)

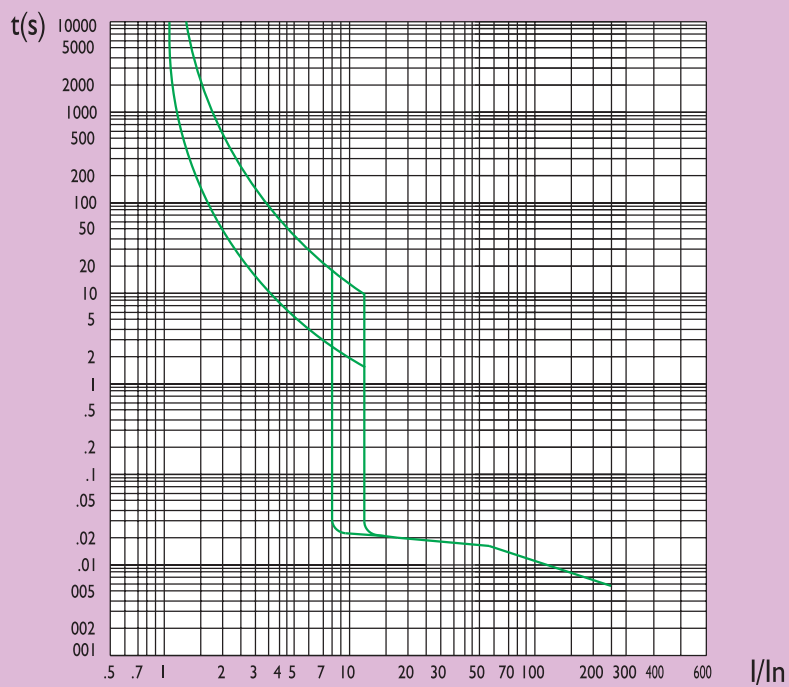




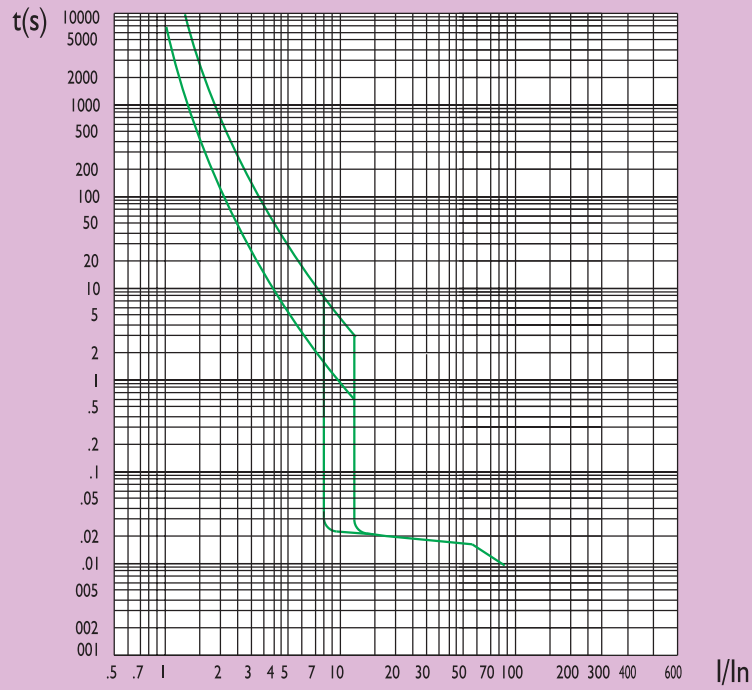
MF2-250(200A, 250A)



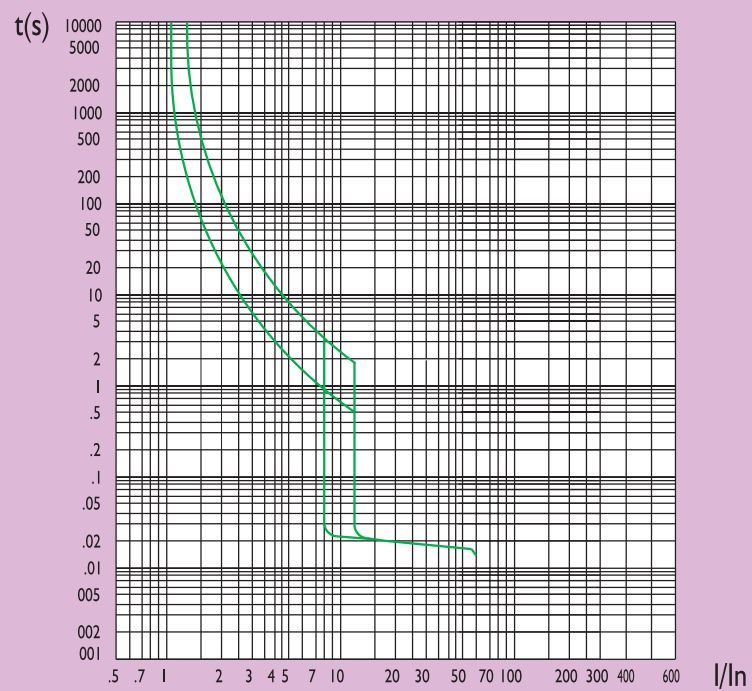
MF2-400, 630(250A~500A)



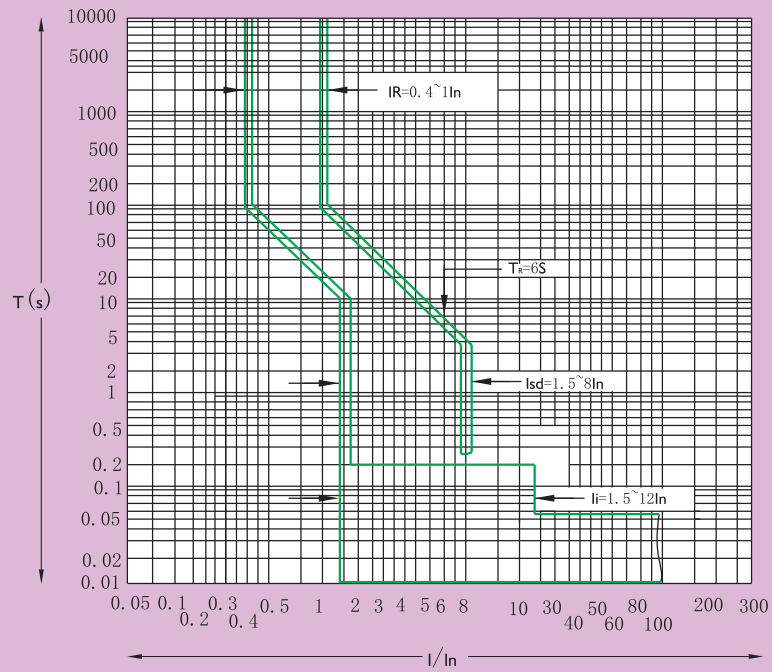
MF2-800, 1250(630A~800A)



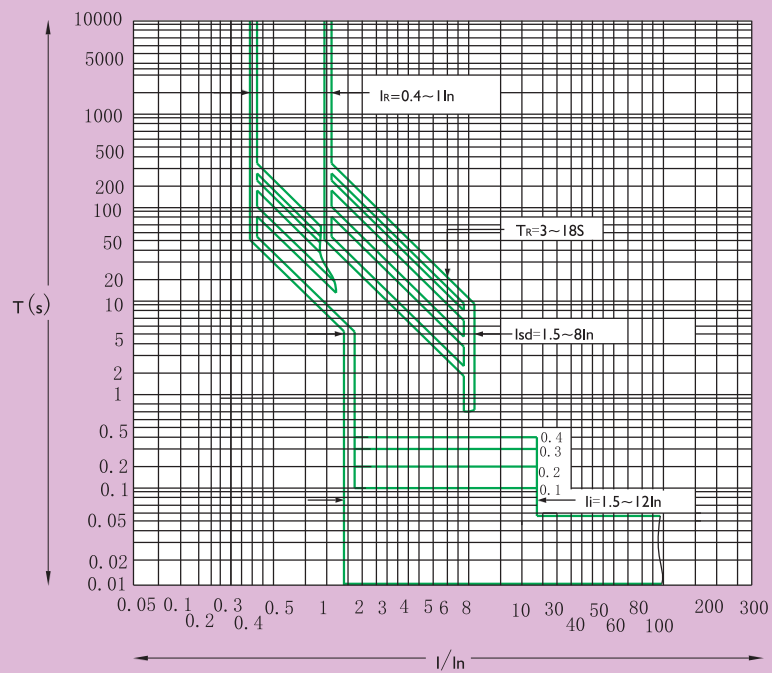
MF2-800, 1250(800A~1250A)

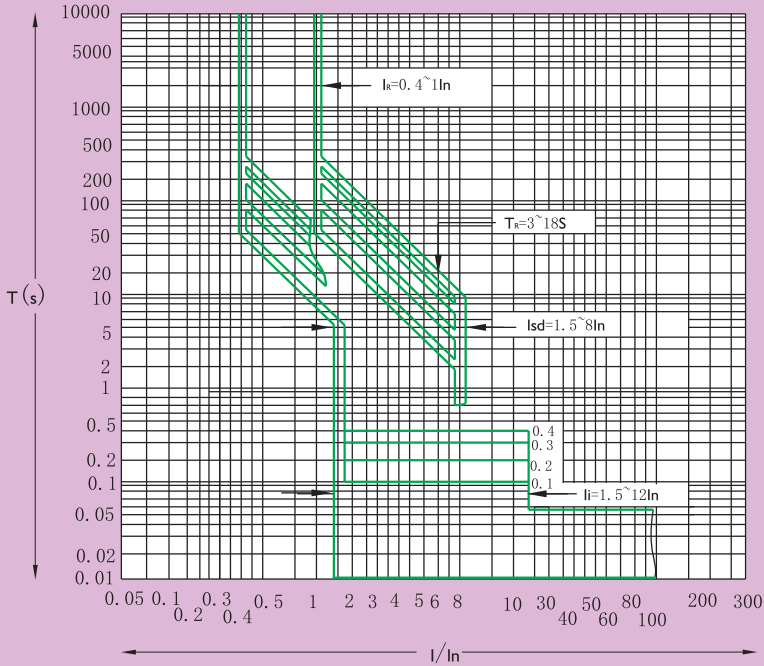


Electronic type MF2S-125、250(40A~250A)

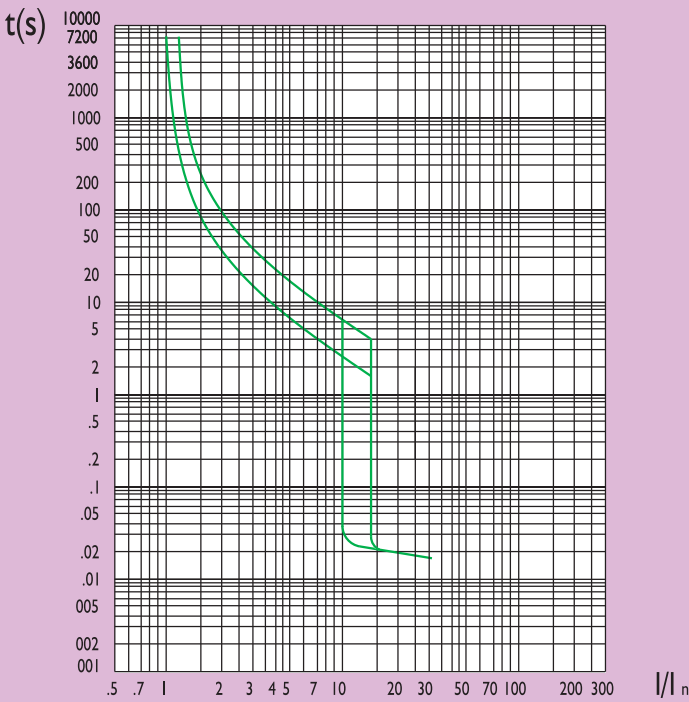


MF2S-400, 630(250A~630A)





For motor protection MF2-125、250、400、630(16A~500A)



7.2 Temperature compensation

When the ambient temperature slightly changes, tripping characteristics will change as well, please refer to the table below for temperature compensation correction.

7.2.1 Temperature compensation coefficient of breaker with thermo-magnetic release as follows.

Ambient temperature	-40℃	-35℃	-30℃	-25℃	-20℃	-15℃	-10℃	-5℃
Temperature compensation coefficient	1.475	1.45	1.425	1.40	1.375	1.35	1.325	1.3

Ambient temperature	0℃	5℃	10℃	15℃	20℃	25℃	30℃	35℃	40℃	45℃	50℃	55℃	60℃	65℃	70℃	75℃
Temperature compensation coefficient	1.275	1.25	1.225	1.2	1.175	1.15	1.125	1.10	1.075	1.05	1.025	1.00	0.975	0.95	0.925	0.9

7.2.2 Temperature compensation coefficient of breaker with electronic release as follows

Frame Level rated current	0℃	5℃	10℃	15℃	20℃	25℃	30℃	35℃	40℃	45℃	50℃	55℃	60℃	65℃	70℃	75℃
MF2S-125S/H(40~125)																
MF2S-250S/H(125~160)MF2S-250S/H(200~250)																
MF2S-630S/H/R(250~400)															0.95	0.95
MF2S-630S/H/R(500~630)															0.98	0.95
MF2S-1250S/H/R(630~800)													0.98	0.95	0.93	0.90
MF2S-1250S/H/R(1000~1250)													0.975	0.975	0.95	0.95
													0.95	0.9	0.875	0.8

8. Mounting of circuit breaker

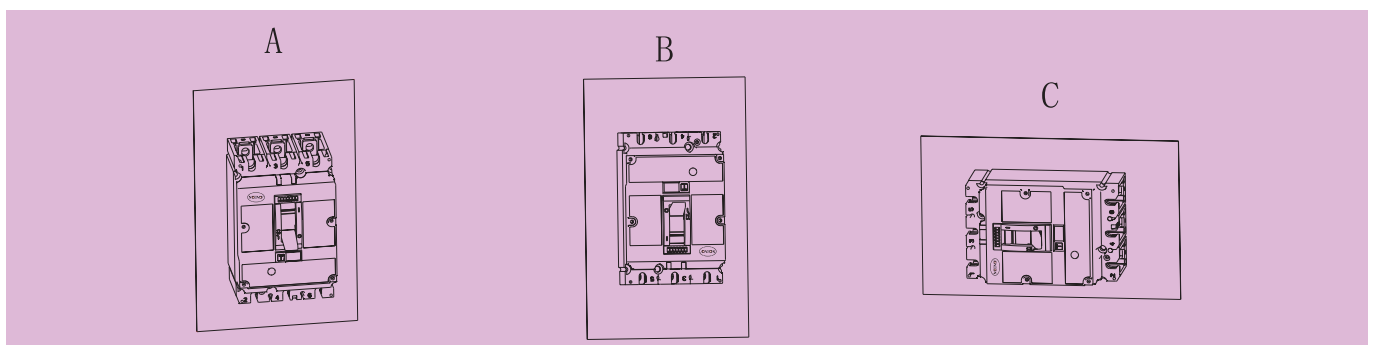
8.1 Modes of down-lead

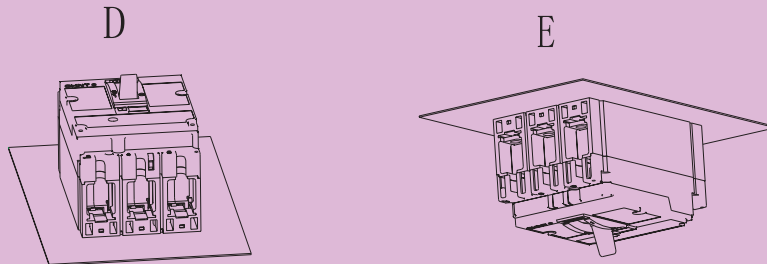
Two modes of upper and lower down-lead are available; adoption of different down-lead modes will not affect normal operation of breaker, in addition, it is no need for derating.



8.2 Modes of mounting

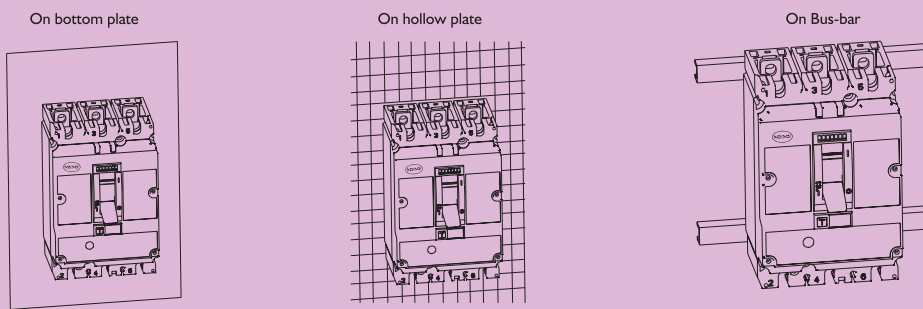
Mounting modes following are available for fixed and plug-in type breakers.



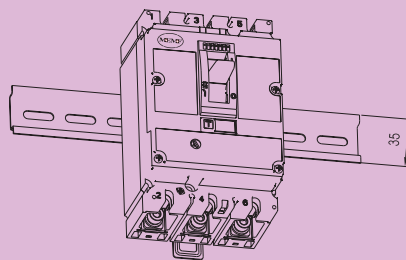


8.3 Modes of fixing

8.3.1 Fixing modes following are available for fixed and plug-in type breakers.

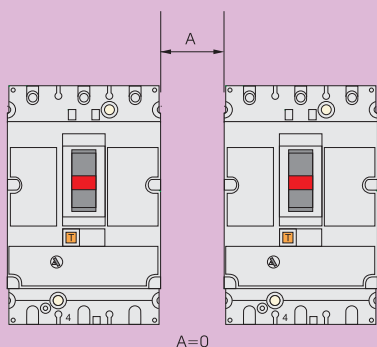


8.3.2 Fixing mode following is available for MF2(S)-125, 250 for fixed type breakers, which adopts DIN rail adaptor of front connection.

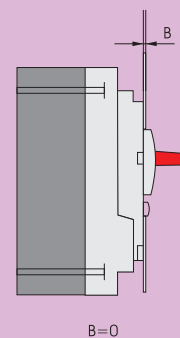


8.4 Secured distance

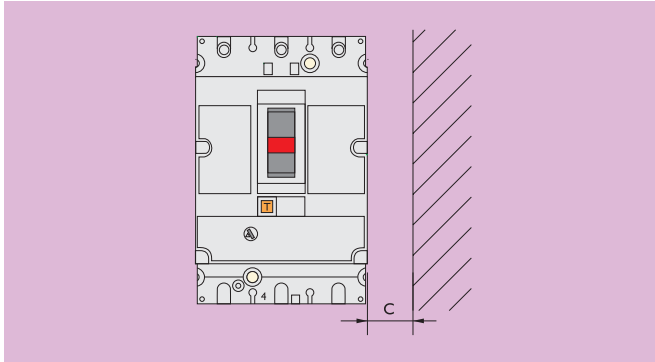
8.4.1 Min. Distance between breakers



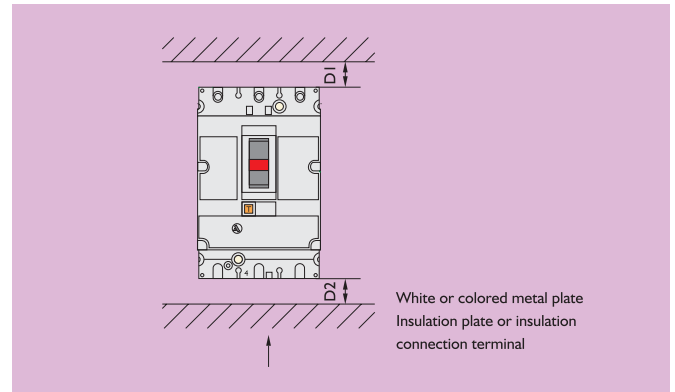
8.4.2 Min. distance between breaker and surface of switchgear where the operation handle is exposed.



8.4.3 Min. distance between breaker and side of switchgear where the operation handle is exposed.



8.4.4 Min. distance between top and bottom of breaker



MF2 Breaker		C	Insulation plate or insulation connection terminal(mm)		White or colored metal plate(mm)	
			D1	D2	D1	D2
MF2-125	$U_e \leq 440V$	5	30	30	35	35
	$U_e < 600V$	10	30	30	35	35
	$U_e \geq 600V$	20	30	30	35	35
MF2S-125	$U_e \leq 440V$	5	30	30	35	35
MF2-250	$U_e < 600V$	10	30	30	35	35
MF2S-250	$U_e \geq 600V$	20	30	30	35	35
MF2-400, 630, MF2S-400, 630	$U_e \leq 440V$	5	30	30	60	60
	$U_e < 600V$	10	30	30	60	60
	$U_e \geq 600V$	20	30	30	100	100
MF2-800, 1250, MF2S-800, 1250	S/H type	10	130	100	70	70
	$U_e = 1000V$	10	300	250	200	200

Note: when voltage is $\geq 500V$, extended terminal cover should be mounted

8.5 Modes of connection

8.5.1 Cable connection plug and Copper busbar

- a. Screw is used to connect with copper (aluminum) cable connection plug or copper busbar

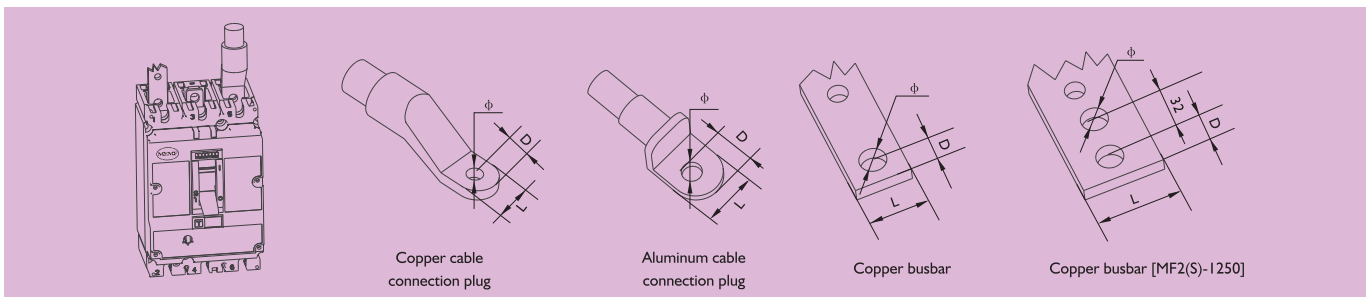
Size of connection screw

MF2-125: M6

MF2S-125、MF2-250、MF2S-250: M8

MF2-400, 630、MF2S-400, 630: M10

MF2-800, 1250、MF2S-800, 1250: M10



MF2	MF2-125	MF2S-125 MF2-250 MF2S-250	MF2-400, 630 MF2S-400, 630	MF2-800, 1250 MF2S-800, 1250
Distance between different poles(mm)	30	35	45	70
L(mm)	≤ 15	≤ 25	≤ 32	≤ 50
D(mm)	≤ 7	≤ 10	≤ 16	≤ 16
φ (mm)	>6	>8	>10	>11

b. With front connection and use screw to connect with copper (aluminum) cable connection plate or copper busbar

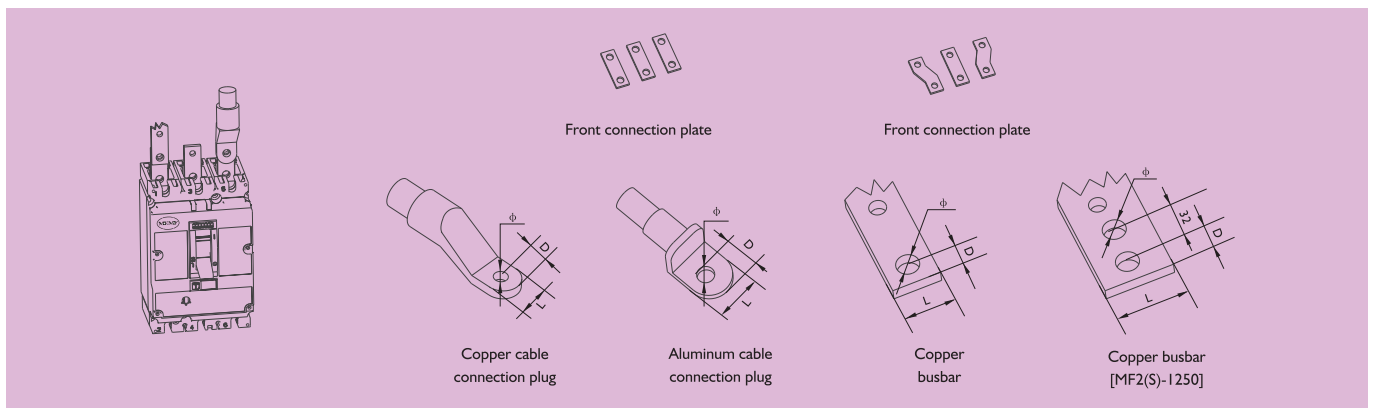
Size of connection screw

MF2-125: M6

MF2S-125, MF2-250、MF2S-250: M8

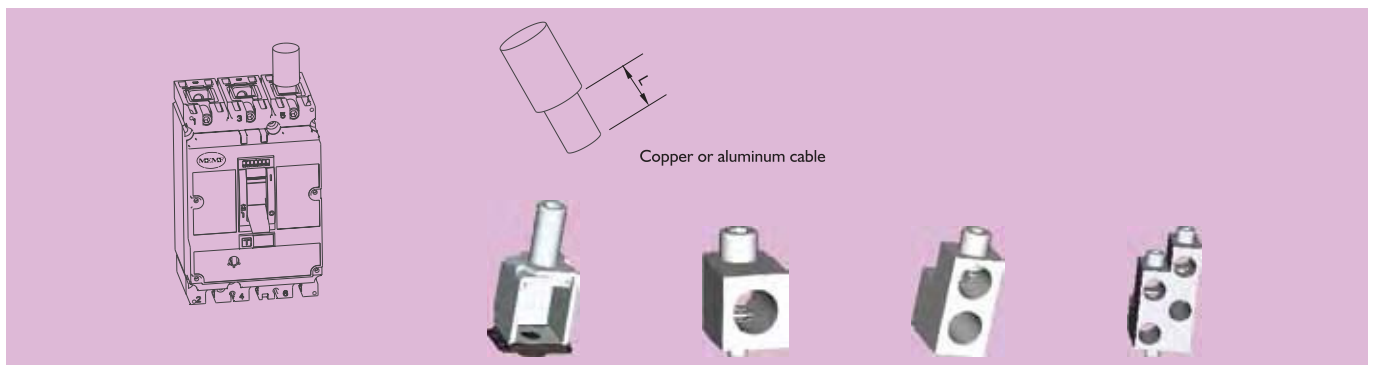
MF2-400, 630, MF2S-400, 630: M12

MF2-800, 1250, MF2S-800, 1250: M10



MF2	MF2-125	MF2S-125 MF2-250 MF2S-250	MF2-400, 630 MF2S-400, 630	MF2-800, 1250 MF2S-800, 1250
Distance between different poles(mm)	30	35	52.5 70	70
L(mm)	≤ 15	≤ 25	≤ 40 ≤ 60	≤ 50
D(mm)	≤ 7	≤ 10	≤ 20 ≤ 20	≤ 16
φ (mm)	>6	>8	>12 >12	>11

8.5.2 Connection of bare cable



MF2	MF2-125	MF2S-125 MF2-250 MF2S-250
L(mm)	16	20
CSA(mm ²)	2.5~70	2.5~185

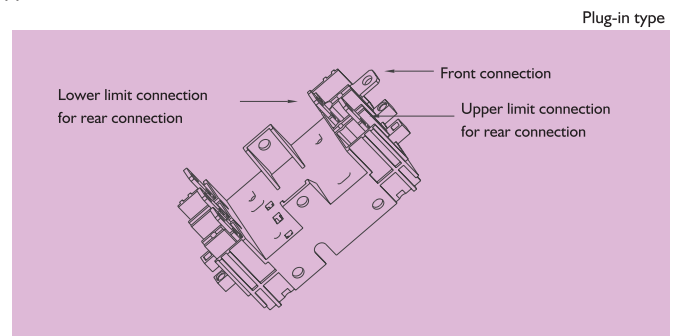
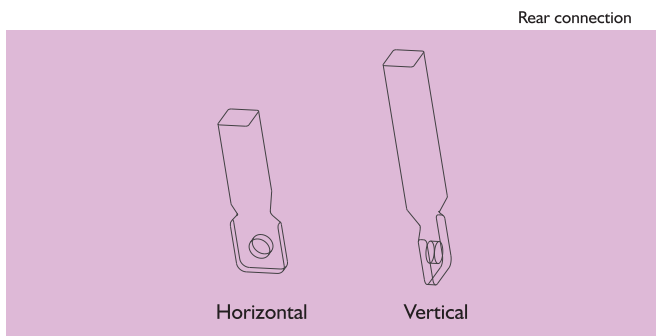
	MF2-400, 630 MF2S-400, 630		
Number of cable	1	2	4
L(mm)	26	30, 60	30
CSA(mm ²)	35~370	35~185	35~125

8.5.3 Rear connection

For rear connection, cable connection plug should be used for connection with copper busbar

8.5.4 Plug-in type connection

Two modes of front and rear connection are available; for rear connection, upper limit or lower limit connection is used.



8.5.5 Standard CSA of copper cable or busbar used for connection

Rated current(A)		16	20	25	32	40	50	63	80	100	125	160	200	250	315	350	400	500	630	700	800	1000	1250
		Cross section area (mm ²)	Copper cable	2.5	2.5	4.0	6.0	10	10	16	25	35	50	70	95	120	185	185	240	2×150	2×185	2×240	2×240
	Copper busbar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2×30×5	2×40×5	2×50×5	2×50×5	2×60×5	2×70×5

8.5.6 Usual cross sections for conductors according intensity

In(A)	Copper conductors		Aluminum conductors		Flexible bars	
	Cross Section Area (mm ²)		Cross Section Area (mm ²)		Dimensions Area (mm ²)	
	Min.	Max.	Min.	Max.	Min.	Max.
10	1.5	2.5	1.5	2.5		
16	1.5	2.5	2.5	4		
20	2.5	4	4	6		
25	2.5	4	4	6		
32	4	6	6	10		
40	6	10	10	16		
63	10	16	16	25		
80	16	25	25	35		
100	25	35	35	50		
125	35	50	50	70		
160	50	70	70	95		
200	70	95	95	120		
250	95	120	150	185		
315	120	185	185	240		
400	185	240 2×150	240 2×150	2×150 3×120		

In(A)	Copper conductors		Aluminum conductors		Flexible bars	
	Cross Section Area (mm ²)		Cross Section Area (mm ²)		Dimensions Area (mm ²)	
	Min.	Max.	Min.	Max.	Min.	Max.
500	2 × 150	2 × 185	2 × 150	2 × 185 4 × 120		
630	2 × 150	2 × 185	2 × 185	2 × 185 4 × 150		2 × 40 × 5
800	2 × 185 2 × 120	2 × 240 4 × 150	2 × 185 3 × 150	3 × 240 4 × 185	2 × 50 × 5	2 × 50 × 10
1000	2 × 240 3 × 185 4 × 150	3 × 240 4 × 185	3 × 185 4 × 150	3 × 240	2 × 32 × 5	2 × 50 × 5
1250	3 × 185 4 × 150	4 × 240	3 × 240	4 × 240	2 × 50 × 10	3 × 50 × 5
1600	4 × 185	4 × 240	4 × 240	6 × 240	3 × 50 × 5	2 × 60 × 10

8.6 Overall and Mounting Dimensions

8.6.1 Overall and mounting dimensions of fixed type for front connection

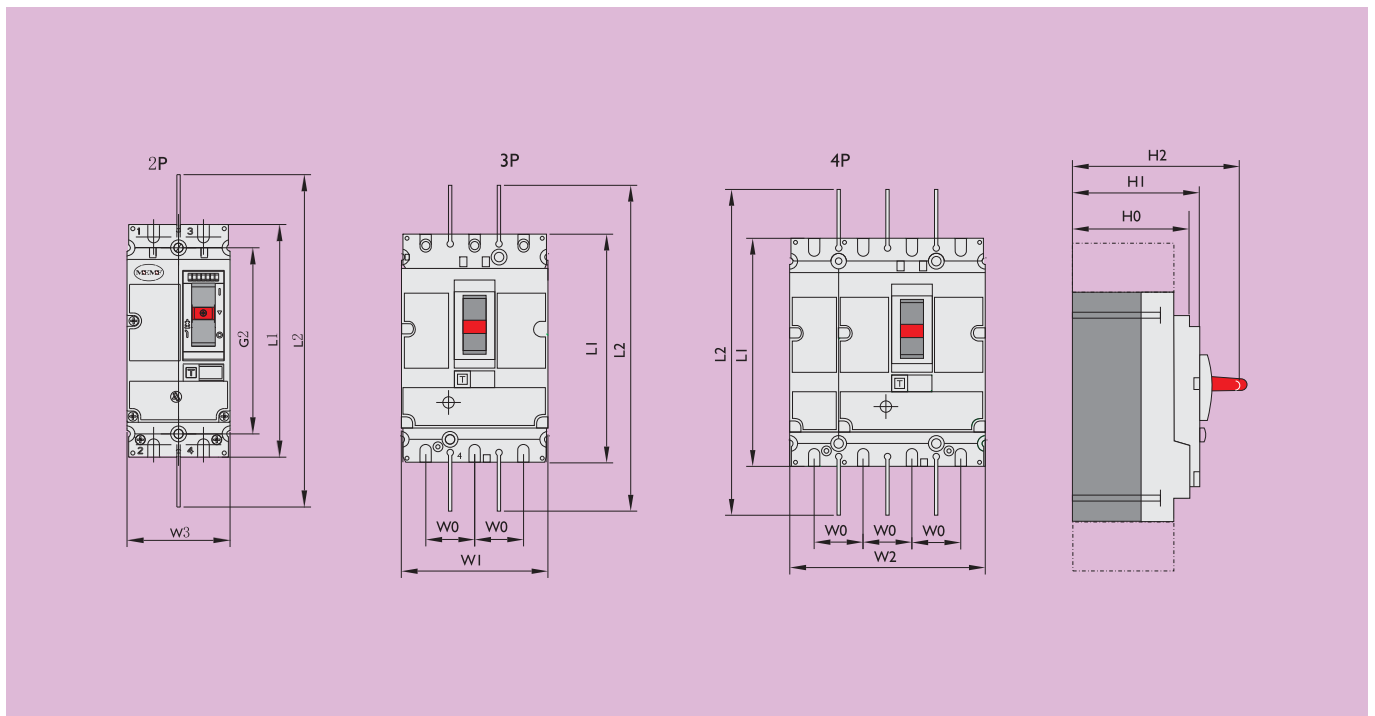
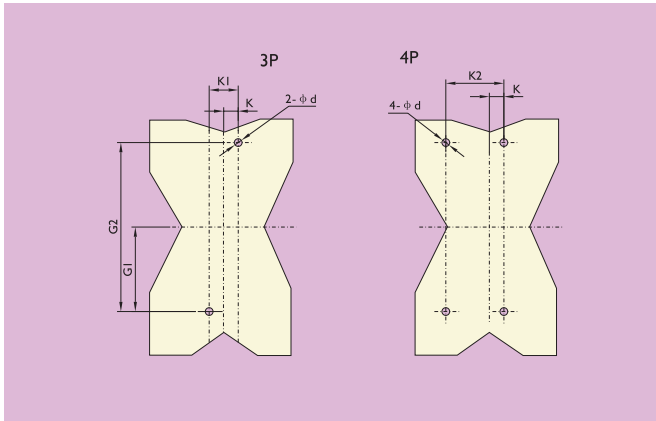
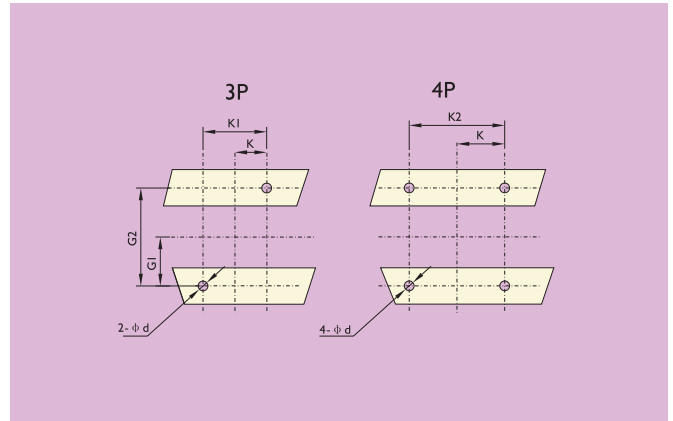


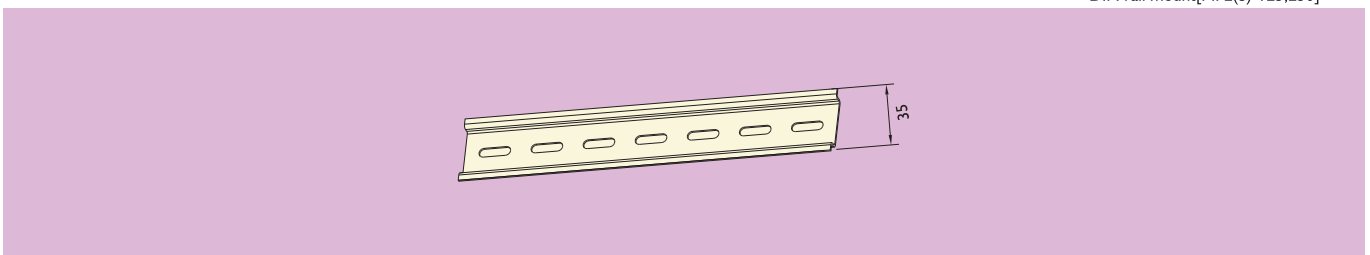
Plate mount



Bar mount



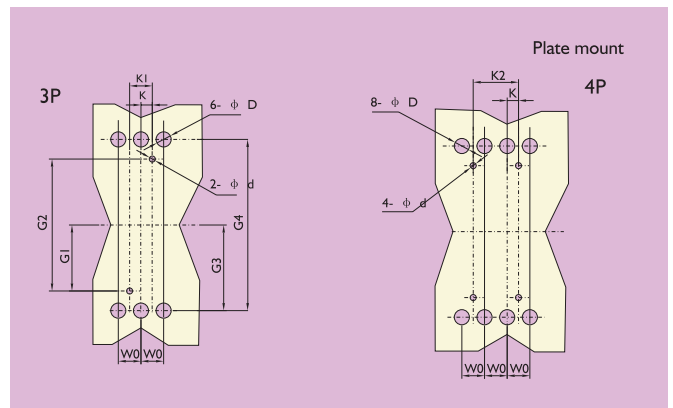
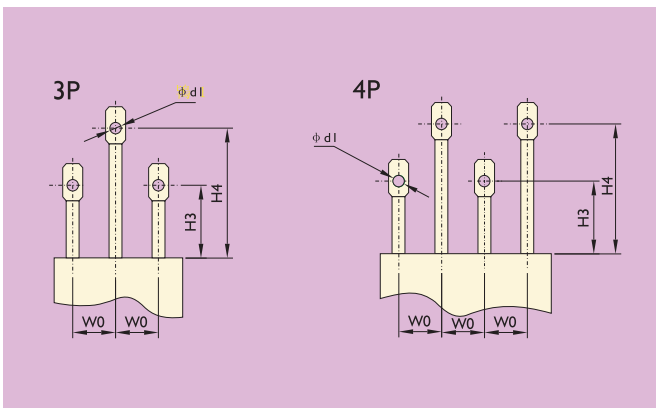
DIN rail mount[MF2(S)-125,250]



	L1	L2	H0	H1	H2	K	K1	K2	G1	G2	W0	W1	W2	W3	d
MF2-125	140	240	72	79	103	15	30	60	56	112	30	90	120	62	6
MF2S-125/MF2-250/MF2S-250	157	357	82	88	126	17.5	35	70	62.5	125	35	105	140	70	6
MF2-400, 630/MF2S-400, 630	255	474	95	113	168	22.5	45	90	100	200	45	140	185	-	6
MF2-800, 1250/MF2S-800, 1250	370	570	132	144	206	35	70	140	120	240	70	210	280	-	7

(mm)

8.6.2 Overall and mounting dimensions of fixed type for rear connection



	H3	H4	W0	K	K1	K2	G1	G2	G3	G4	d	d1	D
MF2-125	47	87	30	15	30	60	56	112	62.5	125	6	6	15
MF2S-125/MF2-250/MF2S-250	57	97	35	17.5	35	70	62.5	125	72	144	6	8	20
MF2-400/MF2S-400	56	100	45	22.5	45	90	100	200	113.5	227	6	13	32
MF2-630/MF2S-630	56	100	45	22.5	45	90	100	200	113.5	227	6	13	32

(mm)

8.6.3 Overall and mounting dimension of plug-in type

Plate mount

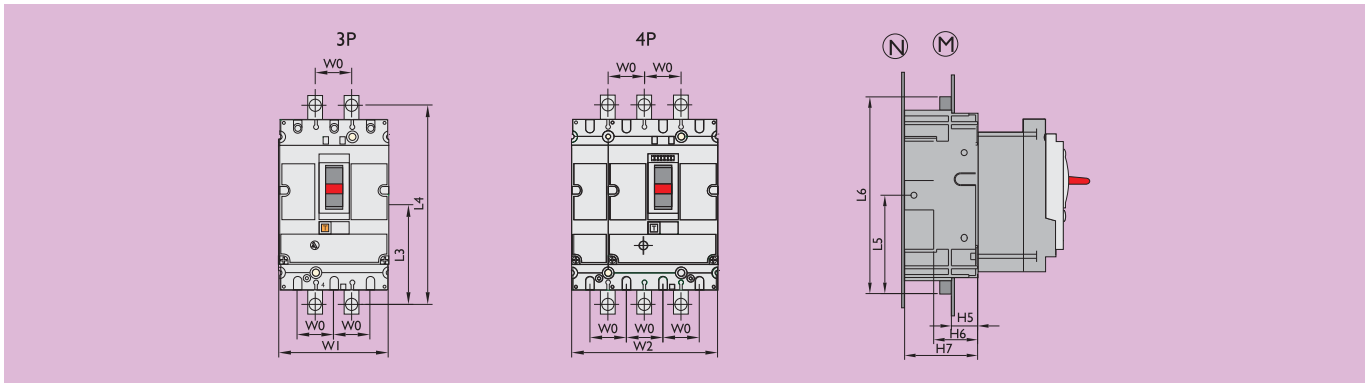


Plate mount (M)

Bar mount

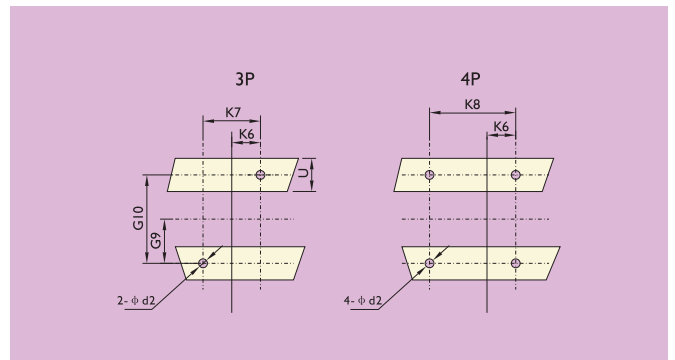
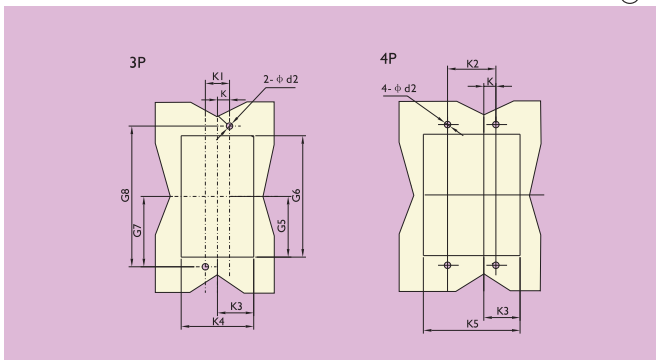


Plate mount (N) front connection

Insulation barrier must be mounted between mounting plate and breaker base

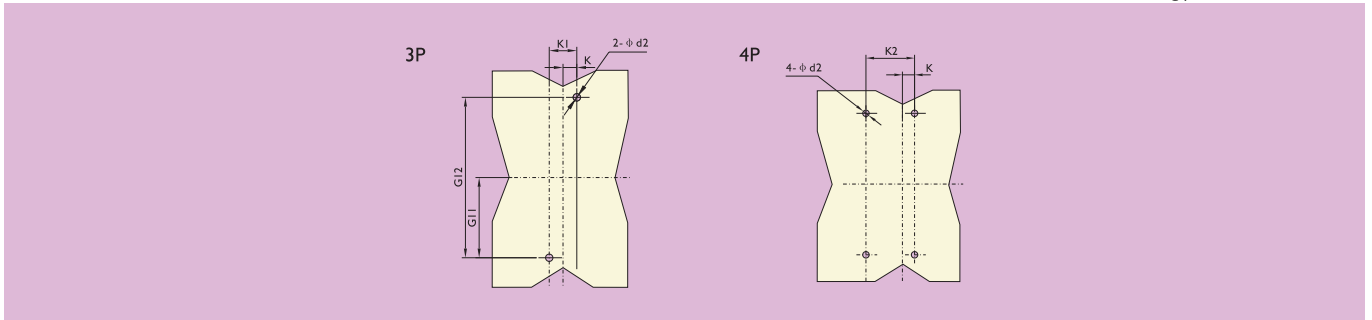
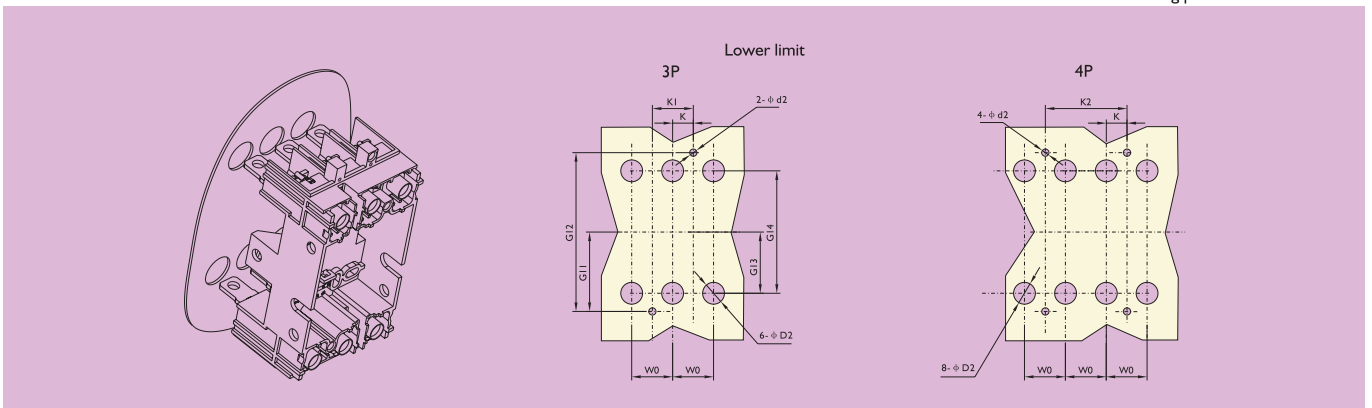
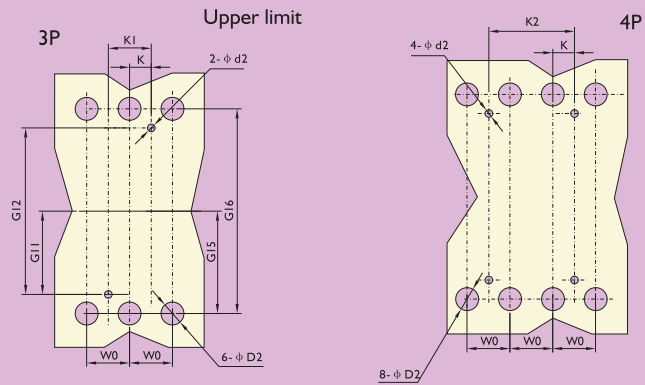
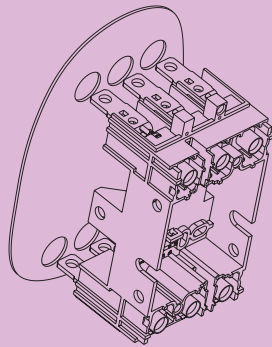


Plate mount (N) rear connection

Insulation barrier must be mounted between mounting plate and breaker base



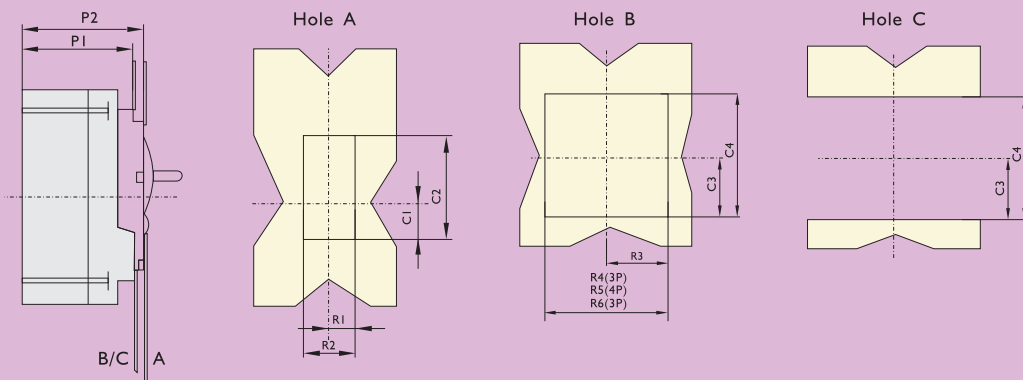


(mm)

	W0	W1	W2	L5	L6	H5	H6	H7	K	K1	K2	K3	K4	K5	K6	K7
MF2-125	30	90	120	90	180	24	40	67	15	30	60	47	94	124	30	60
MF2S-125/MF2-250/MF2S-250	35	105	140	102.5	205	27	45	75	17.5	35	70	54.5	109	144	35	70
MF2-400, 630/MF2S-400, 630	45	140	185	157.5	315	27	45	45	22.5	45	90	71.5	143	188	45	90

	K8	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16	d2	D2	U
MF2-125	90	77	154	85.2	170.4	32.5	65	68	136	54.5	109	70.5	141	6	26	≤32
MF2S-125/MF2-250/MF2S-250	105	87	174	95	190	37.5	75	77.5	155	61	122	79	158	6	30	≤32
MF2-400, 630/MF2S-400, 630	140	137	274	150	300	75	150	125	250	100	200	126	252	6	33	≤32

8.6.4 Flush type (for fixed or plug-in type)



(mm)

	P1	P2	R1	R2	R3	R4	R5	R6	C1	C2	C3	C4
MF2-125	73	80	13	26	46.5	93	123	65	26	68	50.5	101
MF2S-125/MF2-250/MF2S-250	83	90	14.5	29	54	108	143	73	33	78	56.5	113
MF2-400, 630/MF2S-400, 630	109	114	26.5	53	71.5	143	188	-	41.5	116	108	205

9. Accessories

9.1 Inner accessories

9.1.1 Shunt release

$U_s = 70 \sim 100\%I_n$, circuit breaker reliably operates

Long-time electrification is prohibited

Time of response: pulsive type $\geq 20ms$, $\leq 60ms$

9.1.2 Under-voltage release

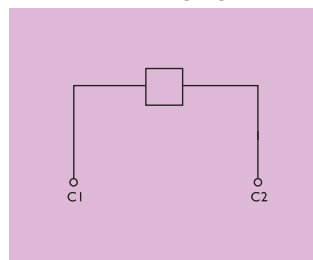
$U_s = 35 \sim 70\%U_n$, circuit breaker reliably breaks

$U_s \geq 85\%U_n$, circuit breaker reliably breaks

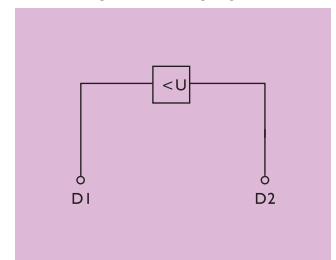
$U_s < 35\%U_n$, prevent circuit breaker from making

Note: With under-voltage release, $U_s \geq 85\%U_n$, circuit breaker normally makes and breaks

Shunt release Wiring diagram



Under-voltage release Wiring diagram

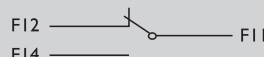


9.1.3 Auxiliary contact

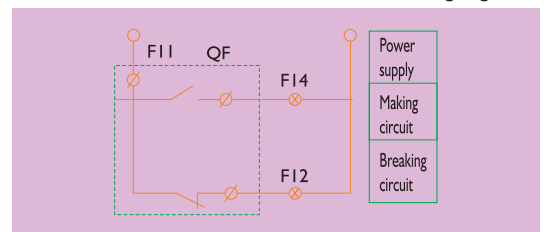
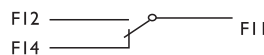
Function: Indication of contacting status

Wiring diagram

Circuit breaker is at breaking status



Circuit breaker is at making status



9.1.4 Alarm contact

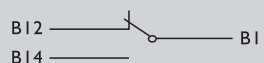
Function: indication of reason for circuit breaker releasing;

- * Over-load
- * Short-circuit
- * Grounding fault
- * Operation of under-voltage releasing or free tripping

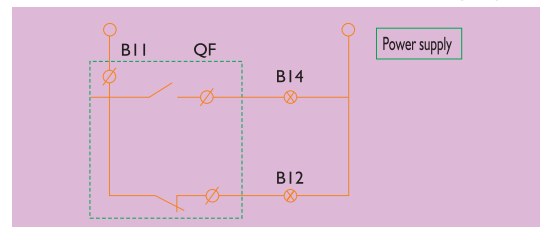
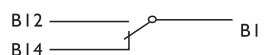
When circuit breaker normally makes and breaks, alarm contact not operates. After free tripping(or tripping due to failure), alarm contact operates and after the circuit breaker again normally operates, alarm contact recovers original status.

Wiring diagram

Circuit breaker is at breaking or making status



Circuit breaker is at free release (or alarming)status



Accessory	Code	Accessory code		Mounting and wiring mode		
		Electromagnetic release	Compound release	MF2-125, 250 MF2S-250	MF2-400, 630 MF2S-400, 630	MF2-800, 1250 MF2S-800, 1250
				3P, 4P	3P, 4P	3P, 4P
No accessory		200	300			
Alarm contact	AL	208	308			
Shunt release	SM: AC220V, SQ: AC380V SB: DC24V	210	310			
Auxiliary contact	AX	220	320			
Under-voltage release	UM: AC220V UQ: AC380V	230	330			
Shunt release Auxiliary contact	SM: AC220V, SQ: AC380V, SB: DC24V AX	240	340			
Two groups of auxiliary contact	AX, AX	260	360			
Auxiliary contact Under-voltage release	AX UM: AC220V, UQ: AC380V	270	370			
Shunt release Alarm contact	SM: AC220V, SQ: AC380V, SB: DC24V AL	218	318			
Auxiliary contact Alarm contact	AX AL	228	328			
Under-voltage release Alarm contact		238	338			
Shunt release Auxiliary contact, alarm	SM: AC220V, SQ: AC380V, SB: DC24V AX, AL	248	348			
Two groups of auxiliary contact	AX, AX AL	268	368			
Alarm contact Auxiliary contact, alarm contact Under-voltage release	AX, AL (UM: AC220V, UQ: AC380V)	278	378			

■ -Shunt release ▲ -Under-voltage release ○ -Auxiliary contact ● -Alarm contact

Note: 1: For MF2-125, 250, 400, 630, MF2S-125, 250, 400, 630, under-voltage and shunt release couldn't be simultaneously equipped on one breaker.

2: For MF2-800, 1250, MF2S-800, 1250, at most three auxiliary contacts could be equipped, Under-voltage and shunt release could be simultaneously equipped on one breaker, in addition, their positions could be exchanged.

9.2 External accessories

9.2.1 Economic extended rotary handle

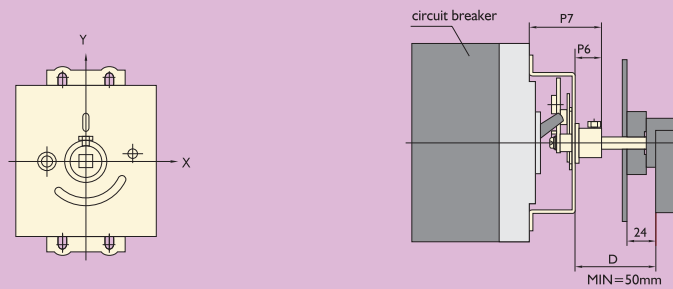
Protection degree: IP30

Functions: Isolation function indication;

0(breaking), I (making)and free tripping indication;

At "OFF" status, the breaker can be fitted with 1-3 padlocks with a diameter of 5-8mm(by customer),

This prevents the door of switchgear being opened unwantedly.

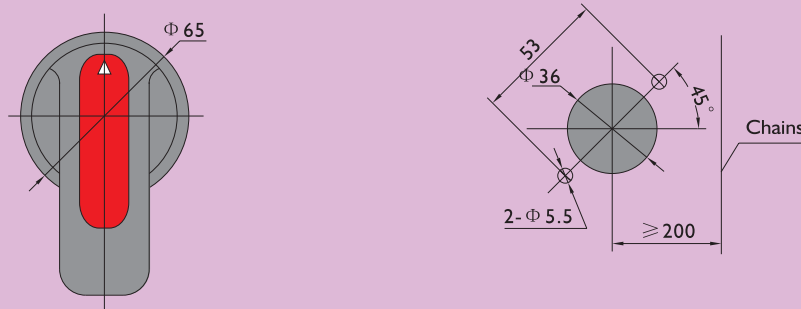


(mm)

	MF2-125	MF2-250、MF2S-250	MF2-400、MF2S-400	MF2-630、MF2S-630
H12	14	14	20	20
H11	56	56	60	60



Boring diagram of handle mounting(mm)



9.2.2 Direct rotary handle

Protection degree: IP40

Functions: Reliable insulation;

Isolation function indication;

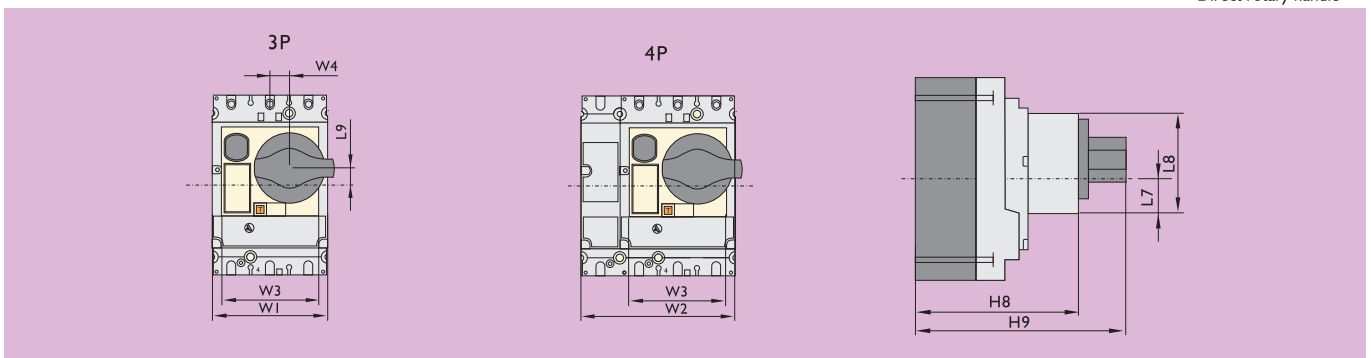
0(breaking), 1(making) and free tripping indication;

Realize free tripping of circuit breaker;

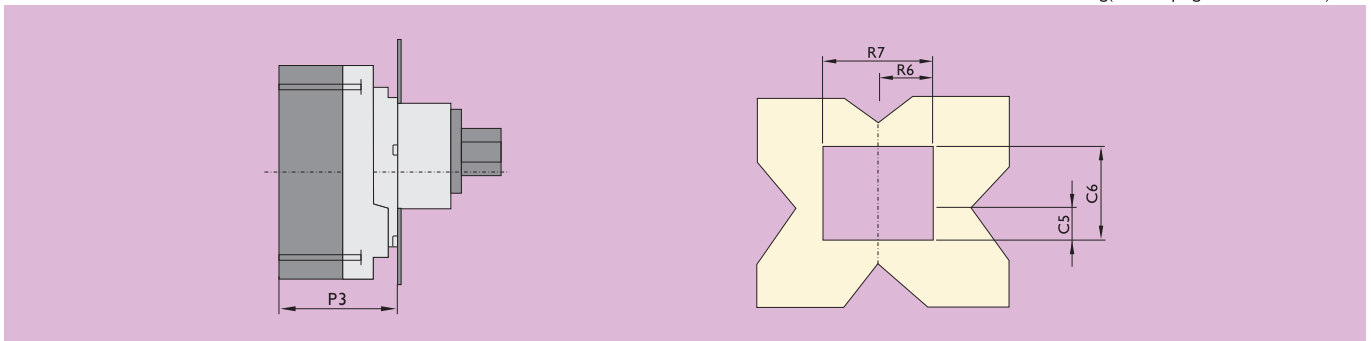
At "OFF" status, the breaker can be fitted with 1-3 padlocks with a diameter of 5~8mm (by customer).



Direct rotary handle



Front boring(fixed or plug-in circuit breaker)



9.2.3 Extended rotary handle

Protection degree: IP55

Functions: Reliable insulation;

Isolation function indication;

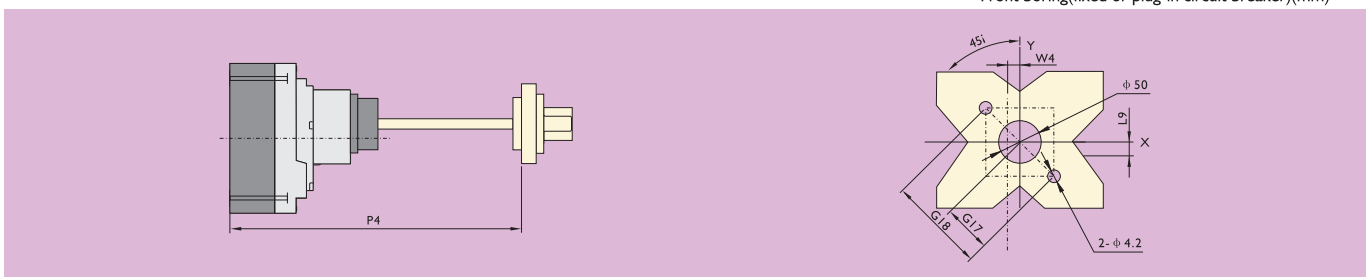
0(breaking), 1(making) and free tripping indication;

When the door is open, the release can be set and the breaker will not make;

At "OFF" status, the breaker can be fitted with 1~3 padlocks with a diameter of 5~8mm (by customer). Then door of the switchgear can be opened.



Front boring(fixed or plug-in circuit breaker)(mm)



(mm)

	W1	W2	W3	W4	L7	L8	L9	H8	H9	P3	P4	R6	R7	C5	C6	G17	G18
MF2-125	30	90	76	15.25	37	70	13.3	114	148	80	≥ 175 ≤ 600	39	78	38	72	36	72
MF2S-125																	
MF2-250	35	105	93	9.25	39	73	9	125	159	90	≥ 175 ≤ 600	48	96	40.5	76	36	72
MF2S-250																	
MF2-400	45	140	122	5	69	121	24.5	148	198	115	≥ 175 ≤ 600	62	124	70.5	124	36	72
MF2S-400																	
MF2-630	45	140	122	5	69	121	24.5	148	198	115	≥ 175 ≤ 600	62	124	70.5	124	36	72
MF2S-630																	

9.2.4 Motor-driven mechanism

Protection degree: IP40

Functions: Reliable insulation;

Isolation function indication;

0(breaking), 1(making) and free tripping indication;

Free releasing of circuit breaker;

Making and breaking the breaker manually or automatically

Manual operation

Turn "manual/auto" switch to "auto" position and then turn the handle to make and break the breaker.

Automatic operation

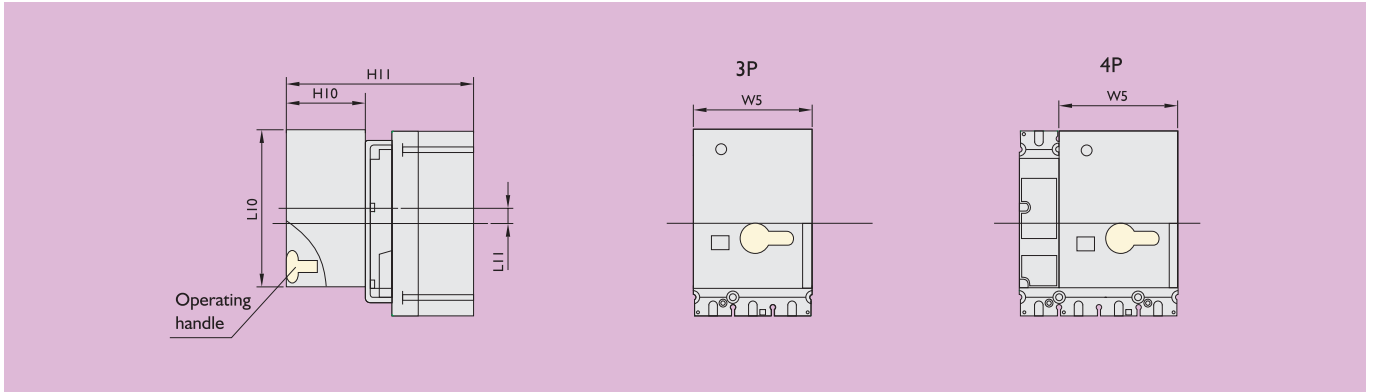
Turn "manual/auto" switch to "manual" position and then push the button to make and break the breaker remotely.

The make/break operation is carried out via pulse or self-retaining type signal control.

Operational range: 85%Un~110%Un.

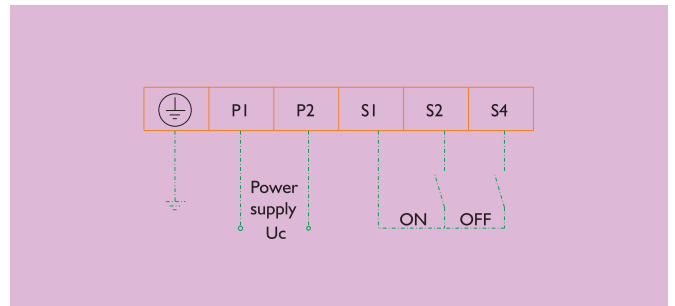
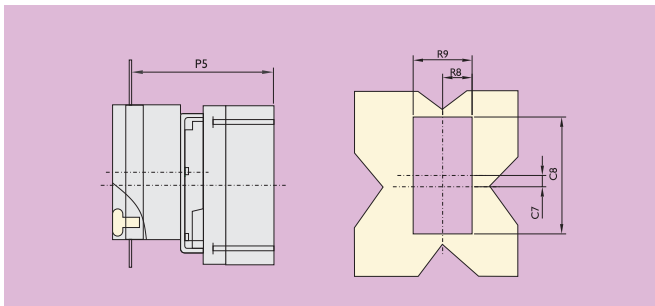


Mf2 circuit breaker	Rated control voltage	Electrical life	Operational current	Power consumption	
MF2-125	100-240V AC	10,000 operations	≤ 0.5 A	14VA	
	100-220V DC			14W	
	24V DC			14W	
MF2S-125	100-240V AC	10,000 operations	≤ 0.5 A	14VA	
	100-220V DC			14W	
	24V DC			14W	
MF2-400	230V AC	5,000 operations	≤ 2 A	35VA	
	110V AC			35VA	
	220V DC			35W	
	110V DC			35W	
	24V DC			35W	
MF2-800	230V/400V AC	3,000 operations	≤ 7.5 A	200W	
					MF2S-800
					MF2-1250
					MF2S-1250



Front boring(fixed or plug-in circuit breaker)

Wiring diagram



	W5	H10	H11	L10	L11	R8	R9	P5	C7	C8
MF2-125	90	77	164	117	17.3	46.5	93	144	17.3	120
MF2S-125, MF2-250, MF2S-250	90	77	175	117	14.5	46.5	93	155	14.5	120
MF2-400, MF2S-400	107	115	250	174	19	64	128	225	19	177
MF2-630, MF2S-630	107	115	250	174	19	64	128	225	19	177
MF2-800, MF2S-800	-	-	-	-	-	-	-	-	-	-
MF2-1250, MF2S-1250	-	-	-	-	-	-	-	-	-	-

(mm)

9.3 Residual current protection module

Protection degree: IP30

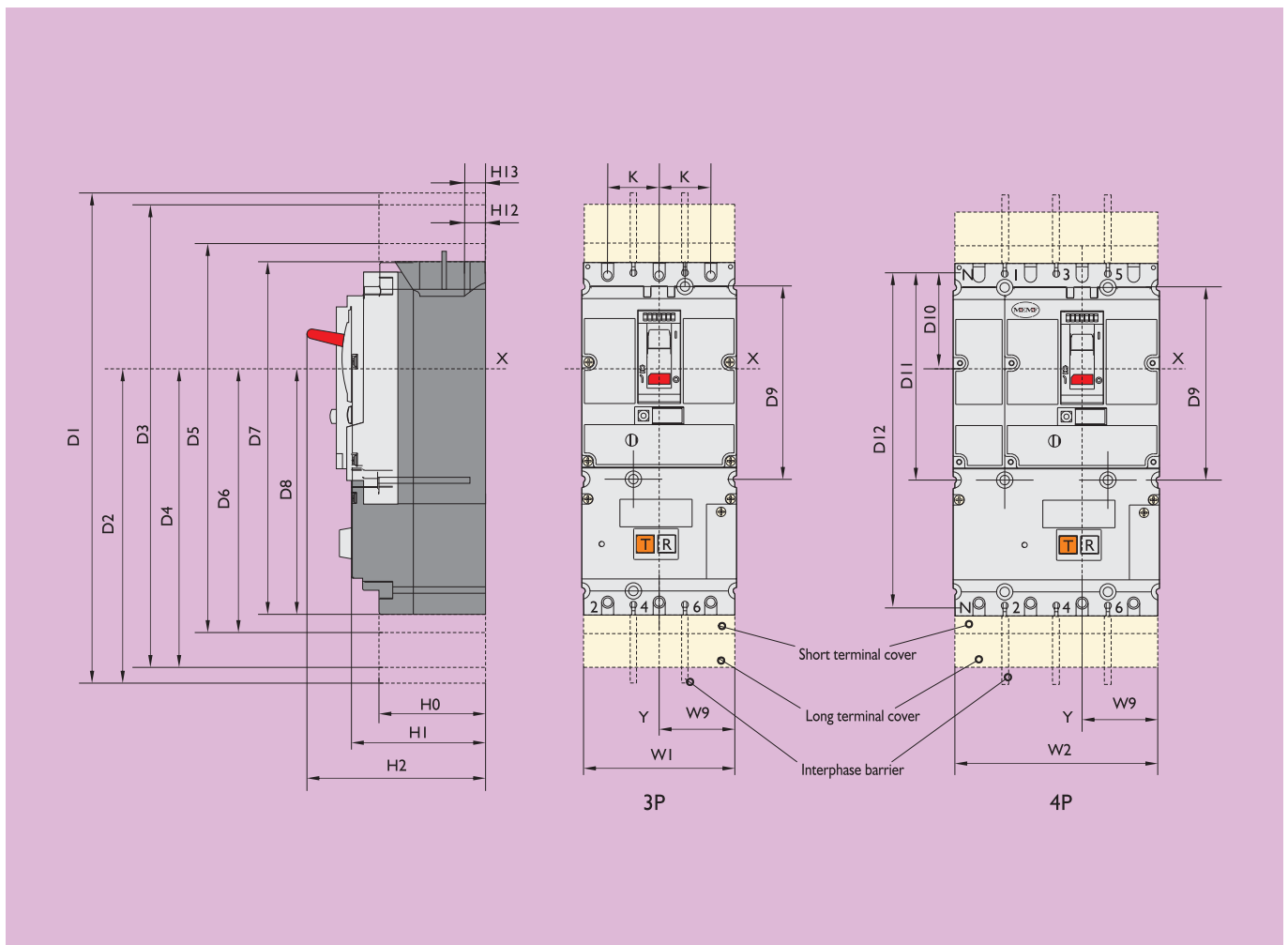
Functions: Failure protection

Failure tripping indication

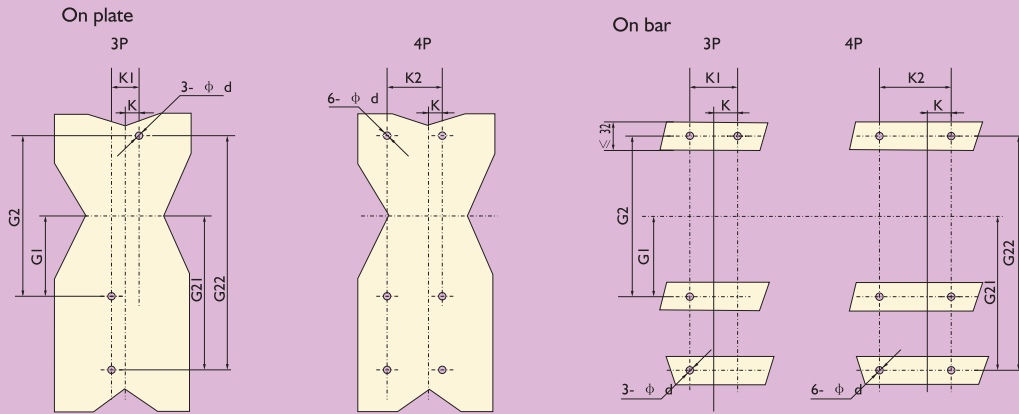
Failure test

Residual current protection module	3P	4P
Number of poles		
MF2-125S/H/R	■	■
MF2S-125S/H	■	■
MF2-250S/H/R	■	■
MF2S-250S/H	■	■
MF2-400S/H/R	■	■
MF2S-400S/H/R	■	■
MF2-630S/H/R	■	■
MF2S-630S/H/R	■	■

Residual current protection module		
Residual current protection properties		
Sensitivity $I_{\Delta n}$ (A)	Adjustable 0.03A/0.1A/0.2A; 0.3A/0.5A/1A; 2A/3A/5A	
Setting of delayed time (S)	Adjustable 0.1S/0.2S/0.3S; 0.3S/0.5S/1S; 1S/2S/3S	
Total breaking time (S)	<0.2S/<0.4S/<0.5S; <0.5S/<0.7S/<1.2S; <1.2S/<2.2S/<3.2S	
Rated voltage (V) AC50/60Hz	200~440	200~440



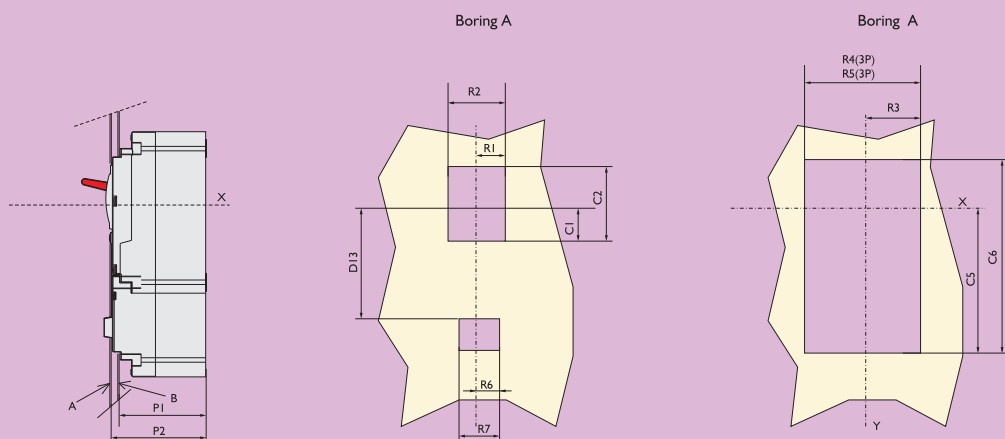
	(mm)																				
	D1	D2	D3	D4	D5	D6	D7	D8	D9	H0	H1	H2	W9	W1	W2	D10	D11	D12	H12	H13	K
MF2-125	305	185	270	167.5	225	145	205	135	112	63	79	103	45	90	120	63	126	191	19	-	30
MF2S-125																					
MF2-250, MF2S-250	432	253.5	396	235.5	263	169	232	153.5	125	73	89	126	52.5	105	140	70	140	215	21.5	-	35
MF2-400, MF2S-400	574	337	580	340	385	242.5	355	227.5	200	95	113	168	70	140	185	113.5	227	327	26	44	45
MF2-630, MF2S-630	574	337	580	340	385	242.5	355	227.5	200	95	113	168	70	140	185	113.5	227	327	26	44	45



(mm)

	K	KI	K2	G1	G2	G21	G22	d
MF2-125	15	30	60	56	112	121	177	5.5
MF2S-125	17.5	35	70	62.5	125	137.5	200	5.5
MF2-250, MF2S-250	22.5	45	90	100	200	200	300	6.5
MF2-400, MF2S-400	22.5	45	90	100	200	200	300	6.5

Front boring of fixed or plug-in circuit breaker(mm)



	P1	P2	R1	R2	R3	R4	R5	R6	R7	D13	D14	C1	C2	C5	C6
MF2-125	73	80	13	26	46.5	93	123	13	26	84	20	26	68	115	165
MF2S-125	83	90	14.5	29	54	108	143	14.5	29	96	20	33	78	132	188
MF2-250, MF2S-250	109	114	26.5	53	71.5	143	188	24	48	146.5	29	41.5	116	202	294
MF2-400, MF2S-400	109	114	26.5	53	71.5	143	188	24	48	146.5	29	41.5	116	202	294

9.5 Locking system

Locking the breaker at status of making or breaking. The system can be fitted with 1~3 padlocks with a diameter of 5~8mm (by customer).

9.6 Terminal cover

Protection degree: IP40

Protect from being contacted with main circuit.

Selection of terminal cover:

Fixed breaker (front connection): Long terminal cover;

Fixed breaker (rear connection): Short terminal cover;

Plug-in breaker: short terminal cover;

When voltage is >500V, terminal cover selected for definite connection mode

Locking system



Long terminal cover



Short terminal cover



10. Complementary Technical Information

10.1 Isolation function

Isolation functions of all the circuit breakers as per IEC60947-2;

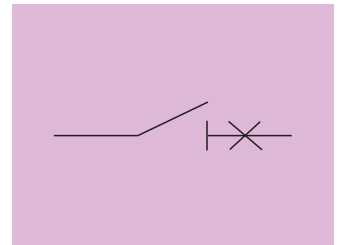
Isolating position of contactors is at 0 (OFF) status;

The operating handle will correctly indicate the status of 0 (OFF), only if the contactor breaks;

Padlocks could be mounted after the contacts breaks;

Operation of isolation functions will realize following points:

- Contacts operation correctly indicates operating reliability of interior mechanism;
- No residual current;
- Higher impulse withstands voltage for terminals at the power supply side and on-load side.



10.2 Current-limiting

10.2.1 Current-limiting capacity

The current-limiting capacity of a circuit breaker is its aptitude to limit short-circuits current. By occurring of short-circuit, the breaker is able to limit I^2t in time so as to protect circuits and switchgear at downstream.

The exceptional limiting capacity of MF2 series is due to the rotating double-break technique, which is characterized by very rapid natural repulsion of contacts and the appearance of two arc voltages in series with a very steep wave front.

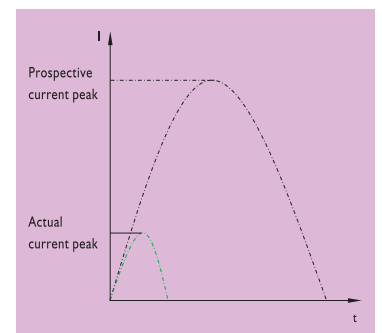
- Exceptional current-limiting capacity is able to greatly reduce power caused by fault current so as to enhance breaking capacity of breaker to $I_{cs} = 100\%I_{cu}$;
- The capacity has greatly released damages, which short-circuit current lay to apparatus;
- The capacity has greatly lowered temperature-rise so as to lengthen service life of the cable;
- The capacity has greatly reduced power so as to lessen distortion of contacts and bus bar;
- The capacity has greatly decreased interruptions to apparatus nearby.

10.2.2 Current-limiting curves

The current-limiting capacity of a circuit breaker is expressed by two curves which are the prospective current and the actual short-circuit current.

Thermal stress (A^2S), i.e. the energy dissipated by the short-circuit current in a conductor with a resistance of $l \Omega$.

The table below indicates the maximum permissible thermal stresses for cables depending on their insulation, conductor (Cu or Al) and cross section area (CSA). CSA values are given in mm^2 and thermal stresses in A^2S .



CSA(mm ²)		1.5	2.5	4	6	10	16	25	35
PVC	Cu K=115	2.97×10^4	8.26×10^4	2.12×10^5	4.76×10^5	1.32×10^6	3.40×10^6	8.26×10^6	1.62×10^7
	Al K=76	1.30×10^4	3.61×10^4	9.26×10^4	2.08×10^5	5.78×10^5	1.48×10^6	3.16×10^6	7.08×10^6
Butyl	Cu K=131	3.86×10^4	1.07×10^5	2.75×10^5	6.18×10^5	1.72×10^6	4.39×10^6	1.07×10^7	2.10×10^7
	Al K=87	1.70×10^4	4.73×10^4	1.21×10^5	2.72×10^5	7.57×10^5	1.94×10^6	4.73×10^6	9.27×10^6
EPR	Cu K=143	4.60×10^4	1.28×10^5	3.27×10^5	7.36×10^5	2.04×10^6	5.23×10^6	1.28×10^7	2.51×10^7
	Al K=94	1.99×10^4	5.52×10^4	1.41×10^5	3.18×10^5	8.84×10^5	2.26×10^6	5.52×10^6	1.08×10^7

CSA(mm ²)		50	70	95	120	150	185	240
PVC	Cu K=115	3.31×10^4	6.48×10^4	1.19×10^5	1.90×10^5	2.98×10^6	4.53×10^6	7.62×10^6
	Al K=76	1.44×10^4	2.83×10^4	5.21×10^4	8.32×10^4	1.30×10^5	1.98×10^6	3.33×10^6
Butyl	Cu K=131	4.29×10^4	8.41×10^4	1.55×10^5	2.47×10^5	3.86×10^5	5.87×10^6	9.88×10^6
	Al K=87	1.89×10^4	3.71×10^4	6.83×10^4	1.09×10^5	1.70×10^5	2.59×10^6	4.36×10^6
EPR	Cu K=143	5.11×10^4	1.00×10^5	1.85×10^5	2.94×10^5	4.60×10^5	7.00×10^6	1.18×10^7
	Al K=94	2.21×10^4	4.33×10^4	7.97×10^4	1.27×10^5	1.99×10^5	3.02×10^6	5.09×10^6

K is quoted from GB-50052 Rules for Low-voltage Power Distribution Design

Example:

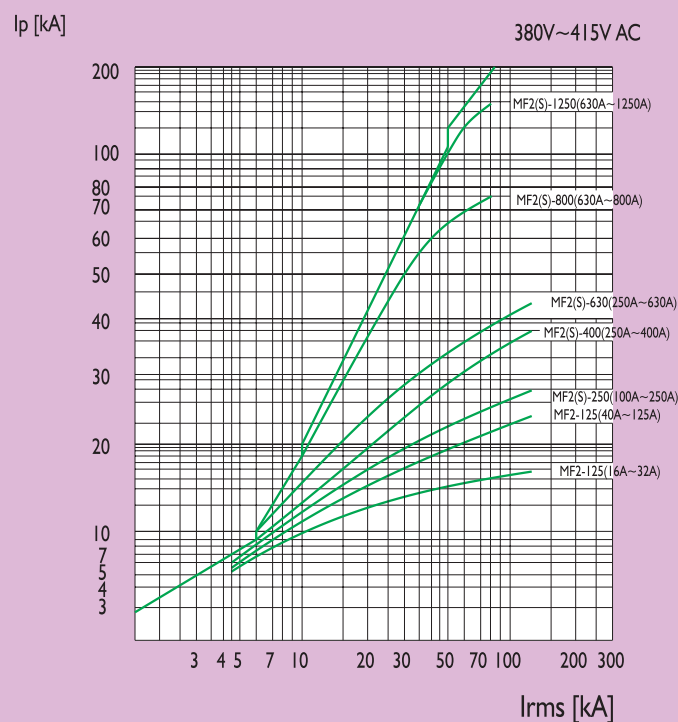
- a. What is the actual current when a prospective short-circuit current of 125kA rms (peak value=275kA) comes through the current-limiting operation circuit breaker at upstream of MF2-125R

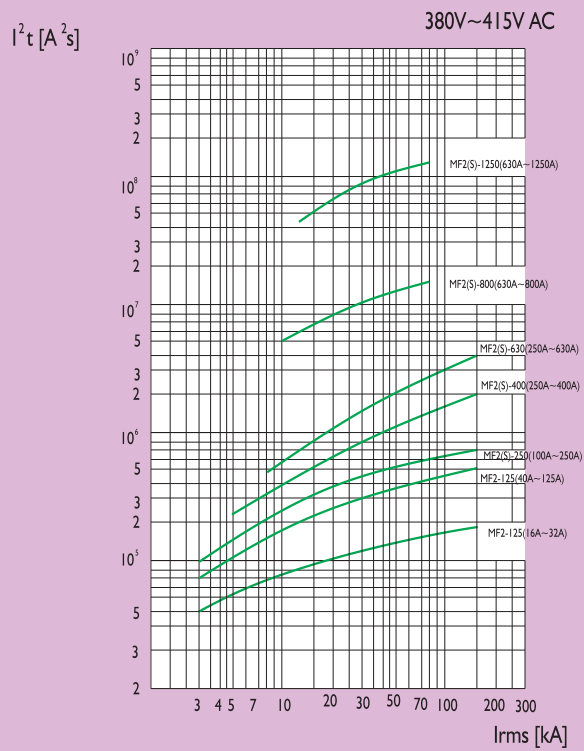
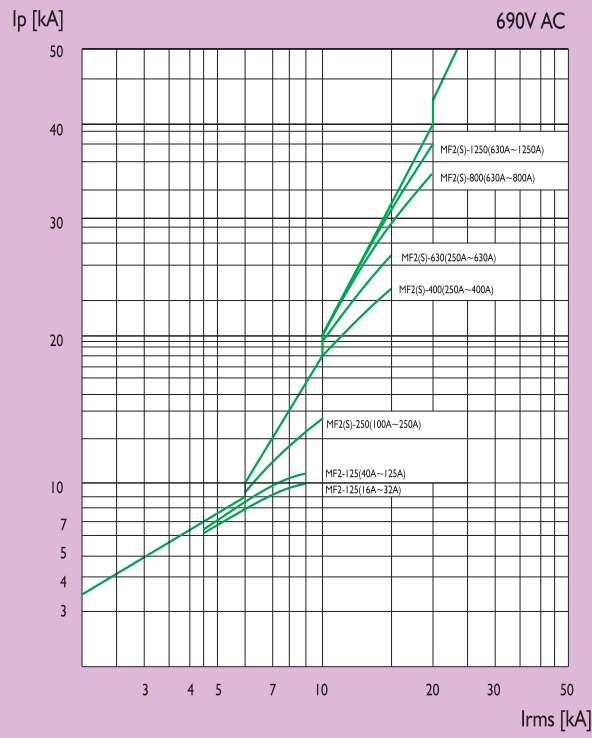
Answer: the peak value=23kA; (for details, refer to current-limiting curves)

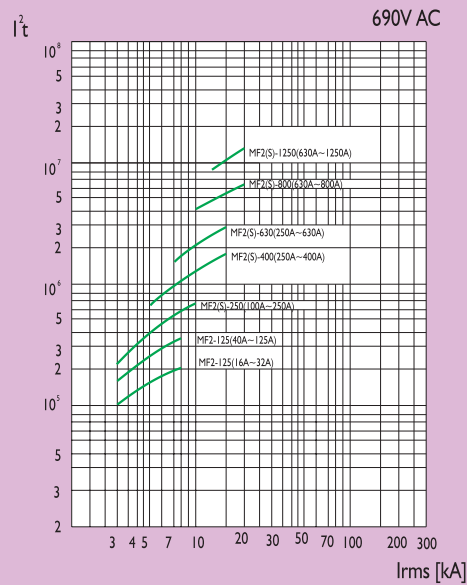
- b. Is a Cu/PVC cable with a CSA of 10mm² adequately protected by a MF2-125S circuit breaker

Answer: the table above indicates that the permissible thermal stress is $1.32 \times 10^6 \text{ A}^2\text{S}$ at the point where a MF2S-125 (I_{cu}=50kA) is installed, and the short-circuit current is limited within the range of $1.32 \times 10^6 \text{ A}^2\text{S}$, therefore the cable could be protected.

I²t Curve





A²s curve

10.3 Power loss per pole

Resistance/ power loss mΩ/W	MF2-125	MF2S-125	MF2-250	MF2S-250	MF2-400	MF2S-400	MF2-630	MF2S-630	MF2-800	MF2S-800	MF2-1250	MF2S-1250
16	7.1/1.82											
20	6.2/2.5											
25	4.8/3											
32	3.7/3.8											
40	2.6/4.2	0.85/1.4										
50	2.7/6.75											
63	1.7/6.75											
80	1.3/8.3											
100	0.85/8.5	0.5/5	1.0/10	0.5/5								
125	0.71/11	0.5/7.8										
160			0.55/14	0.36/9.2								
200			0.55/22	0.36/14.4								
250			0.55/34.4	0.28/17.5	0.3/18.8	0.15/9	0.3/18.8	0.13/8				
315					0.28/28	0.15/15	0.28/28	0.13/13				
350					0.28/34	0.15/18	0.28/34	0.13/16				
400					0.24/38	0.15/24	0.24/38	0.13/21				
500							0.2/50	0.13/32.5				
630								0.13/52	0.04/15.9	0.04/15.9	0.04/15.9	0.04/15.9
700									0.04/19.6	0.04/19.6	0.04/19.6	0.04/19.6
800									0.04/25.6	0.04/25.6	0.04/25.6	0.04/25.6
1000											0.04/40	0.04/40
1250											0.04/62.5	0.04/62.5

10.4 Influences which appended residual current protection module lay to tripping characteristics

Please refer to temperature compensation coefficient below when the fixed and plug-in type circuit breaker are appended with residual current protection module (55°C).

Frame size rated current	Fixed type	Plug-in type
MF2-125S/H/R (16~125)	1In	1In
MF2S-125S/H (40~125)	1In	1In
MF2-250S/H/R (100~160)	1In	1In
MF2-250S /H/R (200~250)	1In	0.9In
MF2S-250S/H (100~160)	1In	1In
MF2S-250S/H (200~250)	1In	0.86In
MF2-400S/H/R (250~400)	0.97In	0.97In
MF2S-400S/H/R (250~400)	0.97In	0.97In
MF2-630S/H/R (250~500)	0.97In	0.97In
MF2S-630S/H/R (250~400)	0.97In	0.97In
MF2S-630S/H/R (500~630)	0.9In	0.9In

Under the environmental temperature beyond 55°C, when the fixed and plug-in type circuit breaker should be appended with residual current protection module, relative coefficient should be taken to consideration. Then the temperature compensation coefficient= coefficient at 55°C × coefficient of thermol-magnetic release referred in 6.2.1 (or that of 6.2.2 electronic release).

10.5 Influences which altitude lay to tripping characteristics

To tripping characteristics of circuit breaker, it is no obvious influence, when the altitude does not exceed 2000m. Once the altitude exceeds the level of 2000m, factors of dielectric stress lowering and cooled air should be taken into consideration.

Altitude (m)	2000	3000	4000	5000
Dielectric stress (V)	3000	2500	2100	1800
Max. operational voltage (V)	690	550	480	420
Ratings at 55°C (A)	1In	0.96In	0.93In	0.9In

10.6 Cascading

Definition of Cascading

Current-limiting technique has been adopted for cascading to install downstream circuit breaker with lower breaking capacity (cheaper circuit breakers) at the given point of circuit, and upstream MF2(S) circuit breaker operates to limit short-circuit current. Under the operation of cascading network, circuit breaker with lower breaking capacity compared with prospective short-circuit current at the given point could operate under normal short-circuit status. As the short-circuit current will be limited by upstream circuit breaker with current-limiting operation, cascading network is applicable to all the power distribution apparatus protection at downstream. In addition, cascading operation is not restricted to operation of two switches in serial, but is applicable in various electric networks, as well.

Application of cascading

Through the application of cascading, connected apparatuses could be installed in different switchgears to realize normal operation. Therefore, cascading, in common, refers to various combination of circuit breakers installed at the given point of which the breaking capacity is lower than prospective short-circuit current. And breaking capacity of upstream circuit breakers should be equal to or higher than prospective short-circuit current at the installed point to protect apparatus at downstream.

Cascading application is in conformity with IEC60947-2 standards.

Cascading (220/230/240V)

Upstream: MF2-125~1250

Downstream: MF2 (S)-125~1250

Upstream Breaking capacity (kA rms)	MF2-125S 85	MF2-125H 100	MF2-125R 150	MF2-250S 85	MF2-250H 100	MF2-250R 150	MF2-400S 85	
Downstream	Breaking capacity (kA rms)							
MF2-125S		100	150		100	150		
MF2-125H			150			150		
MF2-250S					100	150		
MF2-250H						150		
MF2-400S								
MF2-400H								
MF2-630S								
MF2-630H								
MF2-800S								
MF2-800H								
MF2-1250S								
MF2-1250H								
MF2S-125S		100	150		100	150		
MF2S-125H			150			150		
MF2S-250S					100	150		
MF2S-250H						150		
MF2S-400S								
MF2S-400H								
MF2S-630S								
MF2S-630H								
MF2S-800S								
MF2S-800H								
MF2S-1250S								
MF2S-1250H								

MF2-400H 100	MF2-400R 150	MF2-630S 85	MF2-630H 100	MF2-630R 150	MF2-800S 65	MF2-800H 100	MF2-1250S 65	MF2-1250H 100
100	150		100	150		100		100
	150			150				
100	150		100	150		100		100
	150			150				
100	150		100	150		100		100
	150			150				
			100	150		100		100
				150				
						100		100
100	150		100	150		100		100
	150			150				
100	150		100	150		100		100
	150			150				
100	150		100	150		100		100
	150			150				
			100	150		100		100
				150				
						100		100
						100		100

Upstream: MF2S-125~1250

Downstream: MF2(S)-125~1250

Upstream Breaking capacity (kA rms)	MF2S-125S 85	MF2S-125H 100	MF2S-250S 85	MF2S-250H 100	MF2S-400S 85	MF2S-400H 100	
Downstream Breaking capacity (kA rms)							
MF2-125S		100		100		100	
MF2-125H							
MF2-250S				100		100	
MF2-250H							
MF2-400S						100	
MF2-400H							
MF2-630S							
MF2-630H							
MF2-800S							
MF2-800H							
MF2-1250S							
MF2-1250H							
MF2S-125S		100		100		100	
MF2S-125H							
MF2S-250S				100		100	
MF2S-250H							
MF2S-400S						100	
MF2S-400H							
MF2S-630S							
MF2S-630H							
MF2S-800S							
MF2S-800H							
MF2S-1250S							
MF2S-1250H							

MF2S-400R 150	MF2S-630S 85	MF2S-630H 100	MF2S-630R 150	MF2S-800S 65	MF2S-800H 100	MF2S-1250S 65	MF2S-1250H 100
150							
150		100	150		100		100
150			150				
150		100	150		100		100
150			150				
150		100	150		100		100
			150				
		100	150		100		100
			150				
					100		100
					100		100
150							
150		100	150		100		100
150			150				
150		100	150		100		100
150			150				
150		100	150		100		100
			150				
		100	150		100		100
			150				
					100		100
					100		100

2、Cascading (380/400/415V)

Upstream: MF2-125~1250;

Downstream: MF2(S)-125~1250

Upstream Breaking capacity (kA rms)	MF2-125S 50	MF2-125H 100	MF2-125R 150	MF2-250S 50	MF2-250H 100	MF2-250R 150	MF2-400S 70
Downstream Breaking capacity (kA rms)							
MF2-125S		100	150		100	150	70
MF2-125H			150			150	
MF2-250S					100	150	70
MF2-250H						150	
MF2-400S							
MF2-400H							
MF2-630S							
MF2-630H							
MF2-800S							
MF2-800H							
MF2-1250S							
MF2-1250H							
MF2S-125S		100	150		100	150	70
MF2S-125H			150			150	
MF2S-250S					100	150	70
MF2S-250H						150	
MF2S-400S							
MF2S-400H							
MF2S-630S							
MF2S-630H							
MF2S-800S							
MF2S-800H							
MF2S-1250S							
MF2S-1250H							

MF2-400H 100	MF2-400R 150	MF2-630S 70	MF2-630H 100	MF2-630R 150	MF2-800S 50	MF2-800H 70	MF2-1250S 50	MF2-1250H 70
100	150							
	150	70	100	150		70		70
100	150			150				
	150	70	100	150		70		70
100	150			150				
	150		100	150		70		70
				150				
			100	150		70		70
				150				
						70		70
						70		70
100	150							
	150	70	100	150		70		70
100	150			150				
	150	70	100	150		70		70
100	150			150				
	150		100	150		70		70
				150				
			100	150		70		70
				150				
						70		70
						70		70

Upstream: MF2S-125~1250

Downstream: MF2 (S) -125~1250

Upstream Breaking capacity (kA rms)	MF2S-125S 50	MF2S-125H 100	MF2S-250S 50	MF2S-250H 100	MF2S-400S 70	MF2S-400H 100
Downstream ↓	Breaking capacity (kA rms)					
MF2-125S		100		100		100
MF2-125H				100		100
MF2-250S				100		100
MF2-250H						100
MF2-400S						100
MF2-400H						
MF2-630S						
MF2-630H						
MF2-800S						
MF2-800H						
MF2-1250S						
MF2-1250H						
MF2S-125S		100		100		100
MF2S-125H				100		100
MF2S-250S				100		100
MF2S-250H						100
MF2S-400S						100
MF2S-400H						
MF2S-630S						
MF2S-630H						
MF2S-800S						
MF2S-800H						
MF2S-1250S						
MF2S-1250H						

MF2S-400R 150	MF2S-630S 70	MF2S-630H 100	MF2S-630R 150	MF2S-800S 50	MF2S-800H 70	MF2S-1250S 50	MF2S-1250H 70
150		100	150		70		70
150		100	150		70		70
150		100	150		70		70
150		100	150		70		70
150		100	150		70		70
150		100	150		70		70
		100	150		70		70
			150		70		70
					70		70
					70		70
					70		70
					70		70
150		100	150		70		70
150		100	150		70		70
150		100	150		70		70
150		100	150		70		70
150		100	150		70		70
150		100	150		70		70
		100	150		70		70
			150		70		70
					70		70
					70		70
					70		70
					70		70
					70		70

10.7 Protection discrimination(selectivity)

Protection discrimination is a must factor in low-voltage power distribution design so as to ensure reliability and continuity for users' electricity utilization. Whenever there is fault occurring in the electric network, the upstream breaker where the fault is occurring breaks.

Protection discrimination could be clarified into 3 kinds: Total protection discrimination, partial protection discrimination and no protection discrimination(refer to fig aside):

Total protection discrimination: For all kinds of current where the faults occurred, including the overload current and nonresistance current, breaker D2 breaks and breaker D1 keeps making status.

Partial protection discrimination: For a much lower current compared with where the fault occurred (the limit value of protection discrimination), breaker D2 breaks and breaker D1 keeps making status (total protection discrimination).

Upstream: MF2-125~1250

Downstream: MF2(S)-125~1250

Upstream Downstream In (A) I _{li} (kA)	MF2-125 S/H/R										MF2-250 S/H/R			
	16	20	25	32	40	50	63	80	100	125	100	160	200	250
MF2-125 S	16			0.4	0.5	0.5	0.5	0.63	0.8	1.0	2.0	T	T	T
	20				0.5	0.5	0.5	0.63	0.8	1.0	2.0	T	T	T
	25					0.5	0.5	0.63	0.8	1.0	2.0	T	T	T
	32						0.5	0.63	0.8	1.0	2.0	T	T	T
	40							0.63	0.8	1.0	2.0	T	T	T
	50								0.8	1.0	2.0	T	T	T
	63									1.0	2.0	T	T	T
	80											1.25	T	T
	100											1.25	T	T
	125													T
MF2-125 H/R	16			0.4	0.5	0.5	0.5	0.63	0.8	1.0	2.0	T	T	T
	20				0.5	0.5	0.5	0.63	0.8	1.0	2.0	T	T	T
	25					0.5	0.5	0.63	0.8	1.0	2.0	T	T	T
	32						0.5	0.63	0.8	1.0	2.0	T	T	T
	40							0.63	0.8	1.0	2.0	3.6	3.6	3.6
	50								0.8	1.0	2.0	3.6	3.6	3.6
	63									1.0	2.0	3.6	3.6	3.6
	80											3.6	3.6	3.6
	100											3.6	3.6	3.6
	125													3.6
MF2S-125 S/H	40							0.63	0.8	1.0	1.25	T	T	T
	100											1.25	T	T
	125													2.5
MF2-250 S	100													3
	160													
	200													
	250													
MF2-250 H/R	100													3
	160													
	200													
	250													
MF2S-250 S/H	100											1.6	2	2.5
	160													2.5
	200													
	250													
MF2-400 S/H/R	250													
	315													
	350													
	400													

→ Upstream ↓ Downstream In (A) li (kA)		MF2-125 S/H/R										MF2-250 S/H/R				
		16	20	25	32	40	50	63	80	100	125	100	160	200	250	
MF2S-400 S/H/R	250															
	315															
	350															
	400															
MF2-630 S/H/R	250															
	315															
	350															
	400															
	500															
MF2S-630 S/H/R	250															
	315															
	350															
	400															
	500															
	630															
MF2-800 S/H	630															
	700															
	800															
MF2S-800 S/H	630															
	700															
	800															
MF2-1250 S/H	630															
	700															
	800															
	1000															
	1250															
MF2S-1250 S/H	630															
	700															
	800															
	1000															
	1250															

MF2-400 S/H/R				MF2-630 S/H/R					MF2-800 S/H			MF2-1250 S/H				
250	315	350	400	250	315	350	400	500	630	700	800	630	700	800	1000	1250
							8	8	12	12	12	12	12	12	15	15
								8	12	12	12	12	12	12	15	15
									12	12	12	12	12	12	15	15
									12	12	12	12	12	12	15	15
							8	8	30	30	30	30	30	30	T	T
								8	30	30	30	30	30	30	T	T
									30	30	30	30	30	30	T	T
									30	30	30	30	30	30	T	T
										30	30	30	30	30	T	T
							8	8	12	12	12	12	12	12	15	15
								8	12	12	12	12	12	12	15	15
									12	12	12	12	12	12	15	15
										12	12	12	12	12	15	15
											12			12	15	15
															15	15

Upstream: MF2S-125~1250

Downstream: MF2(S)-125~1250

→ Upstream ↓ Downstream In (A) li (kA)	MF2S-125 S/H			MF2S-250 S/H				MF2S-400 S/H/R				
	40	100	125	100	160	200	250	250	315	350	400	
MF2-125 S	16		1.2	1.2	1.2	T	T	T	T	T	T	T
	20		1.2	1.2	1.2	T	T	T	T	T	T	T
	25		1.2	1.2	1.2	T	T	T	T	T	T	T
	32		1.2	1.2	1.2	T	T	T	T	T	T	T
	40		1.2	1.2	1.2	T	T	T	T	T	T	T
	50		1.2	1.2	1.2	T	T	T	T	T	T	T
	63			1.2	1.2	T	T	T	T	T	T	T
	80					T	T	T	T	T	T	T
	100						T	T	T	T	T	T
	125							T	T	T	T	T
MF2-125 H/R	16		1.2	1.2	1.2	T	T	T	T	T	T	T
	20		1.2	1.2	1.2	T	T	T	T	T	T	T
	25		1.2	1.2	1.2	T	T	T	T	T	T	T
	32		1.2	1.2	1.2	T	T	T	T	T	T	T
	40		1.2	1.2	1.2	T	T	T	T	T	T	T
	50		1.2	1.2	1.2	2	36	36	T	T	T	T
	63			1.2	1.2	2	36	36	T	T	T	T
	80					2	36	36	T	T	T	T
	100							36	T	T	T	T
	125							36	T	T	T	T
MF2S-125 S/H	40		1.2	1.2	2	2	T	T	T	T	T	T
	100					2	T	T	T	T	T	T
	125							T	T	T	T	T
MF2-250 S	100							3	5	5	5	5
	160									5	5	
	200											
	250											
MF2-250 H/R	100							3	5	5	5	5
	160									5	5	
	200											
	250											
MF2S-250 S/H	100							5	5	5	5	5
	160							5	5	5	5	5
	200									5	5	
	250										5	
MF2-400 S/H/R	250											
	315											
	350											
	400											

→ Upstream ↓ Downstream In (A) li (kA)		MF2S-125 S/H			MF2S-250 S/H				MF2S-400 S/H/R			
		40	100	125	100	160	200	250	250	315	350	400
MF2S-400 S/H/R	250											
	315											
	350											
	400											
MF2-630 S/H/R	250											
	315											
	350											
	400											
	500											
MF2S-630 S/H/R	250											
	315											
	350											
	400											
	500											
MF2-800 S/H	630											
	700											
	800											
MF2S-800 S/H	630											
	700											
	800											
MF2-1250 S/H	630											
	700											
	800											
	1000											
	1250											
MF2S-1250 S/H	630											
	700											
	800											
	1000											
	1250											

Note:

- The area with T indication clarifies total protection discrimination between upstream and downstream circuit breakers;
- The area with numbers clarifies partial protection discrimination between upstream and downstream circuit breakers;
- For partial protection discrimination, the Max. fault current values to ensure time discrimination performance are given in the table; when fault current exceeds this value, upstream and downstream circuit breakers may operate at the same time.

MF2S-630 S/H/R						MF2S-800 S/H			MF2S-1250 S/H				
250	315	350	400	500	630	630	700	800	630	700	800	1000	1250
			8	8	8	12	12	12	12	12	12	15	15
				8	8	12	12	12	12	12	12	15	15
					8	12	12	12	12	12	12	15	15
					8	12	12	12	12	12	12	15	15
				8	8	30	30	30	30	30	30	T	T
				8	8	30	30	30	30	30	30	T	T
					8	30	30	30	30	30	30	T	T
					8	30	30	30	30	30	30	T	T
							30	30		30	30	T	T
				8	8	12	12	12	12	12	12	15	15
				8	8	12	12	12	12	12	12	15	15
					8	12	12	12	12	12	12	15	15
					8	12	12	12	12	12	12	15	15
							12	12	12	12	12	15	15
								12			12	15	15
												20	20
												15	15
												20	20
												15	15

10.8 Selection table of components for motor control or protection
400V, 50kA, type2, MCCB normal load start-up

Motor parameters		Circuit breaker parameters		Contactor parameters		Thermal relay parameters	
Rated power (kW)	Rated current (A)	Model	Setting of magnetic protection (A)	Model	Rated heating current (A)	Model	Rated current (A)
5.5	10.9	MF2-125S/16M	192	NC1-12	20	NR2-25	9~13
7.5	14.4	MF2-125S/20M	240	NC1-18	32	NR2-25	12~18
11	20.9	MF2-125S/25M	300	NC1-25	40	NR2-25	17~25
15	28	MF2-125S/32M	384	NC1-32	50	NR2-36	23~32
18.5	34.1	MF2-125S/40M	480	NC1-40	60	NR2-36	28~36
22	39.4	MF2-125S/50M	600	NC1-50	80	NR2-93	30~40
30	53.4	MF2-125S/63M	756	NC1-65	80	NR2-93	48~65
37	67.9	MF2-125S/80M	960	NC1-80	110	NR2-93	55~70
45	80.5	MF2-125S/100M	1200	NC1-95	110	NR2-93	80~93
55	98.5	MF2-125S/125M	1500	NC2-115	200	NR2-200	80~125
75	133	MF2-250S/160M	1920	NC2-150	200	NR2-200	100~160
90	158.7	MF2-250S/200M	2400	NC2-185	275	NR2-200	100~160
110	192	MF2-250S/250M	3000	NC2-225	275	NR2-200	125~200
132	229	MF2-400S/315M	3780	NC2-265	315	NR2-630	160~250
160	275	MF2-400S/350M	4200	NC2-330	380	NR2-630	200~315
200	343	MF2-400S/400M	4800	NC2-400	450	NR2-630	250~400
250	445	MF2-630S/500M	6000	NC2-500	630	NR2-630	315~500
290	520	MF2S-630S/630M	7560	NC2-630	800	NR2-630	400~630
315	560	MF2S-630S/630M	7560	NC2-630	800	NR2-630	400~630

Note:

1. MF2 and MF2S breakers are appended with release of IP magnetic protection
2. MF2-125, 250, 630 breakers could replace MF2 and MF2S breakers in the table above with same capacity;
3. NRE8 electronic relays could replace NR2 thermal relays in the table above with same capacity; and same with NRE8's replacement to NR2 in the table above.

400V, 50kA, type2, MCCB heavy-load start-up

Motor parameters		Circuit breaker parameters		Contactor parameters		Thermal relay parameters	
Rated power (kW)	Rated current (A)	Model	Setting of magnetic protection (A)	Model	Rated heating current (A)	Model	Rated current (A)
5.5	10.9	MF2-125S/16M	192	NC1-18	32	NR2-25	9~13
7.5	14.4	MF2-125S/20M	240	NC1-25	40	NR2-25	12~18
11	20.9	MF2-125S/25M	300	NC1-32	50	NR2-25	17~25
15	28	MF2-125S/32M	384	NC1-40	60	NR2-36	23~32
18.5	34.1	MF2-125S/40M	480	NC1-50	80	NR2-36	28~36
22	39.4	MF2-125S/50M	600	NC1-65	80	NR2-93	30~40
30	53.4	MF2-125S/63M	756	NC1-80	110	NR2-93	48~65
37	67.9	MF2-125S/80M	960	NC1-95	110	NR2-93	55~70
45	80.5	MF2-125S/100M	1200	NC2-115	200	NR2-93	80~93
55	98.5	MF2-125S/125M	1500	NC2-150	200	NR2-200	80~125
75	133	MF2-250S/160M	1920	NC2-185	275	NR2-200	100~160
90	158.7	MF2-250S/200M	2400	NC2-225	275	NR2-200	100~160
110	192	MF2-250S/250M	3000	NC2-265	315	NR2-200	125~200
132	229	MF2-400S/315M	3780	NC2-330	380	NR2-630	160~250
160	275	MF2-400S/350M	4200	NC2-400	450	NR2-630	200~315
200	343	MF2-400S/400M	4800	NC2-500	630	NR2-630	250~400
250	445	MF2-630S/500M	6000	NC2-630	800	NR2-630	315~500
290	520	MF2S-630S/630M	7560	NC2-630	800	NR2-630	400~630

Note:

1. MF2 and MF2S breakers are appended with release of IP magnetic protection
2. MF2-125, 250, 630 breakers could replace MF2 and MF2S breakers in the table above with same capacity;
3. Electronic over-load relay NRE8 could replace NR2 in the table above with the same capacity.

400V, 50kA, type2, MCCB star-delta start-up

Motor	parameters	Circuit breaker	parameters	Contactor parameters			Thermal relay parameters	
	Rated power (kW)	Rated current (A)	Model	Setting of magnetic protection (A)	Feedback contactor	Delta contactor	Star contactor	Model
5.5	10.9	MF2-125S/16M	192	NC1-09	NC1-09	NC1-09	NR2-11.5	5.5~8
7.5	14.4	MF2-125S/20M	240	NC1-12	NC1-12	NC1-09	NR2-11.5	7~10
11	20.9	MF2-125S/25M	300	NC1-18	NC1-18	NC1-09	NR2-25	9~13
15	28	MF2-125S/32M	384	NC1-25	NC1-25	NC1-12	NR2-25	12~18
18.5	34.1	MF2-125S/40M	480	NC1-25	NC1-25	NC1-18	NR2-25	17~25
22	39.4	MF2-125S/50M	600	NC1-32	NC1-32	NC1-18	NR2-36	23~32
30	53.4	MF2-125S/63M	756	NC1-40	NC1-40	NC1-25	NR2-36	28~36
37	67.9	MF2-125S/80M	960	NC1-50	NC1-50	NC1-32	NR2-93	30~40
45	80.5	MF2-125S/100M	1200	NC1-65	NC1-65	NC1-32	NR2-93	37~50
55	98.5	MF2-125S/125M	1500	NC1-80	NC1-80	NC1-40	NR2-93	48~65
75	133	MF2-250S/160M	1920	NC1-95	NC1-95	NC1-50	NR2-93	63~80
90	158.7	MF2-250S/200M	2400	NC2-115	NC2-115	NC2-65	NR2-93	80~93
110	192	MF2-250S/250M	3000	NC2-150	NC2-150	NC2-80	NR2-200	80~125
132	229	MF2-400S/315M	3780	NC2-150	NC2-150	NC2-95	NR2-200	80~125
160	275	MF2-400S/350M	4200	NC2-185	NC2-185	NC2-115	NR2-200	100~160
200	343	MF2-400S/400M	4800	NC2-225	NC2-225	NC2-150	NR2-200	125~200
250	445	MF2-630S/500M	6000	NC2-330	NC2-330	NC2-185	NR2-630	200~315
290	520	MF2S-630S/630M	7560	NC2-400	NC2-400	NC2-185	NR2-630	200~315
315	560	MF2S-630S/630M	7560	NC2-400	NC2-400	NC2-225	NR2-630	250~400

Note:

1. MF2 and MF2S breakers are appended with release of IP magnetic protection
2. MF2-125, 250, 630 breakers could replace MF2 and MF2S breakers in the table above with same capacity;
3. Electronic over-load relay NRE8 could replace NR2 in the table above with the same capacity.
4. Breaker is at the power supply side
5. In the delta connection circuit of thermal relay, the setting value is $0.58I_e$;
6. The max. start-up time is 20s;
7. When Star type connection is changed into delta connection, the following connection modes of motor are recommended: L1, U1 to V2; L2, V1 to W2; L3, W1 to U2 to lower the impulse current;
8. The interval of star type connection changing into delta connection is 0.1s.

* Specifications and technical data are subject to change without prior notice.



شركة ميمف للصناعات الكهربائية MEMF Electrical Industries Co.

P.O. Box 355989 Riyadh 11383 Kingdom of Saudi Arabia

Factory Tel.: 00 966 11 265 0515 (8 Lines)-Fax.: 00 966 11 265 0360

Head Office Tel. : 00 966 11 496 6667 - Fax. : 00 966 11 491 7919

ص ب ٣٥٥٩٨٩ الرياض ١١٣٨٣ المملكة العربية السعودية

مصنع هاتف: ٠٥١٥ ١١ ٢٦٥ ٩٦٦ (٨ خطوط) - فاكس: ٠٣٦٠ ١١ ٢٦٥ ٩٦٦

مكتب الرئيسي هاتف: ٤٩٦٦٦٦٧ ١١ ٩٦٦ - فاكس: ٤٩١٧٩١٩ ١١ ٩٦٦

Web site: www.memf.com.sa

البريد الإلكتروني: sales.memf@kfbgroup.com.sa