

## Motor protective circuit breaker MPE25

### Advantages

- With overload and short circuit protection
- Fixed short circuit release  $12 \times I_n$
- With phase-failure sensitivity according to IEC/EN 60947-4-1
- With temperature compensation
- Can be used as main switch
- MPE25 up to 10A at 400/415V are self-protected
- MPE25 above 10A provide a breaking capacity of 50kA at 400/415V according to IEC/EN 60947-2

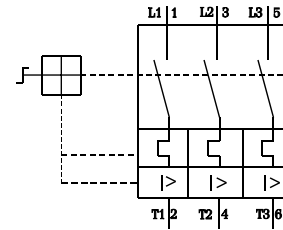
### Example of MPE configuration:



General technical data				
Standards		IEC/EN 60 947		
Climatic proffing		damp heat, constant to IEC 60 068-2-3 damp heat, cyclical to IEC 60 068-2-30		
Ambient temperature	Storage	°C	-50 ... +80	
	Open	°C	-20 ... +70	
	Enclosed	°C	-20 ... +35	
Mounting position		any position		
Degree of protection		IP20		
Protection against direct contact		IP20		
Shock resistance to IEC 60 068-2-27		g	15	
Altitude		m	2000	
Conductor cross-section for main circuit	solid	mm <sup>2</sup>	1 x (1,5 to 6) / 2 x (1,5 to 6)	
	stranded	mm <sup>2</sup>	2 x (1,5 to 6) / 2 x (1,5 to 6)	
Tightening torque	main circuits	Nm	2,0 ... 2,5	
	control circuits	Nm	1,0 ... 1,25	
<b>Main contacts</b>				
Rated impulse withstand voltage U <sub>imp</sub>		kV	6	
Overvoltage categ./pollution degree			III/3	
Rated operational voltage U <sub>e</sub>		V	690	
Rated operational current I <sub>e</sub>		A	25 or setting current of overload release	
Rated frequency		Hz	50/60	
Current heat losses, 3-pole at oper. T	W		5 (MPE25-0,1 - MPE25-0,63)	
	W		6 (MPE25-1 - MPE25-6,3)	
	W		7 (MPE25-10)	
	W		8 (MPE25-16 - MPE25-25)	
	W		10 (MPE25-32)	
Life span, mechanical = electrical		Ops.	100.000	
Maximum operating frequency		Ops./h	15	
<b>Releases</b>				
Temperature compensation		°C	-20 ... +60	
Adjustable overload releases		x I <sub>u</sub>	0,6 - 1	
Fixed short circuit releases		x I <sub>u</sub>	12	
Phase failure sensitivity			IEC/EN 60 947-4-1	
<b>Auxiliary contacts</b>				
Rated impulse withstand voltage		kV	6	
Overvoltage category/pollution degree			III/3	
Rated operational voltage		V	690 (250 -> ACBFE ...)	
Rated operational current				
AC-15	24V	I <sub>e</sub>	A	6 (2 -> ACBFE)
	230V	I <sub>e</sub>	A	4 (0,5 -> ACBFE)
	380V-415V	I <sub>e</sub>	A	3 (0 -> ACBFE)
	440V-500V	I <sub>e</sub>	A	2 (0 -> ACBFE)
DC-13	24V	I <sub>e</sub>	A	2 (1 -> ACBFE)
	60V	I <sub>e</sub>	A	0.5 (0,15 -> ACBFE)
	110V	I <sub>e</sub>	A	0.5 (0 -> ACBFE)
	220V	I <sub>e</sub>	A	0.25 (0 -> ACBFE)
Control circuit reliability at U <sub>e</sub>			U <sub>min</sub> = 17V, I <sub>min</sub> = 5mA	
Fault probability			< 1 fault in 1 million operations	
Short-circuit rating without welding		Fuse gG	A	10
Conductors cross-section for auxiliary and control circuits		solid or stranded	mm <sup>2</sup>	1 x (0,5 to 2,5) / 2 x (0,5 to 2,5)

**Max. operational power**

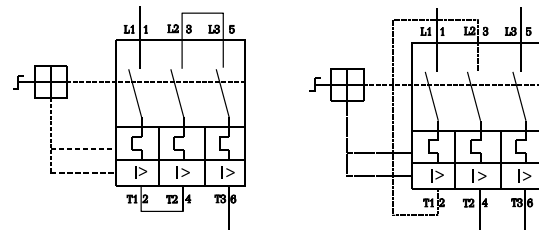
type	max. operational power (kW) AC 3				operational inst. current I <sub>u</sub> (A)	setting overl. release I <sub>r</sub> (A)	short-circuit release I <sub>rm</sub> (A)
	400V 415V	440V	500V	690V			
MPE25-0,16	-	-	-	0.06	0.16	0,1-0,16	1.9
MPE25-0,25	0.06	0.06	0.06	0.12	0.25	0,16-0,25	3
MPE25-0,40	0.09	0.12	0.12	0.18	0.4	0,25-0,4	4,8
MPE25-0,63	0.12	0.18	0.25	0.25	0.63	0,4-0,63	7,5
MPE25-1,0	0.25	0.25	0.37	0.55	1	0,63-1,0	12
MPE25-1,6	0.55	0.55	0.75	1.1	1.6	1,0-1,6	19
MPE25-2,5	0.75	1.1	1.1	1.5	2.5	1,6-2,5	30
MPE25-4,0	1.5	1.5	2.2	3	4	2,5-4,0	48
MPE25-6,3	2.2	3	3	4	6.3	4,0-6,3	75
MPE25-10	4	4	4	7.5	10	6,3-10	120
MPE25-16	7.5	9	9	12.5	16	10-16	190
MPE25-20	9	11	12.5	15	20	16-20	240
MPE25-25	12.5	12.5	15	22	25	20-25	300
MPE25-32	15	15	18.5	30	32	25-32	384



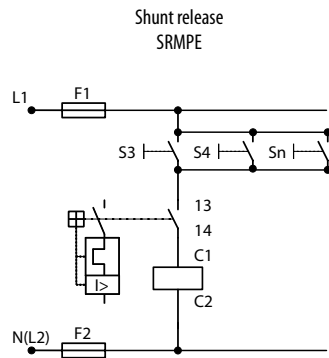
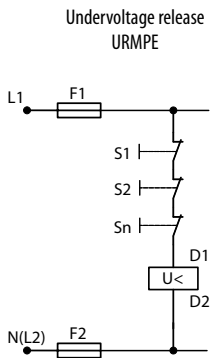
**Technical data**

Tripping devices			
Rated operational voltage	U <sub>e</sub>	V	200-415V
Conductor cross-section for main circuit	solid or stranded	mm <sup>2</sup>	1 x (0,5 to 2,5) / 2 x (0,5 to 2,5)
Shunt Releases			
Operating range	x U <sub>s</sub>		0,7 - 1,1
Power consumption	Pull	VA	10
	Sealing	VA	4.5
Undervoltage Releases			
Pick-up voltage	x U <sub>s</sub>		0,85 - 1,1
Drop-out voltage	x U <sub>s</sub>		0,7 - 0,35

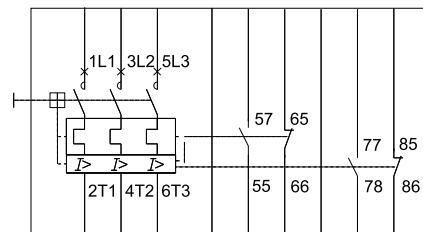
**MPE25 wired 1- or 2-pole**



**Typical circuits**



Trip Signalling Block TSBE

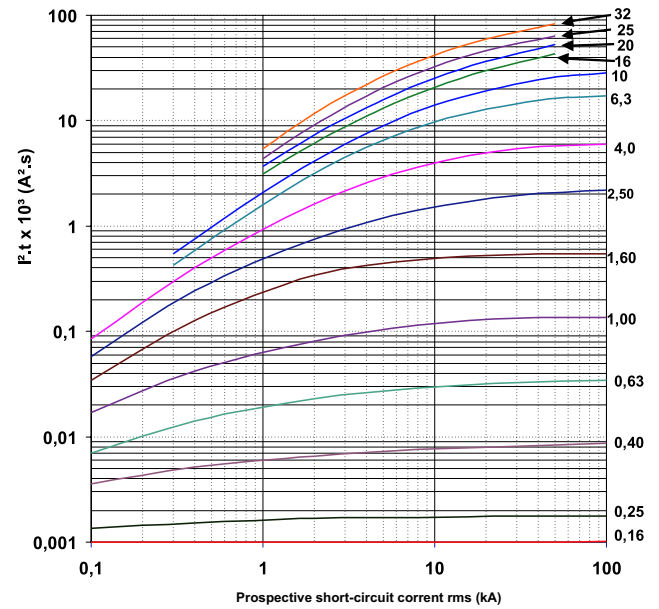
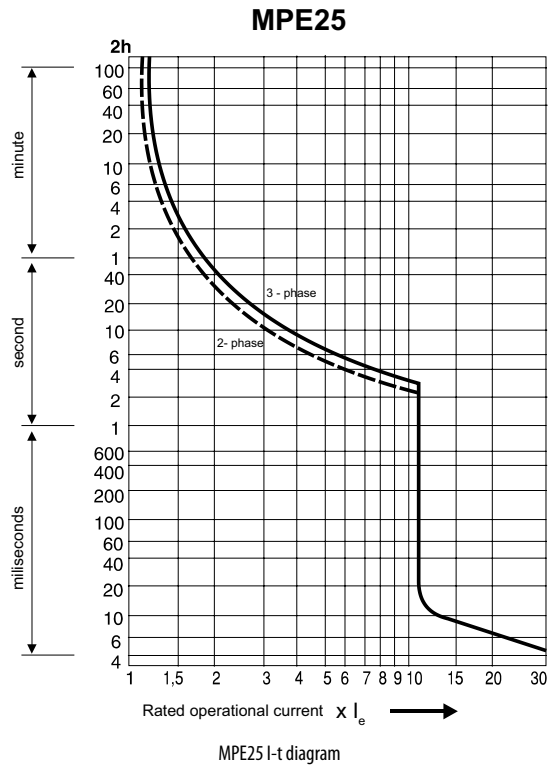


**Altitude - Factor of Correction**

Altitude (above the sea level) - h	Rated operational voltage U <sub>e</sub>	Factor of correction I <sub>u</sub>
h < 2000m	690V	1 x I <sub>n</sub>
2000m < h < 3000m	550V	0,96 x I <sub>n</sub>
3000m < h < 4000m	480V	0,93 x I <sub>n</sub>
4000m < h < 5000m	420V	0,90 x I <sub>n</sub>

## Curves

The tripping characteristics show the tripping time of the circuit-breakers in relation to the current. They show mean values of the tolerance ranges at an ambient temperature of 20 °C, starting from cold. The tripping time of the overload releases at operational temperature is reduced to approximately 25% of the values shown. Under normal operational conditions, all three phases of the MPE25 should be loaded.



## Breaking capacity of motor protective circuit breakers MPE25

I<sub>cc</sub> = Prospective short-circuit current

I<sub>cu</sub> = Rated ultimate short-circuit breaking capacity

I<sub>cs</sub> = Rated service short-circuit breaking capacity

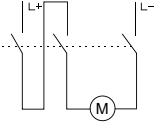
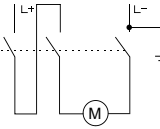
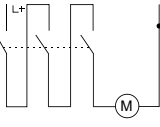
I <sub>e</sub> A	230V			400V			690V		
	I <sub>cu</sub> kA	I <sub>cs</sub> kA	max. fuse gG A	I <sub>cu</sub> kA	I <sub>cs</sub> kA	max. fuse gG A	I <sub>cu</sub> kA	I <sub>cs</sub> kA	max. fuse gG A
0.16	100	100	-	100	100	-	100	100	-
0.25	100	100	-	100	100	-	100	100	-
0.4	100	100	-	100	100	-	100	100	-
0.63	100	100	-	100	100	-	100	100	-
1	100	100	-	100	100	-	100	100	-
1.6	100	100	-	100	100	-	100	100	-
2.5	100	100	-	100	100	-	8	8	25 <sup>(1)</sup>
4	100	100	-	100	100	-	6	3	32 <sup>(1)</sup>
6.3	100	100	-	100	100	-	6	3	50 <sup>(1)</sup>
10	100	100	-	100	100	-	6	3	50 <sup>(1)</sup>
16	100	100	-	50	25	100 <sup>(1)</sup>	4	3	63 <sup>(1)</sup>
20	100	100	-	50	25	125 <sup>(1)</sup>	4	3	63 <sup>(1)</sup>
25	100	100	-	50	25	125 <sup>(1)</sup>	4	3	63 <sup>(1)</sup>
32	100	100	-	50	25	125 <sup>(1)</sup>	4	3	63 <sup>(1)</sup>

Note: (1) Fuse required if the prospective short-circuit current exceeds the rated ultimate short circuit breaking capacity (I<sub>cc</sub> > I<sub>cu</sub>)

## The MPE 25 switching of direct current

The MPE circuit breakers for alternating current are able to switch direct current. However, you are obliged to observe the maximum permissible DC voltage per conducting path. In case of higher voltages, series connection of 2 or 3 conducting parts is required. The response characteristics of the overload releases remain unchanged. The response thresholds of the short-circuit releases are increased with direct current by approximately 35%.

The following table shows suggestions for switching direct current:

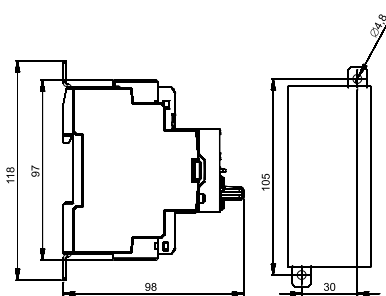
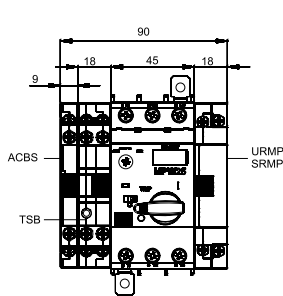
Recommended Connection	Highest Permissible Direct Voltage	Explanation
	150V DC	<b>2-poles switching Ungrounded system</b> If ground fault can be excluded, or if every ground is immediately corrected (via ground-fault monitoring), the maximum permissible DC voltage can be multiplied by 3
	300V DC	<b>2-poles switching Grounded system</b> The grounded pole should be assigned to the individual conducting path so that in the event of a ground fault there are always 2 conducting paths in series
	450V DC	<b>1-pole switching Grounded system</b> 3 conducting paths in series. The grounded pole should be assigned to the unswitched conducting path.

DC short-circuit breaking capacity (time constant <=5ms)

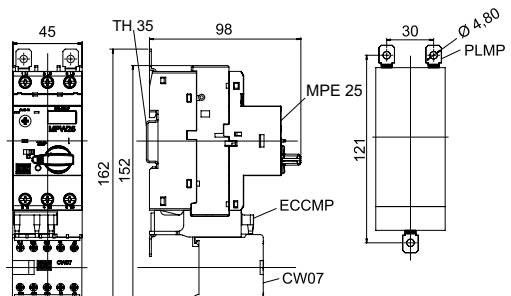
- 1 conducting path DC 150V 10kA
- 2 conducting paths in series DC 350V 10kA
- 3 conducting paths in series DC 350V 10kA

## Dimensions

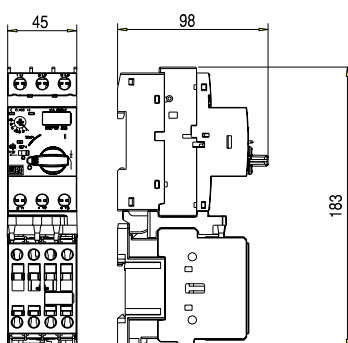
MPE25 + Accessories



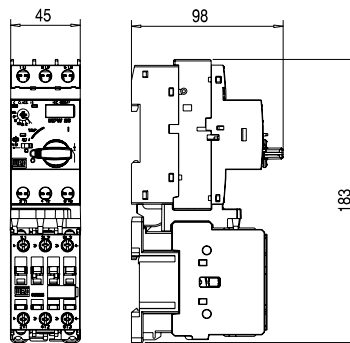
MPE25 + CE07



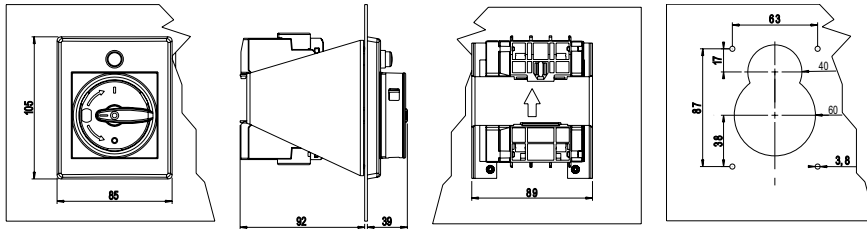
MPE25 + CEM9...CEM18



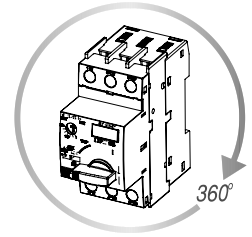
MPE25 + CEM25



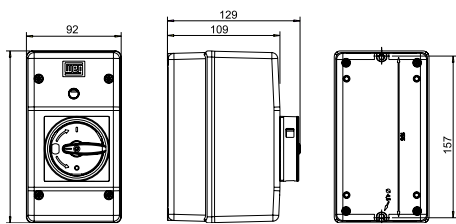
Frontal plate FMEE5E  
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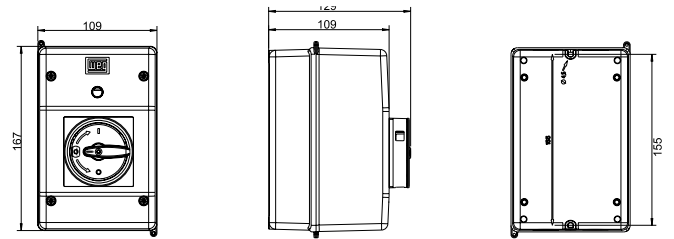
Mounting posi-  
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Insulated Enclosure - MPEE55



Insulated Enclosure - MLPEE55



Door coupling rotary handle RMMPE

