

Meta-MEC  
**Manual Motor Starters**



Electric Equipment



**LG Industrial Systems**

[www.lgis.com](http://www.lgis.com)

# LG Meta-MEC Manual Motor Starters provide completed ranges up to 100A



## 32AF

0.1~0.16... 22~32A (16 step)

**MMS 32S**

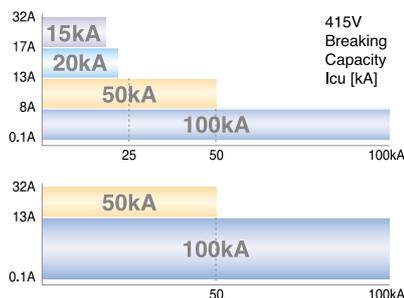


◦ Standard

**MMS 32H  
MMS 32HI**



◦ High break  
◦ Magnetic release



6~10... 45~63A (9 step)

**MMS 63S**



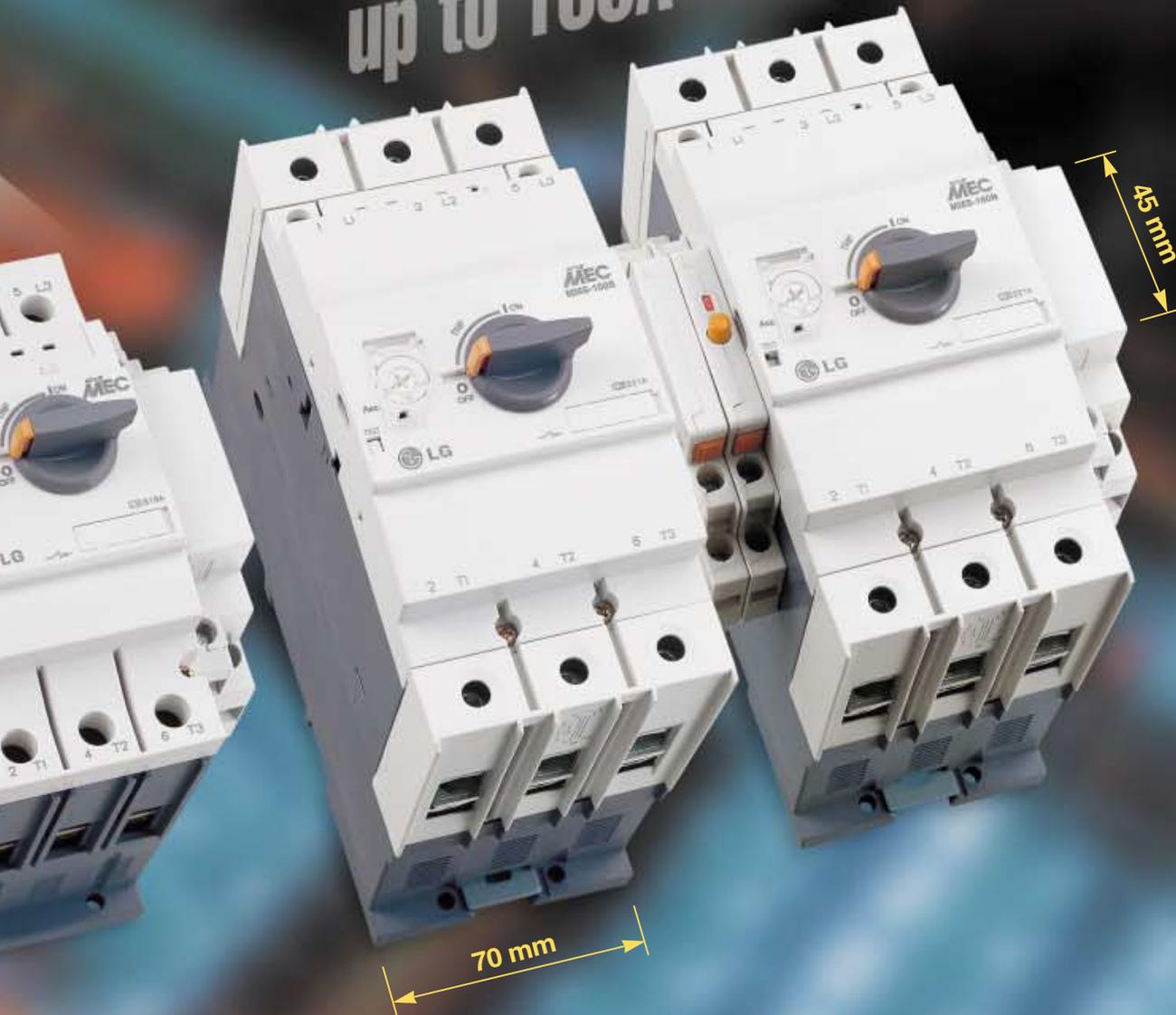
◦ Standard

**MMS 63H  
MMS 63HI  
MMS 63HL**



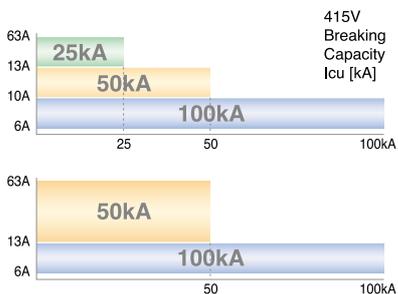
◦ High break  
◦ Magnetic release  
◦ Class 20

up to 100A



MMS

63AF



100AF

11~17... 80~100A (10 step)

MMS 100S



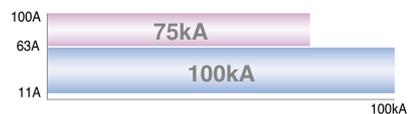
Standard



MMS 100H  
MMS 100HI  
MMS 100HL

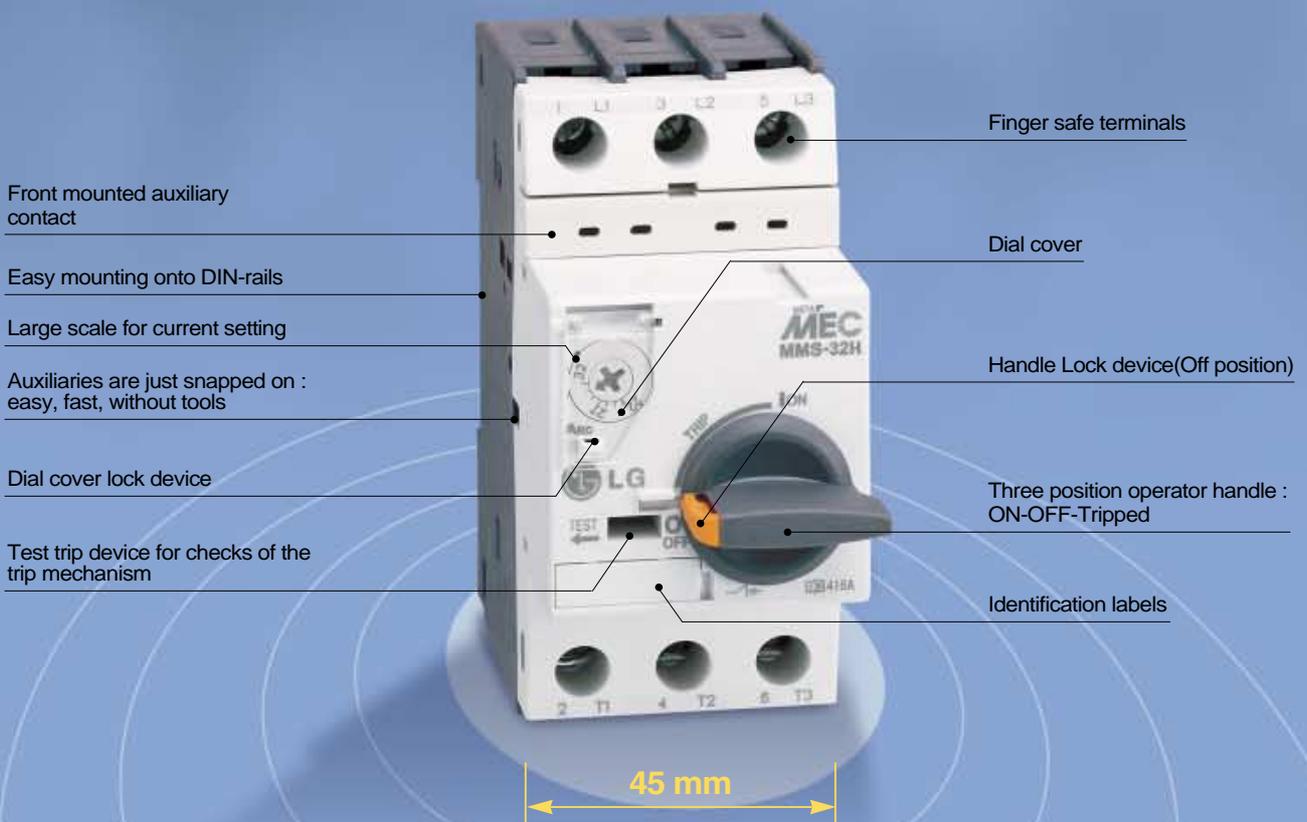


High break  
Magnetic release  
Class 20



# LG Meta-MEC Manual Motor Starters deliver more efficiency through various functions and compact design

**MMS 32H... 32A**  
**[ Scale 1:1 ]**



Handle Lock



Dial cover



Terminals

MMS32



MMS63

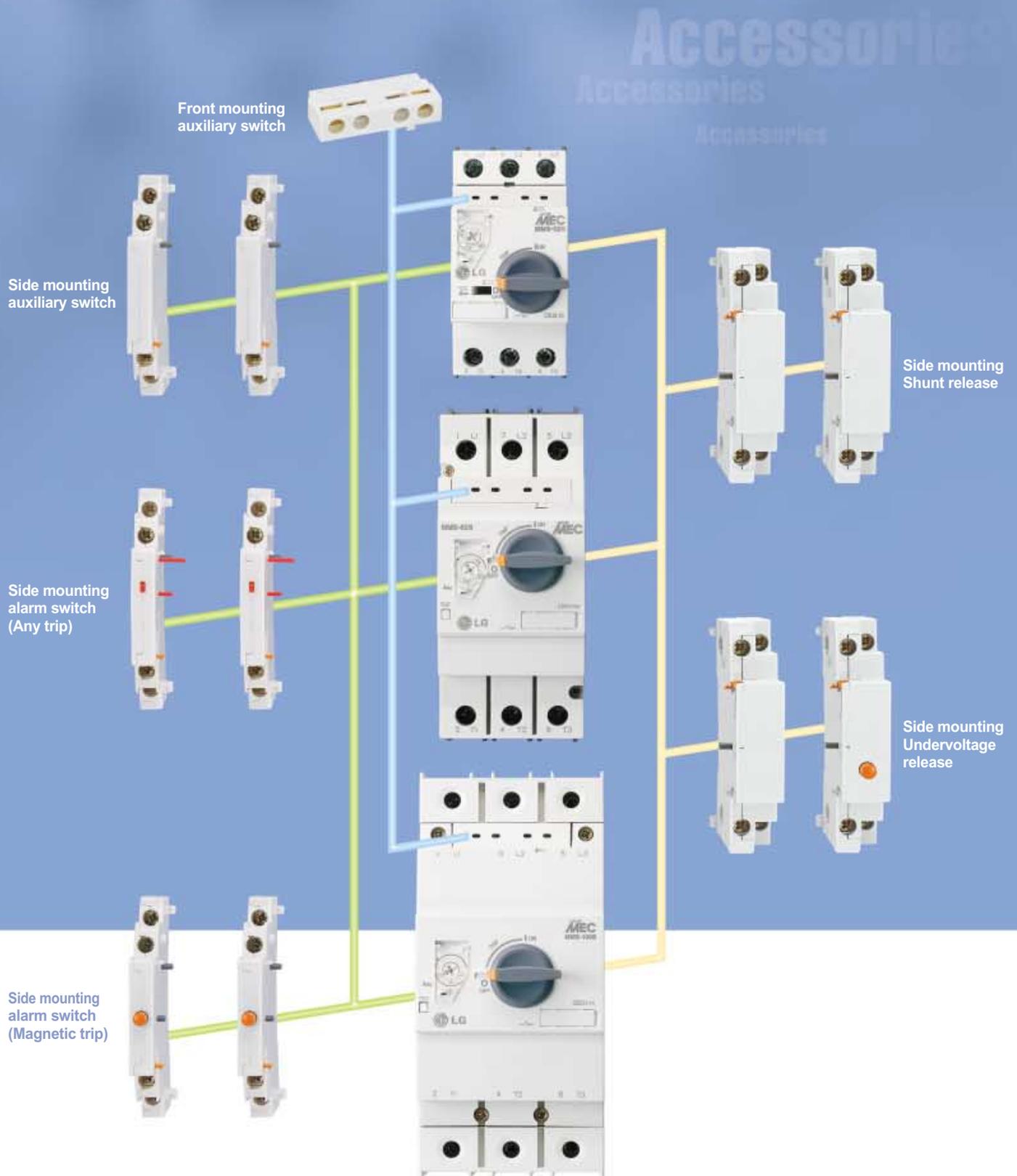


MMS100



# Common use from 32 to 100AF

A wide variety of accessories enables a flexible response to changes in specifications



## Function

- Protection of group installation
- Protection of circuits
- Motor protection
- Starter protection
- Wide range of ambient temperature compensation
- Phase failure protection



## Feature

- 45mm width up to 32A, 55mm width up to 63A and 70mm width rated to 100 amps
- Three position operator: ON-OFF-TRIP
- Complete range of common accessories
- Handle lock in the OFF position
- Class 10, 20 overload trip characteristics
- Trip test
- Finger safe terminal
- DIN rail & Screw mounting

## Standard

- The components fulfill the international standard IEC 60947.
- In U.S., the devices can be used as Manual Motor Starter in Group Installations according UL508.

The approval for UL508 Type E Combination Starter is under preparation.



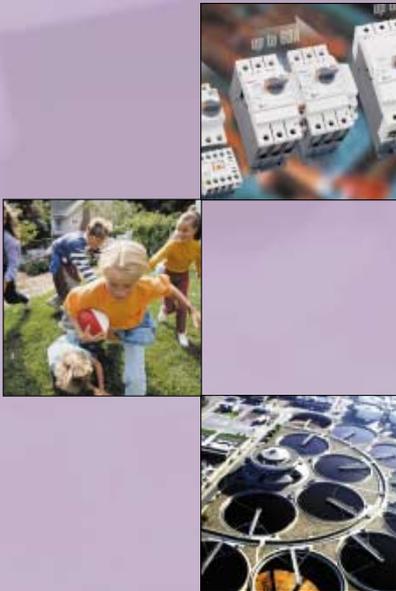
KEMA



IEC 60947

UL 508, UL 508 Type E

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# Product Selection Guide

## Quick selection table ... IEC rating



Frame			32AF																			
Type	Current adjustable type		MMS-32S							MMS-32H												
	Instantaneous type		-							MMS-32HI												
	Class 20		-							-												
Breaking capacity			Standard							High break												
Handle Type			Rocker							Rotary												
Number of poles			3							3												
Rated operational voltage (Ue)			Up to 690V							Up to 690V												
Rated frequency			50/60 Hz							50/60 Hz												
Rated insulation voltage (Ui)			690V							690V												
Rated impulse voltage (Uimp)			6kV							6kV												
Utilization category	IEC 60 947-2 (Breaker)		Cat. A							Cat. A												
	IEC 60 947-4 (Motor starter)		AC 3							AC 3												
Shock resistance (IEC 68 Part 2-27)			30g							30g												
Degree of protection (IEC 60 529)			IP 20							IP 20												
Instantaneous short circuit release			13 × Ie max.							13 × Ie max.												
Mechanical endurance (Operating)			100,000							100,000												
Electrical endurance (Cycles)			100,000							100,000												
Max operating frequency per hour (Ope./h)			25							25												
Temperature compensation (Operation)			-20 ~ +60 °C							-20 ~ +60 °C												
Phase failure function			○							○												
Trip indicating function			○							○												
Test function			○							○												
Rated breaking capacity (kA)	Rated operational current (Ie)	Thermal release Adjustment range (A)	240V		415V		460V		525V		690V		240V		415V		460V		525V		690V	
			230V	400V	440V	500V	600V	230V	400V	440V	500V	600V	230V	400V	440V	500V	600V					
			Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics	Icu	Ics
0.16	0.1-0.16		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
0.25	0.16-0.25		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
0.4	0.25-0.4		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
0.63	0.4-0.63		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1	0.63-1		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
1.6	1-1.6		100	100	100	100	100	100	100	100	3	3	100	100	100	100	100	100	100	100	100	100
2.5	1.6-2.5		100	100	100	100	100	100	50	38	3	3	100	100	100	100	100	100	100	100	8	8
4	2.5-4		100	100	100	100	50	38	15	11	3	3	100	100	100	100	100	100	100	100	8	8
6	4-6		100	100	100	100	15	11	10	8	3	3	100	100	100	100	100	100	100	100	6	6
8	5-8		100	100	100	100	15	11	10	8	3	3	100	100	100	100	50	38	50	38	6	6
10	6-10		100	100	50	38	15	11	6	5	3	3	100	100	100	100	50	38	50	38	6	6
13	9-13		100	100	50	38	10	8	6	5	3	3	100	100	100	100	50	38	42	32	6	6
17	11-17		50	38	20	15	10	8	6	5	3	3	100	100	50	38	20	15	10	8	4	4
22	14-22		40	30	15	11	8	6	6	5	3	3	100	100	50	38	20	15	10	8	4	4
26	18-26		40	30	15	11	8	6	6	5	3	3	100	100	50	38	20	15	10	8	4	4
32	22-32		30	22	15	11	6	4	5	4	3	3	100	100	50	38	20	15	10	8	4	4
40	28-40		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	34-50		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
63	45-63		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75	55-75		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90	70-90		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100	80-100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



# Product Selection Guide

## Motor protection

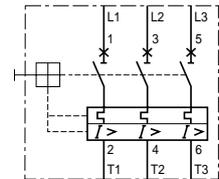
- Adjustable thermal release
- Magnetic release  $13 \times I_e$  max.
- Trip class 10
- Ambient temperature compensation
- Phase-failure protection



MMS-32S



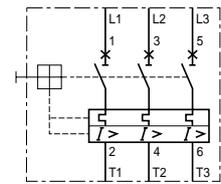
MMS-32H



(Circuit diagram)

Type	Rated operational current $I_e$ [A]	Thermal release Adjustment range [A]	Magnetic release Operating current [A]	Switching of 3 phase AC motors, AC-2, AC-3						400/415V		
				3-phase [kW] (50/60Hz)			3-phase [HP] (60Hz)			$I_{cu}$ [kA]	$I_{cs}$ [kA]	
				230V	400V	690V	230V	460V	575V			
MMS-32S (Standard)	0.16	0.1...0.16	2.1	-	0.02	-	-	-	-	-	100	100
	0.25	0.16...0.25	3.3	0.03	0.06	-	-	-	-	-	100	100
	0.4	0.25...0.4	5.2	0.06	0.09	-	-	-	-	-	100	100
	0.63	0.4...0.63	8.2	0.09	0.12	0.25	-	-	-	-	100	100
	1	0.63...1.0	13	0.12	0.25	0.55	-	1/2	1/2	-	100	100
	1.6	1.0...1.6	20.8	0.25	0.55	1.1	1/3	3/4	1	-	100	100
	2.5	1.6...2.5	32.5	0.37	0.75	1.5	1/2	1½	1½	-	100	100
	4	2.5...4.0	52	0.75	1.5	3	1	2	3	-	100	100
	6	4...6	78	1.5	2.2	4	1½	5	5	-	100	100
	8	5...8	104	1.5	3	5.5	2	5	5	-	100	100
	10	6...10	130	3	4	7.5	3	7½	10	-	50	38
	13	9...13	169	3	5.5	11	3	7½	10	-	50	38
	17	11...17	221	4	7.5	11	5	10	15	-	20	15
	22	14...22	286	4	7.5	15	7½	15	20	-	15	11
26	18...26	338	5.5	11	18.5	7½	15	20	-	15	11	
32	22...32	416	7.5	15	22	10	20	30	-	15	11	
MMS-32H (High break)	0.16	0.1...0.16	2.1	-	0.02	-	-	-	-	-	100	100
	0.25	0.16...0.25	3.3	0.03	0.06	-	-	-	-	-	100	100
	0.4	0.25...0.4	5.2	0.06	0.09	-	-	-	-	-	100	100
	0.63	0.4...0.63	8.2	0.09	0.12	0.25	-	-	-	-	100	100
	1	0.63...1.0	13	0.12	0.25	0.55	-	1/2	1/2	-	100	100
	1.6	1.0...1.6	20.8	0.25	0.55	1.1	1/3	3/4	1	-	100	100
	2.5	1.6...2.5	32.5	0.37	0.75	1.5	1/2	1½	1½	-	100	100
	4	2.5...4.0	52	0.75	1.5	3	1	2	3	-	100	100
	6	4...6	78	1.5	2.2	4	1½	5	5	-	100	100
	8	5...8	104	1.5	3	5.5	2	5	5	-	100	100
	10	6...10	130	3	4	7.5	3	7½	10	-	100	100
	13	9...13	169	3	5.5	11	3	7½	10	-	100	100
	17	11...17	221	4	7.5	11	5	10	15	-	50	38
	22	14...22	286	4	7.5	15	7½	15	20	-	50	38
26	18...26	338	5.5	11	18.5	7½	15	20	-	50	38	
32	22...32	416	7.5	15	22	10	20	30	-	50	38	

- Adjustable thermal release
- Magnetic release  $13 \times I_e$  max.
- Trip class 10
- Ambient temperature compensation
- Phase-failure protection



(Circuit diagram)

Type	Rated operational current $I_e$ [A]	Thermal release Adjustment range [A]	Magnetic release Operating current [A]	Switching of 3 phase AC motors, AC-2, AC-3						400/415V	
				3-phase [kW] (50/60Hz)			3-phase [HP] (60Hz)			$I_{cu}$ [kA]	$I_{cs}$ [kA]
				230V	400V	690V	230V	460V	575V		
MMS-63S (Standard)	10	6~10	130	3	4	7.5	3	7½	10	100	100
	13	9~13	169	3	5.5	11	3	7½	10	50	38
	17	11~17	221	4	7.5	11	5	10	15	25	19
	22	14~22	286	4	7.5	15	7½	15	20	25	19
	26	18~26	338	5.5	11	18.5	10	20	25	25	19
	32	22~32	416	7.5	15	22	10	25	30	25	19
	40	28~40	520	7.5	18.5	30	15	30	40	25	19
	50	34~50	650	11	22	45	15	40	50	25	19
MMS-63H (High break)	10	6~10	130	3	4	7.5	3	7½	10	100	100
	13	9~13	169	3	5.5	11	3	7½	10	100	100
	17	11~17	221	4	7.5	11	5	10	15	50	50
	22	14~22	286	4	7.5	15	7½	15	20	50	50
	26	18~26	338	5.5	11	18.5	10	20	25	50	50
	32	22~32	416	7.5	15	22	10	25	30	50	50
	40	28~40	520	7.5	18.5	30	15	30	40	50	50
	50	34~50	650	11	22	45	15	40	50	50	50
MMS-100S (Standard)	17	11~17	221	4	7.5	11	5	10	15	50	38
	22	14~22	286	4	7.5	15	7½	15	20	50	38
	26	18~26	338	5.5	11	18.5	10	20	25	50	38
	32	22~32	416	7.5	15	22	10	25	30	50	38
	40	28~40	520	7.5	18.5	30	15	30	40	50	38
	50	34~50	650	11	22	45	15	40	50	50	38
	63	45~63	819	15	30	55	20	50	60	50	38
	75	55~75	975	22	37	63	25	60	75	50	38
MMS-100H (High break)	17	11~17	221	4	7.5	11	5	10	15	100	100
	22	14~22	286	4	7.5	15	7½	15	20	100	50
	26	18~26	338	5.5	11	18.5	10	20	25	100	50
	32	22~32	416	7.5	15	22	10	25	30	100	50
	40	28~40	520	7.5	18.5	30	15	30	40	100	50
	50	34~50	650	11	22	45	15	40	50	100	50
	63	45~63	819	15	30	55	20	50	60	100	50
	75	55~75	975	22	37	63	25	60	75	75	50
90	70~90	1170	30	45	75	30	75	100	75	50	
100	80~100	1300	30	45	90	40	75	100	75	50	

# Product Selection Guide

## Short-circuit protection for starters

- Without thermal releases
- Magnetic release  $13 \times I_e$  max.



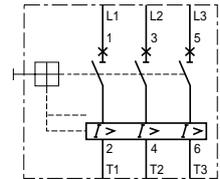
MMS-32HI



MMS-63HI



MMS-100HI



(Circuit diagram)

Type	Rated operational current $I_e$ [A]	Thermal release Adjustment range [A]	Magnetic release Operating current [A]	Switching of 3 phase AC motors, AC-2, AC-3						400/415V	
				3-phase [kW] (50Hz)			3-phase [HP] (60Hz)			$I_{cu}$ [kA]	$I_{cs}$ [kA]
				230V	400V	690V	230V	460V	575V		
MMS-32HI (High break)	0.16	-	2.1	-	0.02	-	-	-	-	100	100
	0.25	-	3.3	0.03	0.06	-	-	-	-	100	100
	0.4	-	5.2	0.06	0.09	-	-	-	-	100	100
	0.63	-	8.2	0.09	0.12	0.25	-	-	-	100	100
	1	-	13	0.12	0.25	0.55	-	1/2	1/2	100	100
	1.6	-	20.8	0.25	0.55	1.1	1/3	3/4	1	100	100
	2.5	-	32.5	0.37	0.75	1.5	1/2	1½	1½	100	100
	4	-	52	0.75	1.5	3	1	2	3	100	100
	6	-	78	1.5	2.2	4	1½	5	5	100	100
	8	-	104	1.5	3	5.5	2	5	5	100	100
	10	-	130	3	4	7.5	3	7½	10	100	100
	13	-	169	3	5.5	11	3	7½	10	100	100
	17	-	221	4	7.5	11	5	10	15	50	38
	22	-	286	4	7.5	15	7½	15	20	50	38
26	-	338	5.5	11	18.5	7½	15	20	50	38	
32	-	416	7.5	15	22	10	20	30	50	38	
MMS-63HI (High break)	10	-	130	3	4	7.5	3	7½	10	100	100
	13	-	169	3	5.5	11	3	7½	10	100	100
	17	-	221	4	7.5	11	5	10	15	50	50
	22	-	286	4	7.5	15	7½	15	20	50	50
	26	-	338	5.5	11	18.5	10	20	25	50	50
	32	-	416	7.5	15	22	10	25	30	50	50
	40	-	520	7.5	18.5	30	15	30	40	50	50
	50	-	650	11	22	45	15	40	50	50	50
63	-	819	15	30	55	20	50	60	50	50	
MMS-100HI (High break)	17	-	221	4	7.5	11	5	10	15	100	100
	22	-	286	4	7.5	15	7½	15	20	100	50
	26	-	338	5.5	11	18.5	10	20	25	100	50
	32	-	416	7.5	15	22	10	25	30	100	50
	40	-	520	7.5	18.5	30	15	30	40	100	50
	50	-	650	11	22	45	15	40	50	100	50
	63	-	819	15	30	55	20	50	60	100	50
	75	-	975	22	37	63	25	60	75	75	50
	90	-	1170	30	45	75	30	75	100	75	50
100	-	1300	30	45	90	40	75	100	75	50	

## Motor protection ... Class 20

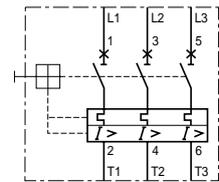
- Adjustable thermal release
- Magnetic release  $13 \times I_e$  max.
- Trip class 20
- Ambient temperature compensation
- Phase-failure protection



MMS-63HL



MMS-100HL

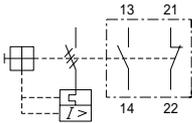
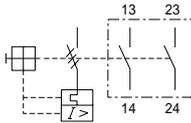
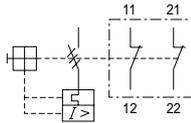
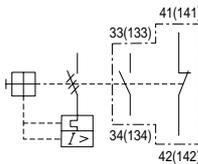
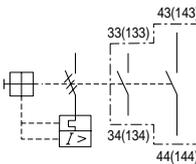
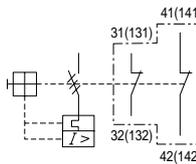
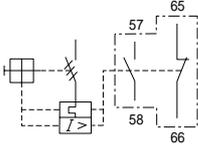
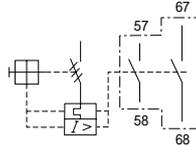
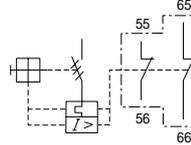
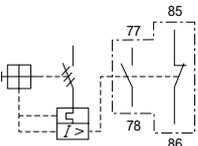
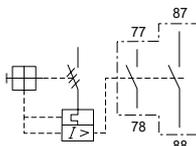
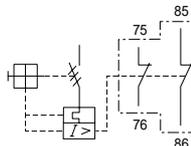


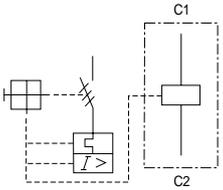
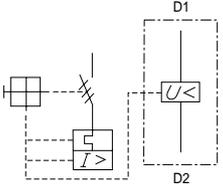
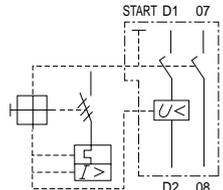
(Circuit diagram)

Type	Rated operational current $I_e$ [A]	Thermal release Adjustment range [A]	Magnetic release Operating current [A]	Switching of 3 phase AC motors, AC-2, AC-3						400/415V	
				3-phase [kW] (50Hz)			3-phase [HP] (60Hz)			$I_{cu}$ [kA]	$I_{cs}$ [kA]
				230V	400V	690V	230V	460V	575V		
MMS-63HL (High break)	10	6~10	130	3	4	7.5	3	7½	10	100	100
	13	9~13	169	3	5.5	11	3	7½	10	100	100
	17	11~17	221	4	7.5	11	5	10	15	50	50
	22	14~22	286	4	7.5	15	7½	15	20	50	50
	26	18~26	338	5.5	11	18.5	10	20	25	50	50
	32	22~32	416	7.5	15	22	10	25	30	50	50
	40	28~40	520	7.5	18.5	30	15	30	40	50	50
	50	34~50	650	11	22	45	15	40	50	50	50
MMS-100HL (High break)	63	45~63	819	15	30	55	20	50	60	50	50
	17	11~17	221	4	7.5	11	5	10	15	100	100
	22	14~22	286	4	7.5	15	7½	15	20	100	50
	26	18~26	338	5.5	11	18.5	10	20	25	100	50
	32	22~32	416	7.5	15	22	10	25	30	100	50
	40	28~40	520	7.5	18.5	30	15	30	40	100	50
	50	34~50	650	11	22	45	15	40	50	100	50
	63	45~63	819	15	30	55	20	50	60	100	50
	75	55~75	975	22	37	63	25	60	75	75	50
90	70~90	1170	30	45	75	30	75	100	75	50	
100	80~100	1300	30	45	90	40	75	100	75	50	

# Product Selection Guide

## Accessories

Type	Description	Connection diagram		
<b>FX...</b> 	<b>Auxiliary Switch</b> <ul style="list-style-type: none"> <li>• Front mounting</li> <li>• 2-pole</li> <li>• One front mounting module per circuit breaker</li> </ul>	<b>1NO1NC</b> 	<b>2NO</b> 	<b>2NC</b> 
<b>LX...</b> 	<b>Auxiliary Switch</b> <ul style="list-style-type: none"> <li>• Side mounting on the left</li> <li>• 2-pole</li> <li>• One side mounting module per circuit breaker</li> </ul>	<b>1NO1NC</b> 	<b>2NO</b> 	<b>2NC</b> 
<b>LA...</b> 	<b>Any Trip Alarm Switch</b> <ul style="list-style-type: none"> <li>• Side mounting on the left</li> <li>• 2-pole</li> <li>• One side mounting module per circuit breaker. (Always directly fitted to the circuit breaker).</li> </ul>			
<b>LAM...</b> 	<b>Magnetic Trip Alarm Switch</b> <ul style="list-style-type: none"> <li>• Side mounting on the left</li> <li>• 2-pole</li> <li>• One side mounting module per circuit breaker. (Always directly fitted to the circuit breaker except using with Any Trip Alarm Switch).</li> </ul>			

Type	Description	Connection diagram	
<b>RS...</b> 	<b>Shunt release</b> <ul style="list-style-type: none"> <li>Side mounting on the right</li> <li>One side mounting module per circuit breaker.(Always directly fitted to the circuit breaker).</li> </ul>		24V 50Hz / 28V 60Hz 110~127V 50Hz / 120V 60Hz 220~230V 50Hz / 240~260V 60Hz 240V 50Hz / 277V 60Hz 380~400V 50Hz / 440~460V 60Hz 415~440V 50Hz / 460~480V 60Hz
<b>RU...</b> 	<b>Undervoltage release</b> <ul style="list-style-type: none"> <li>Side mounting on the right</li> <li>One side mounting module per circuit breaker.(Always directly fitted to the circuit breaker).</li> </ul>		24V 50Hz / 28V 60Hz 110~127V 50Hz / 120V 60Hz 220~230V 50Hz / 240~260V 60Hz 240V 50Hz / 277V 60Hz 380~400V 50Hz / 440~460V 60Hz 415~440V 50Hz / 460~480V 60Hz
<b>RUX...</b> 	<b>Undervoltage release with Switch</b> (Rotary Handle Only) <ul style="list-style-type: none"> <li>Side mounting on the right</li> <li>Include 2NO Auxiliary contact</li> <li>One side mounting module per circuit breaker.(Always directly fitted to the circuit breaker).</li> </ul>		24V 50Hz / 28V 60Hz 110~127V 50Hz / 120V 60Hz 220~230V 50Hz / 240~260V 60Hz 240V 50Hz / 277V 60Hz 380~400V 50Hz / 440~460V 60Hz 415~440V 50Hz / 460~480V 60Hz

## Others

Type	Description	Applied Type
<b>PIL32</b> 	<b>Push-in lug</b> <ul style="list-style-type: none"> <li>For screwing the MMS on to mounting plates.</li> </ul>	<b>MMS 32S</b> <b>MMS 32H</b>
<b>IB100</b> 	<b>Insulation barriers</b> <ul style="list-style-type: none"> <li>Insulation barriers with increased creepage distances and clearances for UL</li> </ul>	<b>MMS 100S</b> <b>MMS 100H</b>

# Technical Information

## IEC performance data (Motor protection)

### ● MMS 32S

Rated operational current $I_e$	[A]	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6	8	10	13	17	22	26	32
<b>Switching of standard three-phase motors</b>																	
AC-2, AC-3																	
230/240V	[kW]	-	0.03	0.06	0.09	0.12	0.18/0.25	0.37	0.55/0.75	1.1/1.5	1.5	2.2/3	3	3.7/4	4	5.5	7.5
400/415V	[kW]	0.02	0.06	0.09	0.12	0.18/0.25	0.37/0.55	0.75	1.1/1.5	2.2	3	3.7/4	5.5	7.5	7.5	11	15
500V	[kW]	-	-	-	0.25	0.37	0.55/0.75	1.1	1.5/2.2	3	3.7	4/5.5	7.5	11	11	15	18.5
690V	[kW]	-	-	-	0.25	0.37/0.55	0.75/1.1	1.5	2.2/3	3.7/4	5.5	7.5	11	11	15	18.5	22
<b>Back-up fuses</b>																	
gG, gL, only if $I_{cc} > I_{cu}$																	
(* = No back up fuse required)																	
230/240V	[A]	*	*	*	*	*	*	*	*	*	*	*	*	*	125	125	125
400/415V	[A]	*	*	*	*	*	*	*	*	*	*	80	80	100	100	100	100
440/460V	[A]	*	*	*	*	*	*	*	50	50	63	63	80	80	100	100	100
500V	[A]	*	*	*	*	*	*	50	40	50	63	63	80	80	80	80	80
690V	[A]	*	*	*	*	*	20	35	40	50	63	63	63	63	63	63	63
<b>Ultimate short-circuit breaking capacity <math>I_{cu}</math></b>																	
230/240V	[kA]	100	100	100	100	100	100	100	100	100	100	100	100	100	50	50	40
400/415V	[kA]	100	100	100	100	100	100	100	100	100	100	50	50	25	25	25	20
440/460V	[kA]	100	100	100	100	100	100	100	50	15	15	15	10	10	10	10	8
500V	[kA]	100	100	100	100	100	100	50	15	10	10	6	6	6	6	6	5
690V	[kA]	100	100	100	100	100	3	3	3	3	3	3	3	3	3	3	3
<b>Rated service short-circuit breaking capacity <math>I_{cs}</math></b>																	
230/240V	[kA]	100	100	100	100	100	100	100	100	100	100	100	100	100	38	38	30
400/415V	[kA]	100	100	100	100	100	100	100	100	100	100	38	38	19	19	19	15
440/460V	[kA]	100	100	100	100	100	100	100	38	11	11	11	8	8	8	8	6
500V	[kA]	100	100	100	100	100	100	38	11	8	8	5	5	5	5	5	4
690V	[kA]	100	100	100	100	100	3	3	3	3	3	3	3	3	3	3	3

### ● MMS 32H

Rated operational current $I_e$	[A]	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6	8	10	13	17	22	26	32
<b>Switching of standard three-phase motors</b>																	
AC-2, AC-3																	
230/240V	[kW]	-	0.03	0.06	0.09	0.12	0.18/0.25	0.37	0.55/0.75	1.1/1.5	1.5	2.2/3	3	3.7/4	4	5.5	7.5
400/415V	[kW]	0.02	0.06	0.09	0.12	0.18/0.25	0.37/0.55	0.75	1.1/1.5	2.2	3	3.7/4	5.5	7.5	7.5	11	15
500V	[kW]	-	-	-	0.25	0.37	0.55/0.75	1.1	1.5/2.2	3	3.7	4/5.5	7.5	11	11	15	18.5
690V	[kW]	-	-	-	0.25	0.37/0.55	0.75/1.1	1.5	2.2/3	3.7/4	5.5	7.5	11	11	15	18.5	22
<b>Back-up fuses</b>																	
gG, gL, only if $I_{cc} > I_{cu}$																	
(* = No back up fuse required)																	
230/240V	[A]	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
400/415V	[A]	*	*	*	*	*	*	*	*	*	*	*	*	100	125	125	125
440/460V	[A]	*	*	*	*	*	*	*	*	*	80	80	80	80	100	100	100
500V	[A]	*	*	*	*	*	*	*	*	*	63	80	80	80	80	80	80
690V	[A]	*	*	*	*	*	*	35	40	50	63	63	63	63	63	63	63
<b>Ultimate short-circuit breaking capacity <math>I_{cu}</math></b>																	
230/240V	[kA]	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
400/415V	[kA]	100	100	100	100	100	100	100	100	100	100	100	100	50	50	50	50
440/460V	[kA]	100	100	100	100	100	100	100	100	100	50	50	50	20	20	20	20
500V	[kA]	100	100	100	100	100	100	100	100	100	50	50	42	10	10	10	10
690V	[kA]	100	100	100	100	100	100	8	8	6	6	6	6	4	4	4	4
<b>Rated service short-circuit breaking capacity <math>I_{cs}</math></b>																	
230/240V	[kA]	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
400/415V	[kA]	100	100	100	100	100	100	100	100	100	100	100	100	38	38	38	38
440/460V	[kA]	100	100	100	100	100	100	100	100	100	38	38	38	15	15	15	15
500V	[kA]	100	100	100	100	100	100	100	100	100	38	38	32	8	8	8	8
690V	[kA]	100	100	100	100	100	100	8	8	6	6	6	6	4	4	4	4

Note) \* = Short circuit proof up to 50 or 100kA.  
No back up fuse required.

## ● MMS 63S



Rated operational current $I_e$	[A]	10	13	17	22	26	32	40	50	63
<b>Switching of standard three-phase motors</b>										
AC-2, AC-3										
230/240V	[kW]	2.2/3	3	3.7/4	4	5.5	7.5	7.5	11	15
400/415V	[kW]	3.7/4	5.5	7.5	7.5	11	15	18.5	22	30
500V	[kW]	4/5.5	7.5	11	11	15	18.5	22	30	37
690V	[kW]	7.5	11	11	15	18.5	22	30	45	55
<b>Back-up fuses</b>										
gG, gL, only if $I_{cc} > I_{cu}$ (* = No back up fuse required)										
230/240V	[A]	*	*	*	125	125	160	160	160	200
400/415V	[A]	*	80	100	125	125	125	125	160	160
440/460V	[A]	80	80	100	100	100	100	100	100	125
500V	[A]	80	80	80	80	80	80	80	80	80
690V	[A]	63	63	63	63	63	63	63	63	80
<b>Ultimate short-circuit breaking capacity <math>I_{cu}</math></b>										
230/240V	[kA]	100	100	100	50	50	50	50	50	50
400/415V	[kA]	100	50	25	25	25	25	25	25	25
440/460V	[kA]	15	10	10	10	10	10	10	10	10
500V	[kA]	10	6	6	6	6	6	6	6	6
690V	[kA]	4	4	4	4	4	4	4	4	4
<b>Rated service short-circuit breaking capacity <math>I_{cs}</math></b>										
230/240V	[kA]	100	100	100	38	38	38	38	38	38
400/415V	[kA]	100	38	19	19	19	19	19	19	19
440/460V	[kA]	12	8	8	8	8	8	8	8	8
500V	[kA]	8	5	5	5	5	5	5	5	5
690V	[kA]	3	3	3	3	3	3	3	3	3

## ● MMS 63H



Rated operational current $I_e$	[A]	10	13	17	22	26	32	40	50	63
<b>Switching of standard three-phase motors</b>										
AC-2, AC-3										
230/240V	[kW]	2.2/3	3	3.7/4	4	5.5	7.5	7.5	11	15
400/415V	[kW]	3.7/4	5.5	7.5	7.5	11	15	18.5	22	30
500V	[kW]	4/5.5	7.5	11	11	15	18.5	22	30	37
690V	[kW]	7.5	11	11	15	18.5	22	30	45	55
<b>Back-up fuses</b>										
gG, gL, only if $I_{cc} > I_{cu}$ (* = No back up fuse required)										
230/240V	[A]	*	*	*	*	*	*	*	*	*
400/415V	[A]	*	*	100	125	125	125	160	160	160
440/460V	[A]	100	100	100	125	125	125	125	125	160
500V	[A]	100	100	100	100	100	100	100	100	100
690V	[A]	63	63	63	80	80	80	80	80	80
<b>Ultimate short-circuit breaking capacity <math>I_{cu}</math></b>										
230/240V	[kA]	100	100	100	100	100	100	100	100	100
400/415V	[kA]	100	100	50	50	50	50	50	50	50
440/460V	[kA]	50	50	50	50	35	35	35	35	35
500V	[kA]	50	42	12	12	12	10	10	10	10
690V	[kA]	6	6	5	5	5	5	5	5	5
<b>Rated service short-circuit breaking capacity <math>I_{cs}</math></b>										
230/240V	[kA]	100	100	100	100	100	100	100	100	100
400/415V	[kA]	100	100	50	50	50	50	50	50	50
440/460V	[kA]	38	38	38	38	27	27	27	27	27
500V	[kA]	38	32	9	9	9	8	8	8	8
690V	[kA]	5	5	4	4	4	4	4	4	4

Note) \* = Short circuit proof up to 50 or 100kA.  
No back up fuse required.

## IEC performance data (Motor protection)



### ● MMS 100S

Rated operational current $I_e$ [A]		17	22	26	32	40	50	63	75	90	100
<b>Switching of standard three-phase motors</b>											
AC-2, AC-3											
230/240V [kW]		3.7/4	4	5.5	7.5	7.5	11	15	22	30	30
400/415V [kW]		7.5	7.5	11	15	18.5	22	30	37	45	45
500V [kW]		11	11	15	18.5	22	30	37	45	55	63
690V [kW]		11	15	18.5	22	30	45	55	63	75	90
<b>Back-up fuses</b>											
gG, gL, only if $I_{cc} > I_{cu}$ (* = No back up fuse required)											
230/240V [A]		*	*	*	*	*	*	*	*	*	*
400/415V [A]		100	125	125	125	160	160	160	160	160	160
440/460V [A]		100	125	125	125	125	160	160	160	160	160
500V [A]		100	100	100	100	100	100	100	125	125	125
690V [A]		63	80	80	80	80	80	80	100	125	125
<b>Ultimate short-circuit breaking capacity <math>I_{cu}</math></b>											
230/240V [kA]		100	100	100	100	100	100	100	100	100	100
400/415V [kA]		50	50	50	50	50	50	50	50	50	50
440/460V [kA]		40	40	40	40	40	40	40	40	40	40
500V [kA]		25	25	25	15	15	12	12	8	8	8
690V [kA]		10	10	10	10	6	6	6	5	5	5
<b>Rated service short-circuit breaking capacity <math>I_{cs}</math></b>											
230/240V [kA]		100	100	100	100	100	100	100	100	100	100
400/415V [kA]		38	38	38	38	38	38	38	38	38	38
440/460V [kA]		30	30	30	30	30	30	30	30	30	30
500V [kA]		19	19	19	11	11	9	9	6	6	6
690V [kA]		8	8	8	8	5	5	5	4	4	4



### ● MMS 100H

Rated operational current $I_e$ [A]		17	22	26	32	40	50	63	75	90	100
<b>Switching of standard three-phase motors</b>											
AC-2, AC-3											
230/240V [kW]		3.7/4	4	5.5	7.5	7.5	11	15	22	30	30
400/415V [kW]		7.5	7.5	11	15	18.5	22	30	37	45	45
500V [kW]		11	11	15	18.5	22	30	37	45	55	63
690V [kW]		11	15	18.5	22	30	45	55	63	75	90
<b>Back-up fuses</b>											
gG, gL, only if $I_{cc} > I_{cu}$ (* = No back up fuse required)											
230/240V [A]		*	*	*	*	*	*	*	*	*	*
400/415V [A]		*	*	*	*	*	*	*	*	*	*
440/460V [A]		125	125	125	160	160	160	200	200	200	200
500V [A]		100	125	125	125	160	160	160	160	160	160
690V [A]		80	80	80	80	80	100	100	125	160	160
<b>Ultimate short-circuit breaking capacity <math>I_{cu}</math></b>											
230/240V [kA]		100	100	100	100	100	100	100	100	100	100
400/415V [kA]		100	100	100	100	100	100	100	100	100	100
440/460V [kA]		50	50	50	50	50	50	50	50	50	50
500V [kA]		35	35	35	25	20	15	15	12	12	12
690V [kA]		12	12	12	12	12	10	8	6	6	6
<b>Rated service short-circuit breaking capacity <math>I_{cs}</math></b>											
230/240V [kA]		100	100	100	100	100	100	100	100	100	100
400/415V [kA]		100	50	50	50	50	50	50	50	50	50
440/460V [kA]		38	38	38	38	38	38	38	38	38	38
500V [kA]		27	27	27	19	15	11	11	9	9	9
690V [kA]		9	9	9	9	9	8	6	6	6	6

Note) \* = Short circuit proof up to 50 or 100kA.  
No back up fuse required.

# IEC performance data (Short-circuit protection for starters)

## ● MMS 32HI

Rated operational current $I_e$	[A]	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6	8	10	13	17	22	26	32
<b>AC-2, AC-3</b>																	
230/240V	[kW]	-	0.03	0.06	0.09	0.12	0.18/0.25	0.37	0.55/0.75	1.1/1.5	1.5	2.2/3	3	3.7/4	4	5.5	7.5
400/415V	[kW]	0.02	0.06	0.09	0.12	0.18/0.25	0.37/0.55	0.75	1.1/1.5	2.2	3	3.7/4	5.5	7.5	7.5	11	15
500V	[kW]	-	-	-	0.25	0.37	0.55/0.75	1.1	1.5/2.2	3	3.7	4/5.5	7.5	11	11	15	18.5
690V	[kW]	-	-	-	0.25	0.37/0.55	0.75/1.1	1.5	2.2/3	3.7/4	5.5	7.5	11	11	15	18.5	22
<b>Back-up fuses</b> gG, gL, only if $I_{cc} > I_{cu}$ (* = No back up fuse required)																	
230/240V	[A]	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
400/415V	[A]	*	*	*	*	*	*	*	*	*	*	*	*	100	125	125	125
440/460V	[A]	*	*	*	*	*	*	*	*	*	80	80	80	100	100	100	100
500V	[A]	*	*	*	*	*	*	*	*	*	63	80	80	80	80	80	80
690V	[A]	*	*	*	*	*	*	35	40	50	63	63	63	63	63	63	63
<b>Ultimate short-circuit breaking capacity <math>I_{cu}</math></b>																	
230/240V	[kA]	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
400/415V	[kA]	100	100	100	100	100	100	100	100	100	100	100	100	50	50	50	50
440/460V	[kA]	100	100	100	100	100	100	100	100	100	50	50	50	20	20	20	20
500V	[kA]	100	100	100	100	100	100	100	100	100	50	50	42	10	10	10	10
690V	[kA]	100	100	100	100	100	100	8	8	6	6	6	6	4	4	4	4
<b>Rated service short-circuit breaking capacity <math>I_{cs}</math></b>																	
230/240V	[kA]	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
400/415V	[kA]	100	100	100	100	100	100	100	100	100	100	100	100	38	38	38	38
440/460V	[kA]	100	100	100	100	100	100	100	100	100	38	38	38	15	15	15	15
500V	[kA]	100	100	100	100	100	100	100	100	100	38	38	32	8	8	8	8
690V	[kA]	100	100	100	100	100	100	8	8	6	6	6	6	4	4	4	4

## ● MMS 63HI

Rated operational current $I_e$	[A]	10	13	17	22	26	32	40	50	63
<b>AC-2, AC-3</b>										
230/240V	[kW]	2.2/3	3	3.7/4	4	5.5	7.5	7.5	11	15
400/415V	[kW]	3.7/4	5.5	7.5	7.5	11	15	18.5	22	30
500V	[kW]	4/5.5	7.5	11	11	15	18.5	22	30	37
690V	[kW]	7.5	11	11	15	18.5	22	30	45	55
<b>Back-up fuses</b> gG, gL, only if $I_{cc} > I_{cu}$ (* = No back up fuse required)										
230/240V	[A]	*	*	*	*	*	*	*	*	*
400/415V	[A]	*	*	100	125	125	125	160	160	160
440/460V	[A]	100	100	100	125	125	125	125	125	160
500V	[A]	100	100	100	100	100	100	100	100	100
690V	[A]	63	63	63	80	80	80	80	80	80
<b>Ultimate short-circuit breaking capacity <math>I_{cu}</math></b>										
230/240V	[kA]	100	100	100	100	100	100	100	100	100
400/415V	[kA]	100	100	50	50	50	50	50	50	50
440/460V	[kA]	50	50	50	50	35	35	35	35	35
500V	[kA]	50	42	12	12	12	10	10	10	10
690V	[kA]	6	6	5	5	5	5	5	5	5
<b>Rated service short-circuit breaking capacity <math>I_{cs}</math></b>										
230/240V	[kA]	100	100	100	100	100	100	100	100	100
400/415V	[kA]	100	100	50	50	50	50	50	50	50
440/460V	[kA]	38	38	38	38	27	27	27	27	27
500V	[kA]	38	32	9	9	9	8	8	8	8
690V	[kA]	5	5	4	4	4	4	4	4	4

## ● MMS 100HI

Rated operational current $I_e$	[A]	17	22	26	32	40	50	63	75	90	100
<b>AC-2, AC-3</b>											
230/240V	[kW]	3.7/4	4	5.5	7.5	7.5	11	15	22	30	30
400/415V	[kW]	7.5	7.5	11	15	18.5	22	30	37	45	45
500V	[kW]	11	11	15	18.5	22	30	37	45	55	63
690V	[kW]	11	15	18.5	22	30	45	55	63	75	90
<b>Back-up fuses</b> gG, gL, only if $I_{cc} > I_{cu}$ (* = No back up fuse required)											
230/240V	[A]	*	*	*	*	*	*	*	*	*	*
400/415V	[A]	*	*	*	*	*	*	*	*	*	*
440/460V	[A]	125	125	125	160	160	160	200	200	200	200
500V	[A]	100	125	125	125	160	160	160	160	160	160
690V	[A]	80	80	80	80	80	100	100	125	160	160
<b>Ultimate short-circuit breaking capacity <math>I_{cu}</math></b>											
230/240V	[kA]	100	100	100	100	100	100	100	100	100	100
400/415V	[kA]	100	100	100	100	100	100	100	100	100	100
440/460V	[kA]	50	50	50	50	50	50	50	50	50	50
500V	[kA]	35	35	35	25	20	15	15	12	12	12
690V	[kA]	12	12	12	12	12	10	8	6	6	6
<b>Rated service short-circuit breaking capacity <math>I_{cs}</math></b>											
230/240V	[kA]	100	100	100	100	100	100	100	100	100	100
400/415V	[kA]	100	50	50	50	50	50	50	50	50	50
440/460V	[kA]	38	38	38	38	38	38	38	38	38	38
500V	[kA]	27	27	27	19	15	11	11	9	9	9
690V	[kA]	9	9	9	9	9	8	6	6	6	6

## IEC performance data (Motor protection ; Class 20)



### ● MMS 63HL

Rated operational current $I_e$ [A]		10	13	17	22	26	32	40	50	63
<b>Switching of standard three-phase motors</b>										
AC-2, AC-3										
230/240V [kW]		2.2/3	3	3.7/4	4	5.5	7.5	7.5	11	15
400/415V [kW]		3.7/4	5.5	7.5	7.5	11	15	18.5	22	30
500V [kW]		4/5.5	7.5	11	11	15	18.5	22	30	37
690V [kW]		7.5	11	11	15	18.5	22	30	45	55
<b>Back-up fuses</b>										
gG, gL, only if $I_{cc} > I_{cu}$ (* = No back up fuse required)										
230/240V [A]		*	*	*	*	*	*	*	*	*
400/415V [A]		*	*	100	125	125	125	160	160	160
440/460V [A]		100	100	100	125	125	125	125	125	160
500V [A]		100	100	100	100	100	100	100	100	100
690V [A]		63	63	63	80	80	80	80	80	80
<b>Ultimate short-circuit breaking capacity <math>I_{cu}</math></b>										
230/240V [kA]		100	100	100	100	100	100	100	100	100
400/415V [kA]		100	100	50	50	50	50	50	50	50
440/460V [kA]		50	50	50	50	35	35	35	35	35
500V [kA]		50	42	12	12	12	10	10	10	10
690V [kA]		6	6	5	5	5	5	5	5	5
<b>Rated service short-circuit breaking capacity <math>I_{cs}</math></b>										
230/240V [kA]		100	100	100	100	100	100	100	100	100
400/415V [kA]		100	100	50	50	50	50	50	50	50
440/460V [kA]		38	38	38	38	27	27	27	27	27
500V [kA]		38	32	9	9	9	8	8	8	8
690V [kA]		5	5	4	4	4	4	4	4	4



### ● MMS 100HL

Rated operational current $I_e$ [A]		17	22	26	32	40	50	63	75	90	100
<b>Switching of standard three-phase motors</b>											
AC-2, AC-3											
230/240V [kW]		3.7/4	4	5.5	7.5	7.5	11	15	22	30	30
400/415V [kW]		7.5	7.5	11	15	18.5	22	30	37	45	45
500V [kW]		11	11	15	18.5	22	30	37	45	55	63
690V [kW]		11	15	18.5	22	30	45	55	63	75	90
<b>Back-up fuses</b>											
gG, gL, only if $I_{cc} > I_{cu}$ (* = No back up fuse required)											
230/240V [A]		*	*	*	*	*	*	*	*	*	*
400/415V [A]		*	*	*	*	*	*	*	*	*	*
440/460V [A]		125	125	125	160	160	160	200	200	200	200
500V [A]		100	125	125	125	160	160	160	160	160	160
690V [A]		80	80	80	80	80	100	100	125	160	160
<b>Ultimate short-circuit breaking capacity <math>I_{cu}</math></b>											
230/240V [kA]		100	100	100	100	100	100	100	100	100	100
400/415V [kA]		100	100	100	100	100	100	100	100	100	100
440/460V [kA]		50	50	50	50	50	50	50	50	50	50
500V [kA]		35	35	35	25	20	15	15	12	12	12
690V [kA]		12	12	12	12	12	10	8	6	6	6
<b>Rated service short-circuit breaking capacity <math>I_{cs}</math></b>											
230/240V [kA]		100	100	100	100	100	100	100	100	100	100
400/415V [kA]		100	50	50	50	50	50	50	50	50	50
440/460V [kA]		38	38	38	38	38	38	38	38	38	38
500V [kA]		27	27	27	19	15	11	11	9	9	9
690V [kA]		9	9	9	9	9	8	6	6	6	6

Note) \* = Short circuit proof up to 50 or 100kA.  
No back up fuse required.

# UL/CSA performance data (Motor protection)

Manual motor controller "group installation" or "Type E starter"  
 (UL 508, CSA C22.2 No..14, for group installation, in connection with a  
 short-circuit protection device)

## ● MMS 32S

Rated operational current I <sub>e</sub>		[A]	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6	8	10	13	17	22	26	32
<b>Max. short-circuit current</b>																		
	240V	[kA]	100	100	100	100	100	100	100	100	100	100	100	100	65	65	65	65
	480V	[kA]	65	65	65	65	65	65	65	65	65	65	65	65	50	50	50	50
	600V	[kA]	25	25	25	25	25	25	25	25	25	25	25	25	10	10	10	10
<b>Motor load</b>																		
1 Phase	115V	[HP]	-	-	-	-	-	-	-	1/8	1/4	1/3	1/2	1/2	1	2	2	2
	230V	[HP]	-	-	-	-	-	1/10	1/6	1/3	3/4	2	1½	2	3	3	5	5
3 Phase	230V	[HP]	-	-	-	-	-	1/3	1/2	1	1½	2	3	3	5	7½	7½	10
	460V	[HP]	-	-	-	-	1/2	3/4	1½	2	5	5	7½	7½	10	15	15	20
	575V	[HP]	-	-	-	-	1/2	1	1½	3	5	5	10	10	15	20	20	30
<b>Maximum rated current of fuse or breaker</b>		[A]	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500

## ● MMS 32H

Rated operational current I <sub>e</sub>		[A]	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6	8	10	13	17	22	26	32
<b>Max. short-circuit current</b>																		
	240V	[kA]	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	480V	[kA]	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
	600V	[kA]	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	10
<b>Motor load</b>																		
1 Phase	115V	[HP]	-	-	-	-	-	-	-	1/8	1/4	1/3	1/2	1/2	1	2	2	2
	230V	[HP]	-	-	-	-	-	1/10	1/6	1/3	3/4	2	1½	2	3	3	5	5
3 Phase	230V	[HP]	-	-	-	-	-	1/3	1/2	1	1½	2	3	3	5	7½	7½	10
	460V	[HP]	-	-	-	-	1/2	3/4	1½	2	5	5	7½	7½	10	15	15	20
	575V	[HP]	-	-	-	-	1/2	1	1½	3	5	5	10	10	15	20	20	30
<b>Maximum rated current of fuse or breaker</b>		[A]	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500



## UL/CSA performance data (Motor protection)

Manual motor controller "group installation" or "Type E starter"  
 (UL 508, CSA C22.2 No..14, for group installation, in connection with a  
 short-circuit protection device)



### ● MMS 63S

Rated operational current I <sub>e</sub>	[A]	10	13	17	22	26	32	40	50	63	
<b>Max. short-circuit current</b>											
240V	[kA]	100	100	100	100	100	100	100	100	100	
480V	[kA]	50	50	50	50	50	50	50	50	50	
600V	[kA]	25	25	25	25	25	10	10	10	10	
<b>Motor load</b>											
1 Phase	115V	[HP]	1/2	1/2	1	2	2	3	3	5	5
	230V	[HP]	1½	2	3	3	5	5	7½	10	15
3 Phase	230V	[HP]	3	3	5	7½	10	10	15	20	25
	460V	[HP]	7½	7½	10	15	20	25	30	40	50
	575V	[HP]	10	10	15	20	25	30	40	50	60
<b>Maximum rated current of fuse or breaker</b>		[A]	600	600	600	600	600	600	600	600	



### ● MMS 63H

Rated operational current I <sub>e</sub>	[A]	10	13	17	22	26	32	40	50	63	
<b>Max. short-circuit current</b>											
240V	[kA]	100	100	100	100	100	100	100	100	100	
480V	[kA]	65	65	65	65	65	65	65	65	65	
600V	[kA]	25	25	25	25	25	25	10	10	10	
<b>Motor load</b>											
1 Phase	115V	[HP]	1/2	1/2	1	2	2	3	3	5	5
	230V	[HP]	1½	2	3	3	5	5	7½	10	15
3 Phase	230V	[HP]	3	3	5	7½	10	10	15	20	25
	460V	[HP]	7½	7½	10	15	20	25	30	40	50
	575V	[HP]	10	10	15	20	25	30	40	50	60
<b>Maximum rated current of fuse or breaker</b>		[A]	600	600	600	600	600	600	600	600	

Manual motor controller "group installation" or "Type E starter"  
 (UL 508, CSA C22.2 No..14, for group installation, in connection with a  
 short-circuit protection device)



## ● MMS 100S

Rated operational current I <sub>e</sub>	[A]	17	22	26	32	40	50	63	75	90	100	
<b>Max. short-circuit current</b>												
240V	[kA]	100	100	100	100	100	100	100	100	100	100	
480V	[kA]	50	50	50	50	50	50	50	50	50	50	
600V	[kA]	25	25	25	10	10	10	10	10	10	10	
<b>Motor load</b>												
1 Phase	115V	[HP]	1	1½	2	3	3	5	5	7½	10	10
	230V	[HP]	3	3	5	5	7½	10	15	15	20	25
3 Phase	230V	[HP]	5	7½	10	10	15	20	25	25	30	40
	460V	[HP]	10	15	20	25	30	40	50	60	75	75
	575V	[HP]	15	20	25	30	40	50	60	75	100	100
<b>Maximum rated current of fuse or breaker</b>		[A]	1000	1000	1000	1000	1000	1000	1000	1000	1000	



## ● MMS 100H

Rated operational current I <sub>e</sub>	[A]	17	22	26	32	40	50	63	75	90	100	
<b>Max. short-circuit current</b>												
240V	[kA]	100	100	100	100	100	100	100	100	100	100	
480V	[kA]	65	65	65	65	65	65	65	65	65	65	
600V	[kA]	25	25	25	25	25	25	25	10	10	10	
<b>Motor load</b>												
1 Phase	115V	[HP]	1	1½	2	3	3	5	5	7½	10	10
	230V	[HP]	3	3	5	5	7½	10	15	15	20	25
3 Phase	230V	[HP]	5	7½	10	10	15	20	25	25	30	40
	460V	[HP]	10	15	20	25	30	40	50	60	75	75
	575V	[HP]	15	20	25	30	40	50	60	75	100	100
<b>Maximum rated current of fuse or breaker</b>		[A]	1000	1000	1000	1000	1000	1000	1000	1000	1000	

# Technical Information

## Manual Motor Controller (UL508)

### ● MMS 32S

Rated operational current I <sub>e</sub>		[A]	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6	8	10	13	17	22	26	32
<b>Max. short-circuit current</b>																		
240V	[kA]	100	100	100	100	100	100	100	100	100	100	100	100	100	50	50	50	50
480V	[kA]	50	50	50	50	50	50	50	50	50	25	25	25	25	25	25	25	25
600V	[kA]	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
<b>Motor load</b>																		
1 Phase	115V	[HP]	-	-	-	-	-	-	-	1/8	1/4	1/3	1/2	1/2	1	2	2	2
	230V	[HP]	-	-	-	-	-	1/10	1/6	1/3	3/4	2	1½	2	3	3	5	5
3 Phase	230V	[HP]	-	-	-	-	-	1/3	1/2	1	1½	2	3	3	5	7½	7½	10
	460V	[HP]	-	-	-	-	1/2	3/4	1½	2	5	5	7½	7½	10	15	15	20
	575V	[HP]	-	-	-	-	1/2	1	1½	3	5	5	10	10	15	20	20	30
<b>Max. fuse size</b>		[A]	1	1	1	1	3	6	10	15	20	30	40	50	60	80	100	125
<b>Max. breaker size</b>		[A]	15	15	15	15	15	15	15	15	20	30	40	50	60	80	100	125

### ● MMS 32H

Rated operational current I <sub>e</sub>		[A]	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6	8	10	13	17	22	26	32
<b>Max. short-circuit current</b>																		
240V	[kA]	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
480V	[kA]	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
600V	[kA]	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
<b>Motor load</b>																		
1 Phase	115V	[HP]	-	-	-	-	-	-	-	1/8	1/4	1/3	1/2	1/2	1	2	2	2
	230V	[HP]	-	-	-	-	-	1/10	1/6	1/3	3/4	2	1½	2	3	3	5	5
3 Phase	230V	[HP]	-	-	-	-	-	1/3	1/2	1	1½	2	3	3	5	7½	7½	10
	460V	[HP]	-	-	-	-	1/2	3/4	1½	2	5	5	7½	7½	10	15	15	20
	575V	[HP]	-	-	-	-	1/2	1	1½	3	5	5	10	10	15	20	20	30
<b>Max. fuse size</b>		[A]	1	1	1	1	3	6	10	15	20	30	40	50	60	80	100	125
<b>Max. breaker size</b>		[A]	15	15	15	15	15	15	15	15	20	30	40	50	60	80	100	125

### ● MMS 63S

Rated operational current I <sub>e</sub>		[A]	10	13	17	22	26	32	40	50	63
<b>Max. short-circuit current</b>											
240V	[kA]	100	100	100	100	100	100	100	100	100	100
480V	[kA]	25	25	25	25	25	25	25	25	25	25
600V	[kA]	10	10	10	10	10	10	10	10	10	10
<b>Motor load</b>											
1 Phase	115V	[HP]	1/2	1/2	1	2	2	3	3	5	5
	230V	[HP]	1½	2	3	3	5	5	7½	10	15
3 Phase	230V	[HP]	3	3	5	7½	10	10	15	20	25
	460V	[HP]	7½	7½	10	15	20	25	30	40	50
	575V	[HP]	10	10	15	20	25	30	40	50	60
<b>Max. fuse size</b>		[A]	40	50	60	80	100	125	150	200	250
<b>Max. breaker size</b>		[A]	40	50	60	80	100	125	150	200	250

## ● MMS 63H



Rated operational current I <sub>e</sub>		[A]	10	13	17	22	26	32	40	50	63
<b>Max. short-circuit current</b>											
240V	[kA]		100	100	100	100	100	100	100	100	100
480V	[kA]		50	50	50	50	50	50	50	50	50
600V	[kA]		10	10	10	10	10	10	10	10	10
<b>Motor load</b>											
1 Phase	115V	[HP]	1/2	1/2	1	2	2	3	3	5	5
	230V	[HP]	1½	2	3	3	5	5	7½	10	15
3 Phase	230V	[HP]	3	3	5	7½	10	10	15	20	25
	460V	[HP]	7½	7½	10	15	20	25	30	40	50
	575V	[HP]	10	10	15	20	25	30	40	50	60
<b>Max. fuse size</b>		[A]	40	50	60	80	100	125	150	200	250
<b>Max. breaker size</b>		[A]	40	50	60	80	100	125	150	200	250

## ● MMS 100S



Rated operational current I <sub>e</sub>		[A]	17	22	26	32	40	50	63	75	90	100
<b>Max. short-circuit current</b>												
240V	[kA]		100	100	100	100	100	100	100	100	100	100
480V	[kA]		25	25	25	25	25	25	25	25	25	25
600V	[kA]		10	10	10	10	10	10	10	10	10	10
<b>Motor load</b>												
1 Phase	115V	[HP]	1	1½	2	3	3	5	5	7½	10	10
	230V	[HP]	3	3	5	5	7½	10	15	15	20	25
3 Phase	230V	[HP]	5	7½	10	10	15	20	25	25	30	40
	460V	[HP]	10	15	20	25	30	40	50	60	75	75
	575V	[HP]	15	20	25	30	40	50	60	75	100	100
<b>Max. fuse size</b>		[A]	60	80	100	125	150	200	250	300	350	400

## ● MMS 100H



Rated operational current I <sub>e</sub>		[A]	17	22	26	32	40	50	63	75	90	100
<b>Max. short-circuit current</b>												
240V	[kA]		100	100	100	100	100	100	100	100	100	100
480V	[kA]		50	50	50	50	50	50	50	50	50	50
600V	[kA]		10	10	10	10	10	10	10	10	10	10
<b>Motor load</b>												
1 Phase	115V	[HP]	1	1½	2	3	3	5	5	7½	10	10
	230V	[HP]	3	3	5	5	7½	10	15	15	20	25
3 Phase	230V	[HP]	5	7½	10	10	15	20	25	25	30	40
	460V	[HP]	10	15	20	25	30	40	50	60	75	75
	575V	[HP]	15	20	25	30	40	50	60	75	100	100
<b>Max. fuse size</b>		[A]	60	80	100	125	150	200	250	300	350	400
<b>Max. breaker size</b>		[A]	60	80	100	125	150	200	250	300	350	400

# Technical Information

## General data



Type	MMS 32S
<b>Rated insulation voltage</b>	
IEC	690V
UL, CSA	600V
<b>Rated impulse withstand voltage</b>	
Uimp/Pollution degree	6kV / 3
<b>Rated frequency</b>	
	50 / 60 Hz
<b>Utilization category :</b>	
IEC 947-2 (Circuit breaker)	Cat. A
IEC 947-4-1 (Motor starter)	AC 3
<b>Life span</b>	
Mechanical	Operations
Electrical (I <sub>e</sub> max.)	Operations
	25
<b>Switching frequency</b>	
	Ope./h
<b>Ambient temperature</b>	
Storage	°C
Operation	°C
	-50 ~ +80
	-20 ~ +60
<b>Operation altitude</b>	
	m
	Up to 2000 (6500 Feet)
<b>Protection class</b>	
	IP 20
	Safe from finger touch
<b>Resistance to shock</b>	
	g
	25
<b>Resistance to vibration</b>	
	Hz
	5 ~ 150
<b>Rated thermal current I<sub>th</sub></b>	
IEC	[A]
up to 60°C ambient temperature	0.1 ... 32
<b>Overload protection</b>	
Characteristics	○
<b>Ambient temperature compensation</b>	
	-20 ~ +60
<b>Phase-failure protection</b>	
	○
<b>Trip class</b>	
	IEC 60947-4-1
	10
<b>Magnetic release</b>	
Response current	13 × I <sub>n</sub> <sup>2)</sup>
<b>Total power loss P<sub>v</sub></b>	
Circuit breaker at rated load	[W]
Operating temperature	I <sub>n</sub> = 0.16-4A : 9
	I <sub>n</sub> = 6-26A : 7.5
	I <sub>n</sub> = 32A : 4.5

Note = 1) Class20; MMS63HL, MMS100HL

2) I<sub>n</sub> = Max. rated operational current I<sub>e</sub>

# Manual Motor Starters

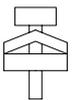


MMS32H	MMS63S, 63H	MMS100S, 100H
690V	690V	690V
600V	600V	600V
6kV / 3	8kV / 3	8kV / 3
50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Cat. A	Cat. A	Cat. A
AC 3	AC 3	AC 3
100,000	50,000	50,000
100,000	25,000	25,000
25	25	25
-50 ~ +80	-50 ~ +80	-50 ~ +80
-20 ~ +60	-20 ~ +60	-20 ~ +60
Up to 2000 (6500 Feet)	Up to 2000 (6500 Feet)	Up to 2000 (6500 Feet)
IP 20	IP 20	IP 20
Safe from finger touch	Safe from finger touch	Safe from finger touch
25	25	25
5 ~ 150	5 ~ 150	5 ~ 150
0.1 ... 32	6 ...63	11 ...100
○	○	○
-20 ~ +60	-20 ~ +60	-20 ~ +60
○	○	○
10	10 <sup>1)</sup>	10 <sup>1)</sup>
13 × In <sup>2)</sup>	13 × In <sup>2)</sup>	13 × In <sup>2)</sup>
In = 0.16-4A : 9 In = 6-26A : 7.5 In = 32A : 4.5	In = 10-22A : 16 In = 26-63A : 12	In = 17-63A : 17 In = 75-100A : 21

### ● Manual Motor Starter MMS32..100

	MMS32S	MMS32H	MMS63S, 63H	MMS100S, 100H	
<b>Conformity to standards</b>	IEC60947 UL508, UL508 Type E				
<b>Approvals</b>	CE, UL				
<b>Terminal parts</b>					
<b>Screwdriver</b>					
Single-core	1.conductor [mm] / [AWG]	1...10 / 18...8	1...10 / 18...8	0.75...35 / 18...2	2.5...70 / 12...2/0
	2.conductor [mm] / [AWG]	1...6 / 18...10	1...6 / 18...10	0.75...25 / 18...4	2.5...50 / 12...1/0
Stranded	1.conductor [mm] / [AWG]	1...6 / 18...10	1...6 / 18...10	0.75...35 / 18...2	2.5...70 / 12...2/0
	2.conductor [mm] / [AWG]	1...6 / 18...10	1...6 / 18...10	0.75...25 / 18...4	2.5...50 / 12...1/0
Flexible	1.conductor [mm] / [AWG]	1...6 / 18...10	1...6 / 18...10	0.75...25 / 18...4	2.5...50 / 12...1/0
	2.conductor [mm] / [AWG]	0.75...4 / 18...10	0.75...4 / 18...10	0.75...16 / 18...6	2.5...35 / 10...2
<b>Tightening torque</b>	[Nm] / [lb-in]	0.8...2.5 / 7...22	0.8...2.5 / 7...22	3...4.5 / 26...39	4...6 / 35...53

### ● Accessories for Manual Motor Starter MMS32..100

		Auxiliary contacts for front mounting FX...	Auxiliary contacts for left side mounting LX...	Alarm switch for left side mounting LA...	
<b>Rated thermal current / th</b>					
at 40 °C ambient temperature	[A]	5	10	10	
at 60 °C ambient temperature	[A]	3	6	6	
<b>Contact class coordination according to NEMA</b> (UL/CSA-Standards)	AC	B 600 Standard Pilot Duty	A 600 Standard Pilot Duty	A 600 Standard Pilot Duty	
	DC	R 300 Light Pilot Duty	Q 300 Light Pilot Duty	Q 300 Light Pilot Duty	
<b>Back-up fuses gG, gL</b>	[A]	16	16	16	
<b>Rated supply current</b>	[V]	24	24	24	240
AC-15:	[A]	3	2	6	4
DC-13:	[V]	24	220	24	220
	[A]	1	0.1	2	0.25
<b>Terminal parts</b>					
Type of terminals					
<b>Screwdriver</b>	Pozidriv size 2				
Single-core	1.conductor [mm] / [AWG]	0.5...2.5 / 20...14			
	2.conductor [mm] / [AWG]	0.5...2.5 / 20...14			
Flexible	1.conductor [mm] / [AWG]	0.5...4 / 20...10			
	2.conductor [mm] / [AWG]	0.75...2.5 / 18...14			
<b>Tightening torque</b>	[Nm] / [lb-in]	0.8...1.2 / 7...10			

## ● Accessories for Manual Motor Starter MMS32..100

	Undervoltage release for right side mounting <b>RU...</b>	Undervoltage release with 2 auxiliary contacts for right side mounting <b>RUX...</b>	Shunt release for right side mounting <b>RS...</b>	
<b>Actuating voltage</b>				
Pull-in	0.85...1.1×Us	0.85...1.1×Us	0.7...1.1×Us	
Drop-out	0.7...0.35×Us	0.7...0.35×Us		
<b>Rated control voltage</b>				
min.:	24V 50Hz / 28V 60Hz	24V 50Hz / 28V 60Hz	24V 50Hz / 28V 60Hz	
max.:	415~440V 50Hz / 460~480V 60Hz	415~440V 50Hz / 460~480V 60Hz	415~440V 50Hz / 460~480V 60Hz	
<b>Coil rating</b>				
Pull-in	8.5VA, 6W	8.5VA, 6W	8.5VA, 6W	
Hold	3VA, 1.2W	3VA, 1.2W	3VA, 1.2W	
On-Time	100%	100%	100%	
<b>Terminal parts</b>				
Type of terminals				
Screwdriver				
1.conductor [mm] / [AWG]				Pozidriv size 2 0.5...2.5 / 20...14
2.conductor [mm] / [AWG]				0.5...2.5 / 20...14
1.conductor [mm] / [AWG]	0.5...4 / 20...10			
2.conductor [mm] / [AWG]	0.75...2.5 / 18...14			
<b>Tightening torque</b>	[Nm] / [lb-in]	0.8...1.2 / 7...10		

## ● Weights

Description	Type	Weight [g]
<b>Circuit breaker</b>	<b>MMS-32S</b>	320
	<b>MMS-32H</b>	360
	<b>MMS-63S</b>	1,000
	<b>MMS-100S</b>	2,200
<b>Auxiliary switch</b>	<b>FX...</b> (Front Auxiliary Switch)	18
	<b>LX...</b> (Side Auxiliary Switch)	30
	<b>LA...</b> (Alarm Switch)	40
<b>Undervoltage release</b>	<b>RU...</b> (Undervoltage release)	110
	<b>RUX...</b> (Undervoltage release with 2 auxiliary contacts)	120
<b>Shunt release</b>	<b>RS...</b> (Shunt release)	110

## Type '2' coordination according to IEC 947-4-1

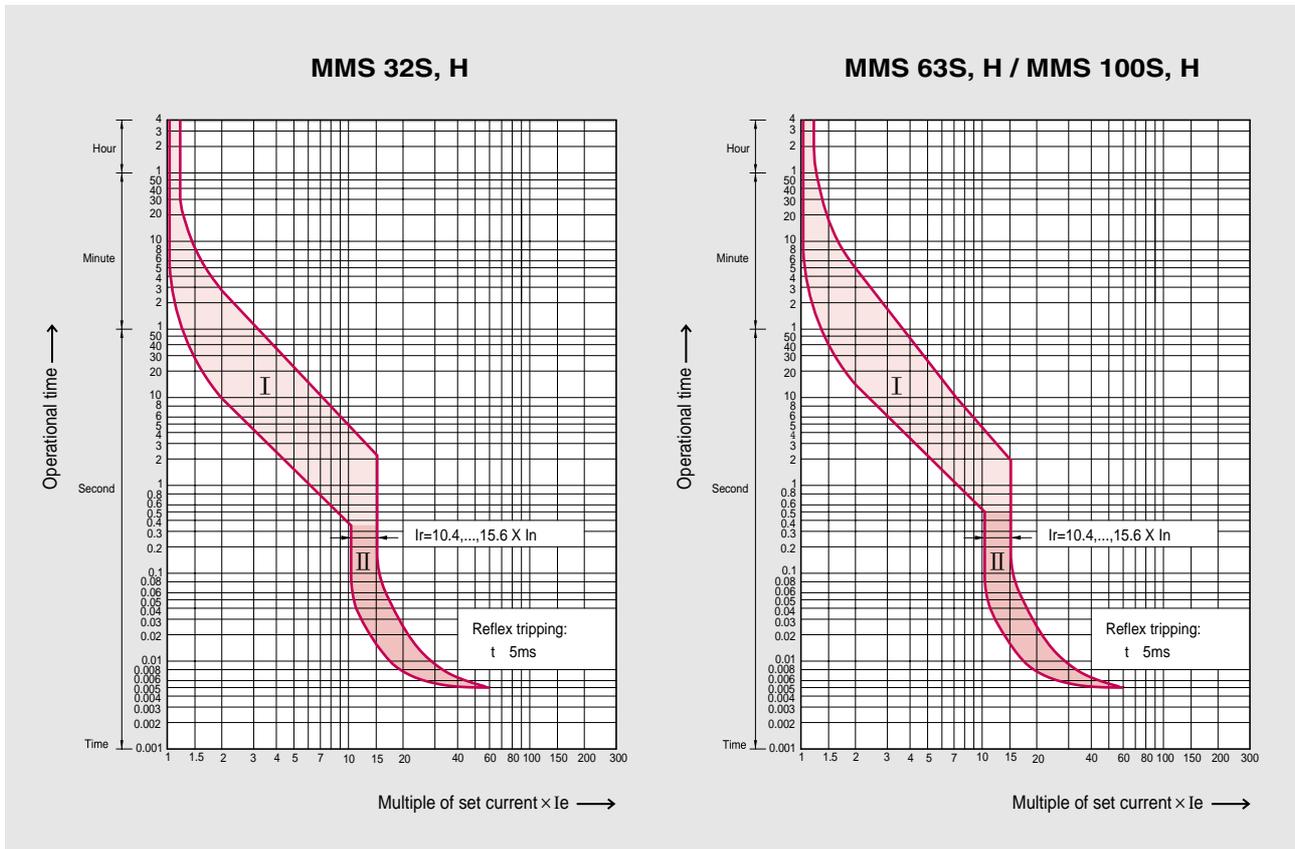
- Short-circuit current  $I_q = 50\text{kA}$   
Voltage : 400/415V, 50/60Hz

Standard motors AC-3 at 400/450V 1500rpm		Manual motor starter			Contactor	
[kW]	[A]	Circuit breaker Type	Thermal overload release setting range [A]	Magnetic release response current [A]		
0.06	0.24	MMS-32S 0.25A	0.16~0.25	3.25	GMC-6M	6
0.09	0.33	MMS-32S 0.4A	0.25~0.4	5.2	GMC-6M	6
0.12	0.43	MMS-32S 0.63A	0.4~0.63	8.19	GMC-6M	6
0.18	0.61	MMS-32S 0.63A	0.4~0.63	8.19	GMC-6M	6
0.25	0.8	MMS-32S 1A	0.63~1	13	GMC-6M	6
0.37	1.1	MMS-32S 1.6A	1~1.6	20.8	GMC-6M	6
0.55	1.5	MMS-32S 1.6A	1~1.6	20.8	GMC-6M	6
0.75	1.9	MMS-32S 2.5A	1.6~2.5	32.5	GMC-9M / GMC-9	9
1.1	2.7	MMS-32S 4A	2.5~4	52	GMC-9M / GMC-9	9
1.5	3.5	MMS-32S 4A	2.5~4	52	GMC-12M / GMC-12	12
2.2	5	MMS-32S 6A	4~6	78	GMC-18	18
3	6.6	MMS-32S 8A	5~8	104	GMC-18	18
4	8.5	MMS-32S 10A	6~10	130	GMC-18	18
5.5	11	MMS-32S 13A	9~13	169	GMC-22	22
7.5	15	MMS-32H 17A	11~17	221	GMC-22	22
10	20	MMS-32H 22A	14~22	286	GMC-32	32
11	22	MMS-32H 26A	18~26	338	GMC-32	32
15	29	MMS-32H 32A	22~32	416	GMC-32	32
18.5	36	MMS-63S 40A	28~40	520	GMC-50	50
22	41	MMS-63S 50A	34~50	650	GMC-50	50
30	56	MMS-63S 63A	45~63	819	GMC-65	65
37	68	MMS-100S 75A	55~75	975	GMC-75	75
-	-	MMS-100S 90A	70~90	1170	GMC-85	85
45	81	MMS-100S 100A	80~100	1300	GMC-85	85

### Definition type '2' coordination according to IEC 947-4-1 :

- The contactor or the starter must not endanger persons or systems in the event of a short-circuit.
- The contactor or the starter must be suitable for further use.
- No damage to the overload relay or other parts may occur with the exception of welding of the contactor or starter contacts provided that these can be easily separated without significant deformation (such as with a screwdriver).

# Time/Current characteristic



## I) Thermal release trip current :

The adjustable inverse bimetal trip reliability protects motors against overloads. The curve shows the mean operating current at an ambient temperature of 20°C starting from cold. Careful testing and setting ensures effective motor protection even in the case of single-phasing.

## II) Magnetic release trip current :

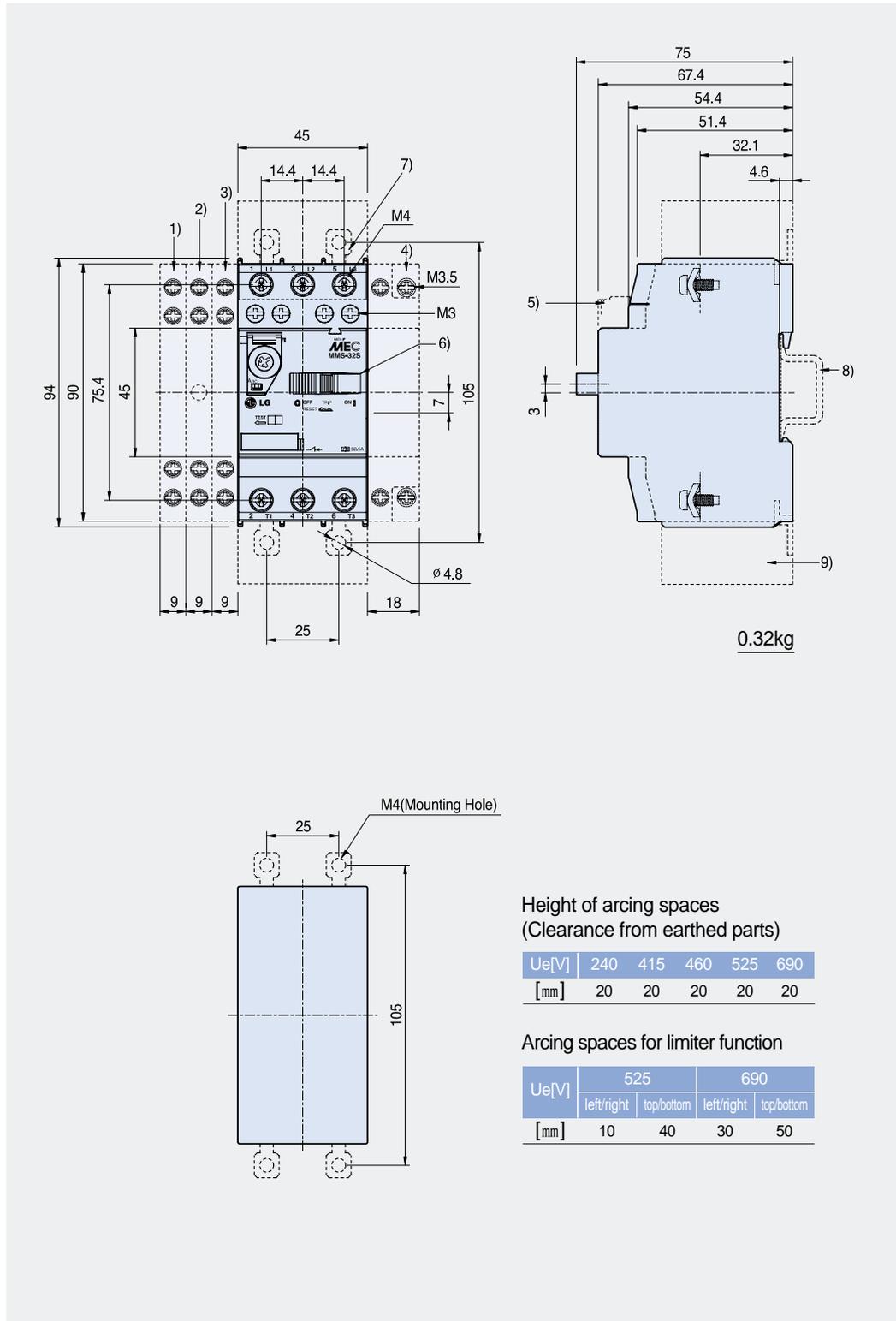
The instantaneous magnetic trip has a fixed operating current setting. This corresponds to 13times the maximum value of setting range, at a lower setting it is correspondingly higher.

## Current setting $I_e$ :

The overload trip corresponds to a thermal overload relay in a motor starter conforming to IEC 947-4-1. If a different value is prescribed (e.g. reduced  $I_e$  for cooling medium having a temperature higher than 40°C or a place of installation higher than 2000m above sea level), the setting current is equal to the reduced rated current  $I_e$  of the motor.

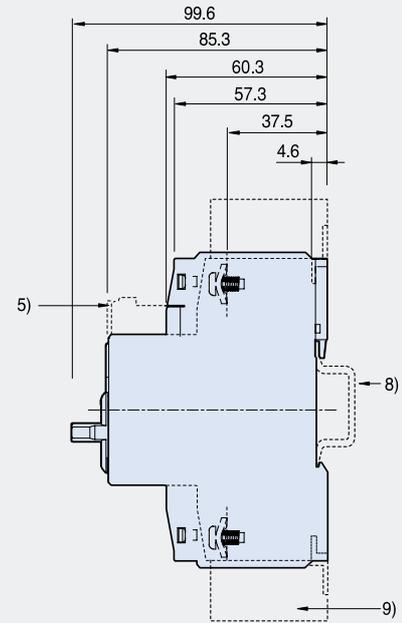
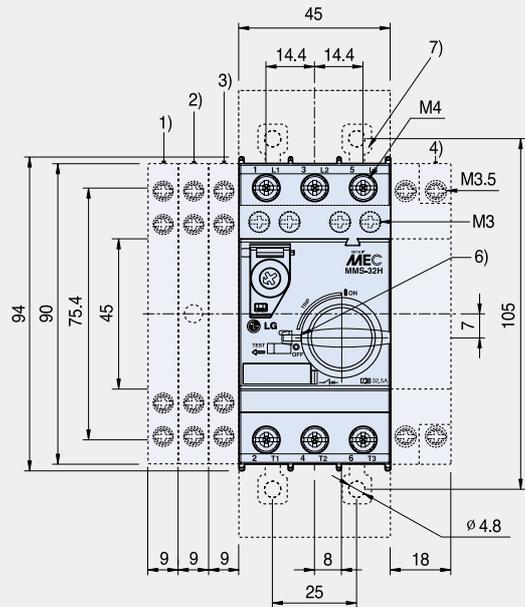
### ● MMS 32S

[mm]

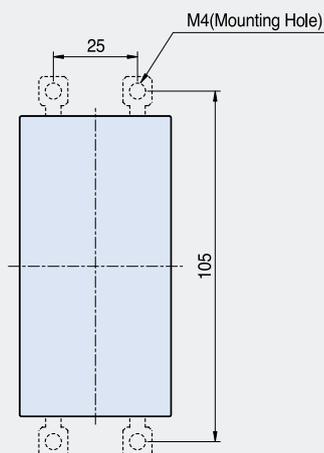


## ● MMS 32H, 32HI

[mm]



0.36kg



Height of arcing spaces  
(Clearance from earthed parts)

Ue[V]	240	415	460	525	690
[mm]	30	30	30	30	50

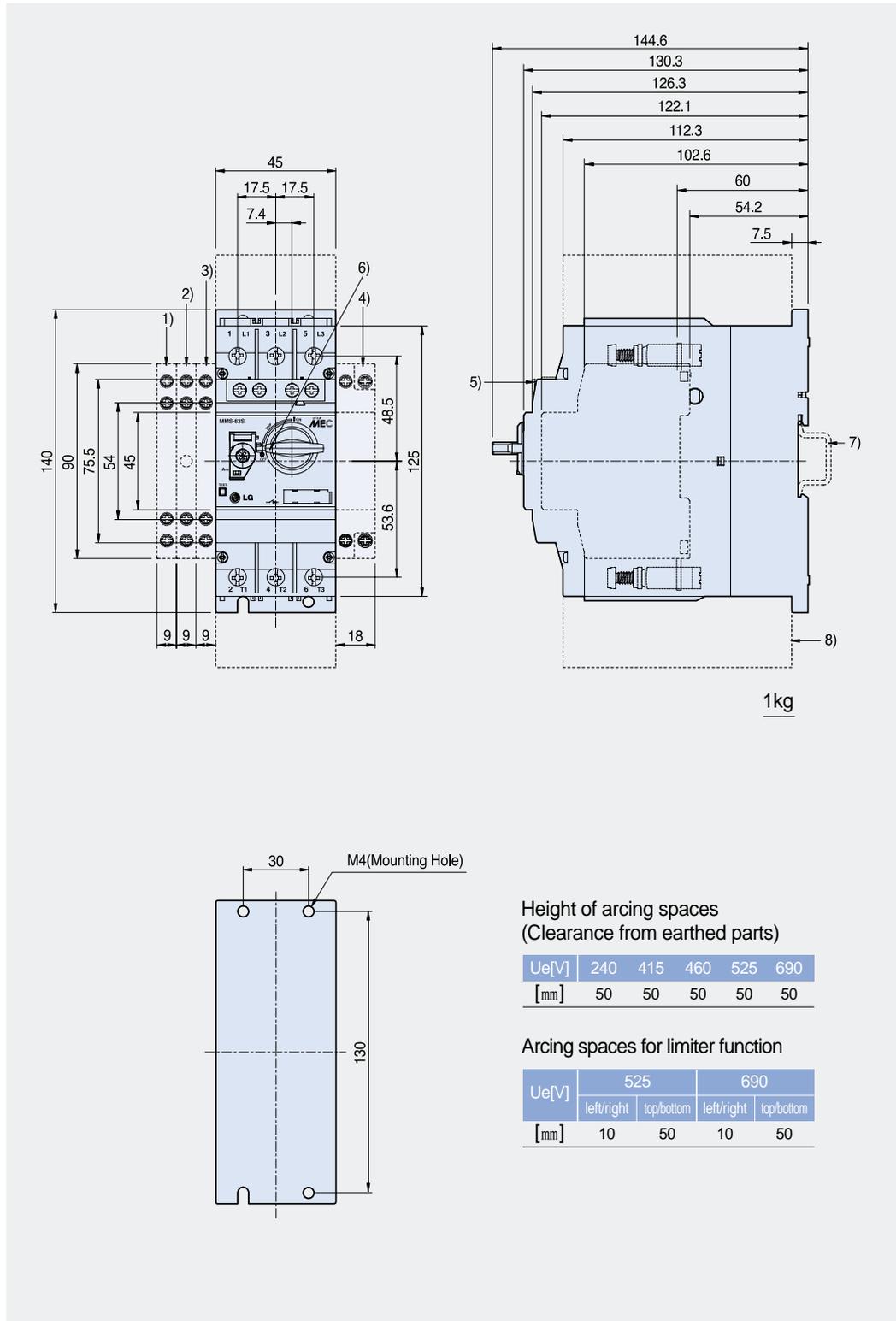
Arcing spaces for limiter function

Ue[V]	525		690	
	left/right	top/bottom	left/right	top/bottom
[mm]	10	40	30	50

- 1) Side auxiliary switch
- 2) Side magnetic trip alarm switch
- 3) Side any trip alarm switch
- 4) Side auxiliary release
- 5) Front auxiliary switch
- 6) Handle lock in OFF position (∅ 5mm)
- 7) Push-in Lugs for screw mounting
- 8) 35mm standard mounting rail acc. to EN 50 022
- 9) Arcing space

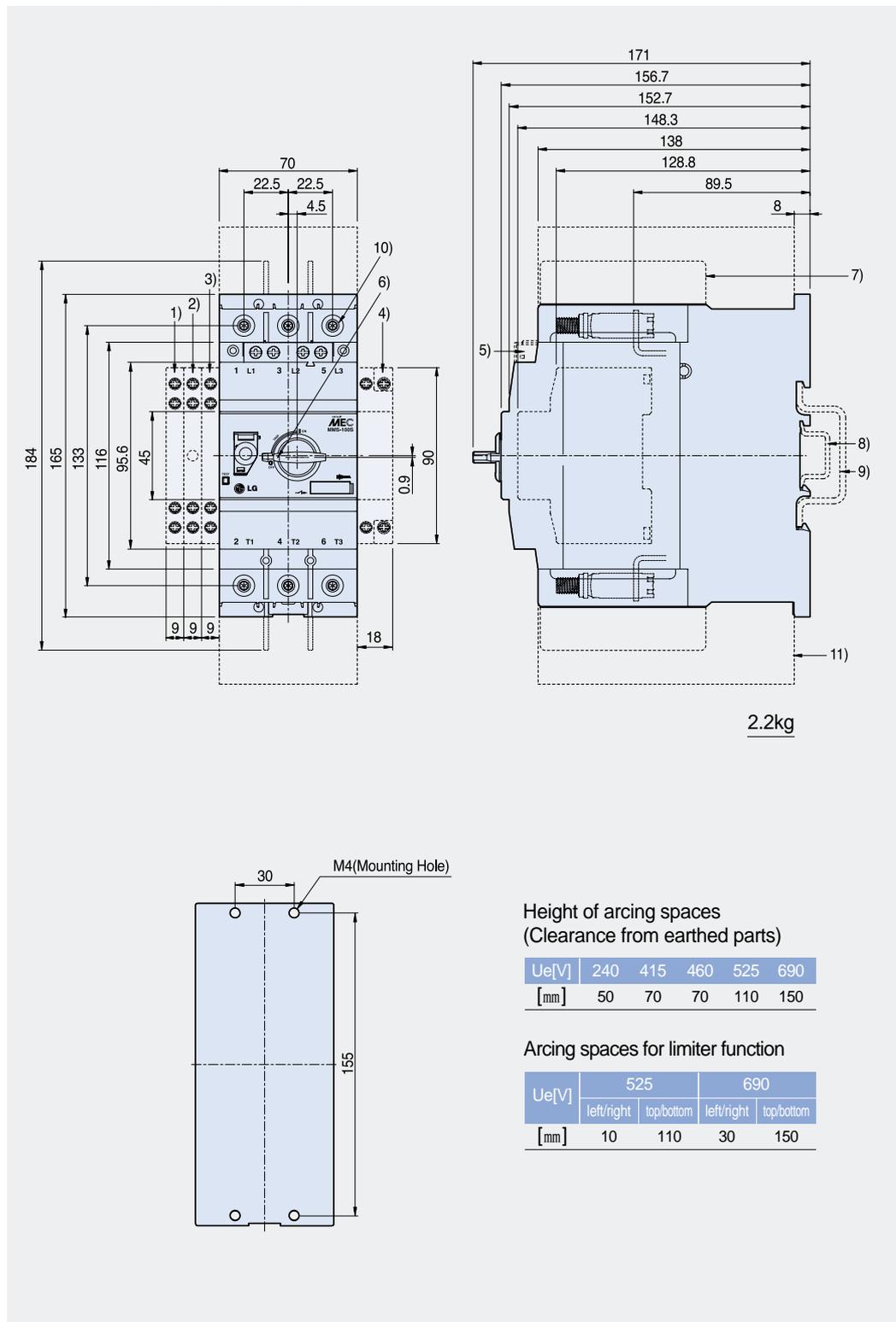
● MMS 63S, 63H, 63HI, 63HL

[mm]



## ● MMS 100S, 100H, 100HI, 100HL

[mm]



## Leader in Electrics & Automation



### Safety Instructions

- For your safety, please read user's manual thoroughly before operating.
- Contact the nearest authorized service facility for examination, repair, or adjustment.
- Please contact qualified service technician when you need maintenance. Do not disassemble or repair by yourself!
- Any maintenance and inspection shall be performed by the personnel having expertise concerned.



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