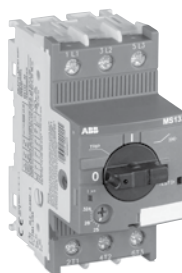


Manual motor protectors are electromechanical devices for motor and circuit protection. These devices offer local motor disconnect means, manual ON/OFF control, and protection against short circuit, overload, and phase loss conditions. Manual motor protection saves cost, panel space, and ensures quick and reliable short-circuit protection by reacting within milliseconds. Close coupling adaptors are available for combination with ABB contactors in various applications.



Type MS116

- Manual motor protectors suitable for use with single and three phase motors up to 25 hp
- Suitable as motor disconnect in single motor applications and group motor installations as outlined in NEC Article 430.53(C)
- 15 thermal setting ranges from 0.16 to 32 Amperes, overload Class 10A
- Phase loss sensitivity per IEC/EN 60947-4-1
- Short circuit current ratings up to 30 kA
- Motor controllers, manual (NLRV, NLRV7), UL file E137861



Type MS132

- Manual motor protectors suitable for use with single and three phase motors up to 25 hp
- Suitable as motor disconnect in single motor applications and group motor installations as outlined in NEC Article 430.53(C)
- Suitable for Tap conductor protection as outlined in NEC Article 430.53(D)(3)
- Suitable as self-protected combination motor controllers Types E and F as outlined in UL 508 and UL 60947-4-1A
- 15 thermal setting ranges from 0.16 to 32 Amperes, overload Class 10
- Phase loss sensitivity per IEC/EN 60947-4-1
- Short circuit current ratings up to 65 kA
- Motor controllers, manual (NLRV, NLRV7), UL file E137861
- Combination motor controllers (NKJH, NKJH7), UL file E345003



Type MS45x

- Manual motor protectors suitable for use with single and three phase motors up to 50 hp
- Suitable as motor disconnect in single motor applications and group motor installations as outlined in NEC Article 430.53(C)
- Suitable as self-protected combination motor controller Type E as outlined in UL 508 and UL 60947-4-1A
- Phase loss sensitivity per IEC/EN 60947-4-1
- 3 thermal setting ranges from 28 to 50 Amperes, overload Classes 10 and 20
- Short circuit current ratings up to 65 kA
- Motor controllers, manual (NLRV), UL file E167205
- Combination motor controllers (NKJH, NKJH7), UL file E195536



Type MS49x

- Manual motor protectors suitable for use with single and three phase motors up to 100 hp
- Suitable as motor disconnect in single motor applications and group motor installations as outlined in NEC Article 430.53(C)
- Suitable as self-protected combination motor controller Types E as outlined in UL 508 and UL 60947-4-1A
- Phase loss sensitivity per IEC/EN 60947-4-1
- 6 thermal setting ranges from 28 to 100 Amperes, overload Classes 10 and 20
- Short circuit current ratings up to 65 kA
- Motor controllers, manual (NLRV), UL file E167205
- Combination motor controllers (NKJH, NKJH7), UL file E195536

Single motor applications, suitable as motor disconnect

A manual motor protector is a simple, compact and economical alternative to conventional magnetic motor controllers for local control of a single motor.

4 Upstream short-circuit and overcurrent protection in the form of either fuses or a circuit breaker is still required. Manual motor protectors can replace the overload relay, contactor, and any wiring or components necessary for controlling a contactor (i.e. pushbuttons) by utilizing the integral rotary handle for manual ON/OFF control.

Manual motor protectors also offer instantaneous (magnetic only) short-circuit trip functionality, allowing for these devices to be utilized as UL 508/60947-4-1A circuit protectors.

MS Series Manual Motor Protectors are marked as "suitable as motor disconnect", with the Types MS132 and MS4xx not requiring additional accessories. This marking allows the devices to be utilized as local disconnects within line-of-sight of the motor.

Group motor installation

Group motor installations utilize a single branch circuit protective device to protect multiple loads. Per NEC Article 430.53(C), this branch circuit protection must be in the form of either fuses or an inverse-time (thermal magnetic, MCCB) circuit breaker. Individual overload protection must be provided for each load. Devices utilized in group motor installations must be marked as suitable in such applications.

Branch circuit protection for group motor installations is sized based on the sum of:

1. 250% (MCCB) or 175% (fuses) of the full-load current of the largest load in the group, plus
2. The sum of the full-load current of all additional loads

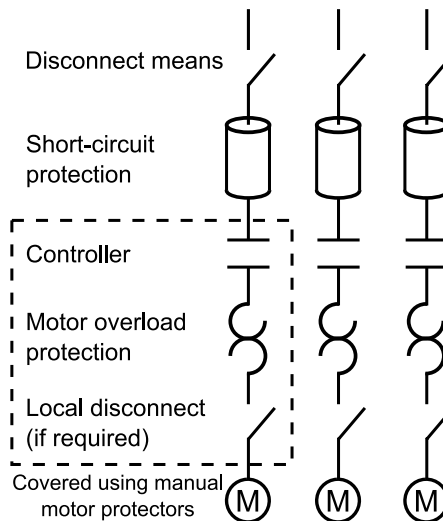
Conductors on the load side of the branch circuit protective device are sized in accordance with the full-load current rating of said device.

In addition to meeting the requirements outlined above, Type MS132 devices are also suitable for tap conductor protection in group installations as outlined in NEC Article 430.53(D), allowing the conductors on the load-side of the branch circuit protective device to be sized no less than one-tenth (1/10) of the full-load current rating of the protective device.

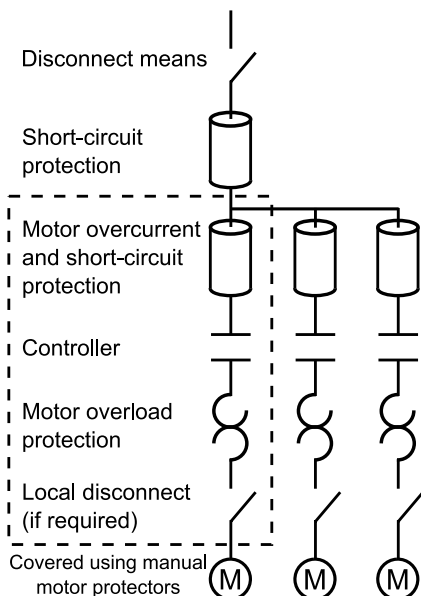
Devices suitable for these applications

Application	Manual motor protector type			
	MS116	MS132	MS45x	MS49x
Motor disconnect	•	•	•	•
Group motor installation	•	•	•	•
Tap conductor protection		•		

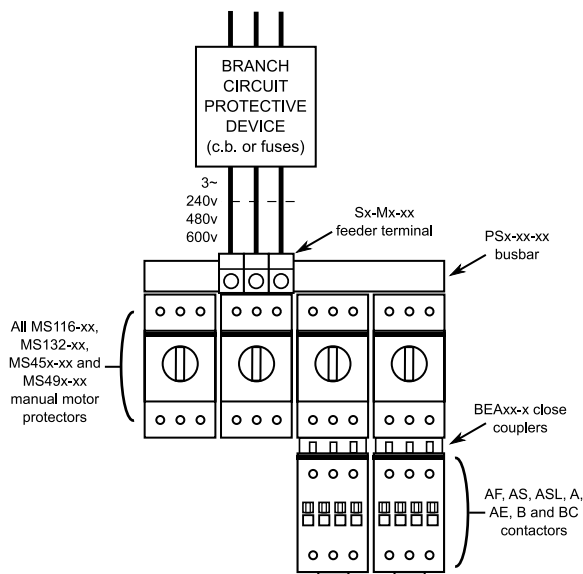
Typical Single-motor Branch Circuits



Typical Group Motor Circuit



Group Motor Installations



General information

Suitable applications

MS Series
Manual motor
protectors

Combination motor controllers Types E & F

Combination motor controllers, as outlined in UL 508 Section 76, are a manufacturer's tested combination of either individual discrete components or a single controller. Fulfilling all the necessary components for a motor branch circuit, combination motor controllers provide a disconnecting and load switching means, as well as overload and short-circuit protection. These devices offer additional flexibility when selecting components for motor control and protection.

Combination motor controllers can also utilize busbar for self-protected, multiple motor installations. Busbar must be selected and sized in accordance with the full-load current rating of the feeder circuit protective device.

Definitions

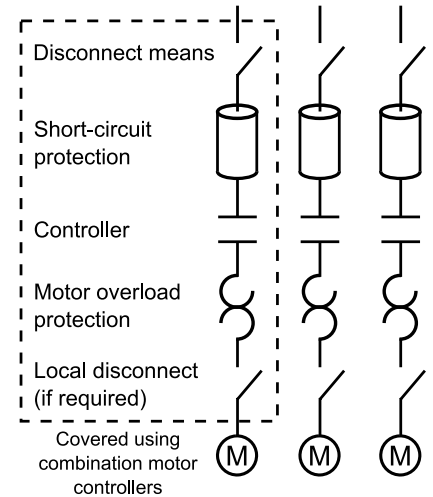
Type E Combination Motor Controllers are comprised of a UL 508 Disconnect, Branch Circuit Protector Device, Motor Controller and Motor Overload typically included in a single Self-protected Control Device (manual motor protector). Following a short-circuit fault, Type E Combination Motor Controllers are tested to operate for 6,000 electrical cycles, plus an additional 4,000 mechanical cycles, as outlined in UL 508 Table 83.1.

Type F Combination Motor Controllers are comprised of a UL 508 Disconnect, Branch Circuit Protector Device, and Motor Overload typically included in a single Manual Self-protected Combination Controller with additional Magnetic or Solid State Motor Controller utilized for remote operation (manual motor protector + contactor). The operational requirements following a short-circuit fault differ for the manual motor protector and contactor.

Devices suitable for these applications

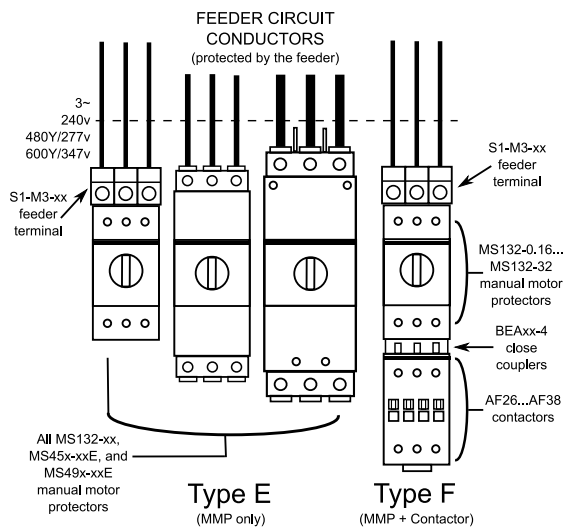
Combination motor controller	Manual motor protector type			
	MS116	MS132 + S1-M3-xx	MS45x-xxE	MS49x-xxE
Self-protected, Type E		•	•	•
Self-protected, Type F		•		

Typical Self-protected Branch Circuits

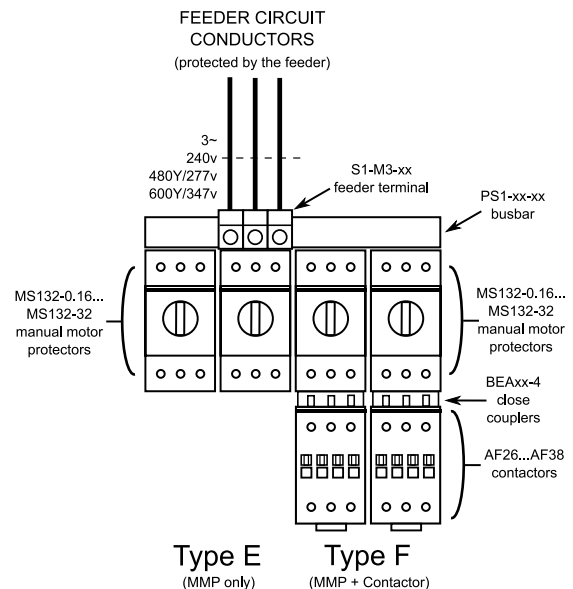


4

Combination Motor Controllers



Combination Motor Controllers (for multiple motors)



General information

Motor ratings

Horsepower to full-load Amperes for AC induction motors

4	Horsepower (hp)	Full Load Amperes (FLA)													
		110...120 v ac		200 v ac		208 v ac		220...240 v ac		380...415 v ac		440...480 v ac		550...600 v ac	
		Single phase	Three phase	Single phase	Three phase	Single phase	Three phase	Single phase	Three phase	Single phase	Three phase	Single phase	Three phase	Single phase	Three phase
	1/10	3.0	-	-	-	-	-	1.5	-	1.0	-	-	-	-	-
	1/8	3.8	-	-	-	-	-	1.9	-	1.2	-	-	-	-	-
	1/6	4.4	-	2.5	-	2.4	-	2.2	-	1.4	-	-	-	-	-
	1/4	5.8	-	3.3	-	3.2	-	2.9	-	1.8	-	-	-	-	-
	1/3	7.2	-	4.1	-	4.0	-	3.6	-	2.3	-	-	-	-	-
	1/2	9.8	4.4	5.6	2.5	5.4	2.4	4.9	2.2	3.2	1.3	2.5	1.1	2.0	0.9
	3/4	13.8	6.4	7.9	3.7	7.6	3.5	6.9	3.2	4.5	1.8	3.5	1.6	2.8	1.3
	1	16.0	8.4	9.2	4.8	8.8	4.6	8.0	4.2	5.1	2.3	4.0	2.1	3.2	1.7
	1-1/2	20.0	12.0	11.5	6.9	11.0	6.6	10.0	6.0	6.4	3.3	5.0	3.0	4.0	2.4
	2	24.0	13.6	13.8	7.8	13.2	7.5	12.0	6.8	7.7	4.3	6.0	3.4	4.8	2.7
	3	34.0	19.2	19.6	11.0	18.7	10.6	17.0	9.6	10.9	6.1	8.5	4.8	6.8	3.9
	5	56.0	30.4	32.2	17.5	30.8	16.7	28.0	15.2	17.9	9.7	14.0	7.6	11.2	6.1
	7-1/2	80.0	44.0	45.0	25.3	44.0	24.2	40.0	22.0	27.0	14.0	21.0	11.0	16.0	9.0
	10	100.0	56.0	57.5	32.2	55.0	30.8	50.0	28.0	33.0	18.0	26.0	14.0	20.0	11.0
	15	135.0	84.0	-	48.3	-	46.2	68.0	42.0	44.0	27.0	34.0	21.0	27.0	17.0
	20	-	108.0	-	62.1	-	59.4	88.0	54.0	56.0	34.0	44.0	27.0	35.0	22.0
	25	-	136.0	-	78.2	-	74.8	110.0	68.0	70.0	44.0	55.0	34.0	44.0	27.0
	30	-	160.0	-	92.0	-	88.0	136.0	80.0	87.0	51.0	68.0	40.0	54.0	32.0
	40	-	208.0	-	120.0	-	114.0	176.0	104.0	112.0	66.0	88.0	52.0	70.0	41.0
	50	-	260.0	-	150.0	-	143.0	216.0	130.0	139.0	83.0	108.0	65.0	86.0	52.0
	60	-	-	-	177.0	-	169.0	-	154.0	-	103.0	-	77.0	-	62.0
	75	-	-	-	221.0	-	211.0	-	192.0	-	128.0	-	96.0	-	77.0
	100	-	-	-	285.0	-	273.0	-	248.0	-	165.0	-	124.0	-	99.0
	125	-	-	-	359.0	-	343.0	-	312.0	-	208.0	-	156.0	-	125.0
	150	-	-	-	414.0	-	396.0	-	360.0	-	240.0	-	180.0	-	144.0
	200	-	-	-	552.0	-	528.0	-	480.0	-	320.0	-	240.0	-	192.0
	250	-	-	-	-	-	-	-	604.0	-	403.0	-	302.0	-	242.0
	300	-	-	-	-	-	-	-	722.0	-	482.0	-	361.0	-	289.0
	350	-	-	-	-	-	-	-	828.0	-	560.0	-	414.0	-	336.0
	400	-	-	-	-	-	-	-	954.0	-	636.0	-	477.0	-	382.0
	450	-	-	-	-	-	-	-	1030.0	-	-	-	515.0	-	412.0
	500	-	-	-	-	-	-	-	1180.0	-	786.0	-	590.0	-	472.0

Full-load motor-running currents in Amperes corresponding to various AC horsepower ratings as published in Table 50.1 of UL 508.

General information

Pilot duty ratings and overload trip classes

Pilot duty ratings for AC control circuit contacts

Contact rating designation	Continuous thermal, test current (A)	Maximum current, 50/60 Hz (A)									
		120 v ac		240 v ac		480 v ac		600 v ac		Volt-amperes	
		Make	Break	Make	Break	Make	Break	Make	Break	Make	Break
A150	10	60	6.00	-	-	-	-	-	-	7200	720
A300	10	60	6.00	30	3.00	-	-	-	-	7200	720
A600	10	60	6.00	30	3.00	15	1.50	12	1.20	7200	720
B150	5	30	3.00	-	-	-	-	-	-	3600	360
B300	5	30	3.00	15	1.50	-	-	-	-	3600	360
B600	5	30	3.00	15	1.50	7.5	0.75	6	0.60	3600	360
C150	2.5	15	1.5	-	-	-	-	-	-	1800	180
C300	2.5	15	1.5	7.5	0.75	-	-	-	-	1800	180
C600	2.5	15	1.5	7.5	0.75	3.75	0.375	3.00	0.30	1800	180
D150	1.0	3.60	0.60	-	-	-	-	-	-	432	72
D300	1.0	3.60	0.60	1.80	0.30	-	-	-	-	432	72
E150	0.5	1.80	0.30	-	-	-	-	-	-	216	36

Mechanical switching ratings and test values as published in Table 1-4-1 of NEMA ICS 5-2000 (R2005, R2010)

Pilot duty ratings for DC control circuit contacts

Contact rating designation	Continuous thermal, test current (A)	Maximum current, 50/60 Hz (A)			
		120 v dc	250 v dc	301 to 600 v dc	Volt-amperes
		Make / Break	Make / Break	Make / Break	Make / Break
N150	10	2.2	-	-	275
N300	10	2.2	1.1	-	275
N600	10	2.2	1.1	0.40	275
P150	5.0	1.1	-	-	138
P300	5.0	1.1	0.55	-	138
P600	5.0	1.1	0.55	0.20	138
Q150	2.5	0.55	-	-	69
Q300	2.5	0.55	0.27	-	69
Q600	2.5	0.55	0.27	0.10	69
R150	1.0	0.22	-	-	28
R300	1.0	0.22	0.11	-	28

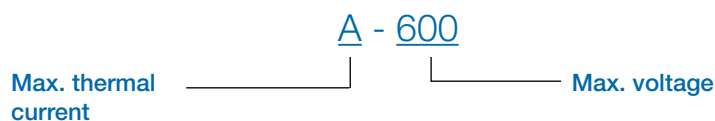
Mechanical switching ratings and test values as published in Table 1-4-1 of NEMA ICS 5-2000 (R2005, R2010)

Overload trip classes

Trip class	Tripping time T_p (seconds)
10A	$2 < T_p \leq 10$
10	$4 < T_p \leq 10$
20	$6 < T_p \leq 20$
30	$9 < T_p \leq 30$

Trip classes as published in Table 2 of UL 60947-4-1A.

Pilot duty rating explanation



Type MS116

For applications up to 32A

Suitable applications:

- Single motor, suitable as motor disconnect
- Group motor installation



Frame Sz. 1
MS116-0.16...MS116-16



Frame Sz. 2
MS116-20...MS116-32

MS116 Electrical ratings ①

Thermal setting range (A)	Trip class	Rated operational current I _o (A)	Rated instantaneous short-circuit current setting I _f (A)	AC Motor ratings, breaking all lines, 50/60 Hz (hp)					Catalog number
				Single phase ②		Three phase			
				120V	240V	240V	480V	600V	
0.10...0.16	10A	0.16	1.56	Horsepower not applicable; use upper limit of the device thermal setting range for rated full-load current in Amperes					MS116-0.16
0.16...0.25	10A	0.25	2.44						MS116-0.25
0.25...0.40	10A	0.40	3.90						MS116-0.4
0.40...0.63	10A	0.63	6.14						MS116-0.63
0.63...1.0	10A	1.00	11.5					1/2	MS116-1.0
1.0...1.6	10A	1.60	18.4		1/10		3/4	3/4	MS116-1.6
1.6...2.5	10A	2.50	28.8		1/6	1/2	1	1.5	MS116-2.5
2.5...4.0	10A	4.00	50.0	1/8	1/3	1	2	3	MS116-4.0
4.0...6.3	10A	6.30	78.8	1/4	1/2	1.5	3	5	MS116-6.3
6.3...10.0	10A	10.0	150	1/2	1.5	3	5	7.5	MS116-10
8.0...12.0	10A	12.0	180	1/2	2	3	7.5	10	MS116-12
10.0...16.0	10A	16.0	240	1	2	5	10	10	MS116-16
16.0...20.0	10A	20.0	300	1.5	3	5	10	15	MS116-20
20.0...25.0	10A	25.0	375	2	3	7.5	15	20	MS116-25
25.0...32.0	10A	32.0	480	2	5	10	20	25	MS116-32

MS116 Short circuit current ratings (kA)

Catalog number	UL 508 - Motor controllers, manual (NLRV)							UL 508 - Combination motor controllers (NKJH)				
	Max. fuse size (A)	Fuse class	Circuit breaker	Motor disconnect ③		Group motor installation		Self-protected Type E		Self-protected Type F		
				240V / 480V	600V	240V / 480V	600V	480Y / 277V	600Y / 347V	480Y / 277V	600Y / 347V	Type F contactors
MS116-0.16	200	J	No rating	30	5	30	5	Use Type MS132				
MS116-0.25				30	5	30	5					
MS116-0.4				30	5	30	5					
MS116-0.63				30	5	30	5					
MS116-1.0				30	5	30	5					
MS116-1.6				30	5	30	5					
MS116-2.5				30	5	30	5					
MS116-4.0				18	5	18	5					
MS116-6.3				18	5	18	5					
MS116-10				18	5	18	5					
MS116-12				18	5	18	5					
MS116-16				18	5	18	5					
MS116-20				18	5	18	5					
MS116-25				18	5	18	5					
MS116-32				18	5	18	5					

① Always size manual motor protectors based on the full-load current of the motor.

② For single phase connection diagram see page 4.17.

③ Suitable as motor disconnect only when provide with padlock adaptor SA1 or SA3; see accessories section.

Type MS132

For applications up to 32A

MS Series
Manual motor
protectors



Frame Sz. 1
MS132-0.16...MS132-10

Frame Sz. 2
MS132-12...MS132-32

Suitable applications:

- Single motor, suitable as motor disconnect
- Group motor installation
- Tap conductor protection
- Combination motor controllers
 - Type E
 - Type F

4

MS132 Electrical ratings ①

Thermal setting range (A)	Trip class	Rated operational current I _e (A)	Rated instantaneous short-circuit current setting I _i (A)	AC Motor ratings, breaking all lines, 50/60 Hz (hp)					Catalog number
				Single phase ②		Three phase			
				120V	240V	240V	480V	600V	
0.10...0.16	10A	0.16	1.56	Horsepower not applicable; use upper limit of the device thermal setting range for rated full-load current in Amperes					MS132-0.16
0.16...0.25	10	0.25	2.44						MS132-0.25
0.25...0.40	10	0.40	3.90						MS132-0.4
0.40...0.63	10	0.63	6.14						MS132-0.63
0.63...1.0	10	1.00	11.5					1/2	MS132-1.0
1.0...1.6	10	1.60	18.4		1/10		3/4	3/4	MS132-1.6
1.6...2.5	10	2.50	28.8		1/6	1/2	1	1.5	MS132-2.5
2.5...4.0	10	4.00	50.0	1/8	1/3	1	2	3	MS132-4.0
4.0...6.3	10	6.30	78.8	1/4	1/2	1.5	3	5	MS132-6.3
6.3...10.0	10	10.0	150	1/2	1.5	3	5	7.5	MS132-10
8.0...12.0	10	12.0	180	1/2	2	3	7.5	10	MS132-12
10.0...16.0	10	16.0	240	1	2	5	10	10	MS132-16
16.0...20.0	10	20.0	300	1.5	3	5	10	15	MS132-20
20.0...25.0	10	25.0	375	2	3	7.5	15	20	MS132-25
25.0...32.0	10	32.0	480	2	5	10	20	25	MS132-32

MS132 Short circuit current ratings (kA) ③

Catalog number	UL 508 - Motor controllers, manual (NLRV)							UL 508 - Combination motor controllers (NKJH)				
	Max. fuse size (A)	Fuse class	Circuit breaker	Motor disconnect		Group motor installation ④		Self-protected Type E ⑤		Self-protected Type F ⑥		Type F contactors
				240V 480V	600V	240V 480V	600V	480Y / 277V	600Y / 347V	480Y / 277V	600Y / 347V	
MS132-0.16	Size per NEC ⑥	Any fuse class	MCCB, size per NEC ⑥ ⑦	65	47	65	47	65	47	65	47	AF26...AF38
MS132-0.25				65	47	65	47	65	47	65	47	AF26...AF38
MS132-0.4				65	47	65	47	65	47	65	47	AF26...AF38
MS132-0.63				65	47	65	47	65	47	65	47	AF26...AF38
MS132-1.0				65	47	65	47	65	47	65	47	AF26...AF38
MS132-1.6				65	47	65	47	65	47	65	47	AF26...AF38
MS132-2.5				65	47	65	47	65	47	65	47	AF26...AF38
MS132-4.0				65	47	65	47	65	47	65	47	AF26...AF38
MS132-6.3				65	18	65	18 [35]	65	18	65	47	AF26...AF38
MS132-10				65	18	65	18 [35]	65	18	65	47	AF26...AF38
MS132-12				30	18	30 [35]	18 [35]	30	-	30	-	AF26...AF38
MS132-16				30	18	30 [35]	18 [35]	30	-	30	-	AF26...AF38
MS132-20				30	18	30 [35]	18 [35]	30	-	30	-	AF26...AF38
MS132-25				30	18	30 [35]	18 [35]	30	-	30	-	AF26...AF38
MS132-32				30	18	30 [35]	18 [35]	30	-	30	-	AF26...AF38

① Always size manual motor protectors based on the full-load current of the motor.

② For single phase connection diagram see page 4.17.

③ For higher ratings using S803W current limiters see accessories section.

④ Also suitable for tap conductor protection. Group ratings increased to [x] kA using Class RK5 fuses.

⑤ Requires the use of line-side feeder terminal S1-M3-xx: see accessories section.

⑥ NEC refers to the National Electric Code.

⑦ MCCB interrupting rating must be equal to or greater than the rating of the device.

Type MS450 / MS451

For applications up to 50A

Suitable applications:

- Single motor, suitable as motor disconnect
- Group motor installation
- Combination motor controller - Type E



Frame Sz. 3
MS450-40...MS450-50



Frame Sz. 3
MS451-16...MS451-50

MS450 / MS451 Electrical ratings ①

Thermal setting range (A)	Trip class	Rated operational current I _e (A)	Rated instantaneous short-circuit current setting I _i (A)	AC Motor ratings, breaking all lines, 50/60 Hz (hp)					Catalog number ③
				Single phase ②		Three phase			
				120V	240V	240V	480V	600V	
28.0...40.0	10	40.0	520	3	7.5	15	30	40	MS450-40 MS450-40E
36.0...45.0	10	45.0	585	5	7.5	15	30	40	MS450-45 MS450-45E
40.0...50.0	10	50.0	650	5	10	20	40	50	MS450-50 MS450-50E
11.0...16.0	20	16.0	208	1	3	5	10	15	MS451-16 MS451-16E
14.0...20.0	20	20.0	260	1.5	3	7.5	15	20	MS451-20 MS451-20E
18.0...25.0	20	25.0	325	2	5	10	20	25	MS451-25 MS451-25E
22.0...32.0	20	32.0	416	3	5	10	25	30	MS451-32 MS451-32E
28.0...40.0	20	40.0	520	3	7.5	15	30	40	MS451-40 MS451-40E
36.0...45.0	20	45.0	585	5	7.5	15	30	40	MS451-45 MS451-45E
40.0...50.0	20	50.0	650	5	10	20	40	50	MS451-50 MS451-50E

MS450 / MS451 Short circuit current ratings (kA)

Catalog number ④	UL 508 - Motor controllers, manual (NLRV)							UL 508 - Combination motor controllers (NKJH)				
	Max. fuse size (A)	Fuse class	Circuit breaker	Motor disconnect		Group motor installation		Self-protected Type E ⑤		Self-protected Type F		
				240V / 480V	600V	480Y / 277V	600Y / 347V	480Y / 277V	600Y / 347V	480Y / 277V	600Y / 347V	Type F contactors
MS450-40x	500	Any fuse class	MCCB, 500A max. ⑤	65	25	65	25	65	25	-	-	-
MS450-45x				65	25	65	25	65	25	-	-	-
MS450-50x				65	25	65	25	65	25	-	-	-
MS451-16x				65	25	65	25	65	25	-	-	-
MS451-20x				65	25	65	25	65	25	-	-	-
MS451-25x				65	25	65	25	65	25	-	-	-
MS451-32x				65	25	65	25	65	25	-	-	-
MS451-40x				65	25	65	25	65	25	-	-	-
MS451-45x				65	25	65	25	65	25	-	-	-
MS451-50x				65	25	65	25	65	25	-	-	-

① Always size manual motor protectors based on the full-load current of the motor.

② For single phase connection diagram see page 4.17.

③ MS45x-xxE part numbers include the necessary components for Type E applications – Self-protected Type E ratings apply only to these devices.

④ Replace "x" in part number with "E" for self-protected Type E ratings. All other ratings leave blank.

⑤ MCCB interrupting rating must be equal to or greater than the rating of the device.

Type MS495 / MS496

For applications up to 100A

MS Series
Manual motor
protectors



Frame Sz. 4
MS495-40...MS495-100



Frame Sz. 4
MS496-40...MS496-100

Suitable applications:

- Single motor, suitable as motor disconnect
- Group motor installation
- Combination motor controller - Type E

4

MS495 / MS496 Electrical ratings ①

Thermal setting range (A)	Trip class	Rated operational current I _n (A)	Rated instan- aneous short-circuit current setting I _s (A)	AC Motor ratings, breaking all lines, 50/60 Hz (hp)					Catalog number ③
				Single phase ②		Three phase			
				120V	240V	240V	480V	600V	
28.0...40.0	10	40.0	520	3	7.5	15	30	40	MS495-40 MS495-40E
36.0...50.0	10	50.0	650	5	10	20	40	50	MS495-50 MS495-50E
45.0...63.0	10	63.0	819	5	15	25	50	60	MS495-63 MS495-63E
57.0...75.0	10	75.0	975	7.5	15	25	60	75	MS495-75 MS495-75E
70.0...90.0	10	90.0	1170	10	20	30	75	100	MS495-90 MS495-90E
80.0...95.0	10	100.0	1235	10	20	40	75	100	MS495-100 MS495-100E
28.0...40.0	20	40.0	520	3	7.5	15	30	40	MS496-40 MS496-40E
36.0...50.0	20	50.0	650	5	10	20	40	50	MS496-50 MS496-50E
45.0...63.0	20	63.0	819	5	15	25	50	60	MS496-63 MS496-63E
57.0...75.0	20	75.0	975	7.5	15	25	60	75	MS496-75 MS496-75E
70.0...90.0	20	90.0	1170	10	20	30	75	100	MS496-90 MS496-90E
80.0...95.0	20	95.0	1235	10	20	40	75	100	MS496-100 MS496-100E

MS495 / MS496 Short circuit current ratings (kA)

Catalog number ④	UL 508 - Motor controllers, manual (NLRV)				UL 508 - Combination motor controllers (NKJH)						
	Max. fuse size (A)	Fuse class	Circuit breaker	Motor disconnect		Group motor installation		Self-protected Type E ⑥		Self-protected Type F	
				240V / 480V	600V	480Y / 277V	600Y / 347V	480Y / 277V	600Y / 347V	480Y / 277V	600Y / 347V / Type F contactors
MS495-40x	500	Any fuse class	MCCB, 500A max. ⑤	65	30	65	30	65	30	-	-
MS495-50x				65	30	65	30	65	30	-	-
MS495-63x				65	30	65	30	65	30	-	-
MS495-75x				65	30	65	30	65	30	-	-
MS495-90x				65	30	65	30	65	-	-	-
MS495-100x				65	30	65	30	65	-	-	-
MS496-40x				65	30	65	30	65	30	-	-
MS496-50x				65	30	65	30	65	30	-	-
MS496-63x				65	30	65	30	65	30	-	-
MS496-75x				65	30	65	30	65	30	-	-
MS496-90x				65	30	65	30	65	-	-	-
MS496-100x				65	30	65	30	65	-	-	-

① Always size manual motor protectors based on the full-load current of the motor.

② For single phase connection diagram see page 4.17.

③ MS49x-xxE part numbers include the necessary components for Type E applications – Self-protected Type

E ratings apply only to these devices.

④ Replace "x" in part number with "E" for self-protected Type E ratings. All other ratings leave blank.

⑤ MCCB interrupting rating must be equal to or greater than the rating of the device.