

MS165 manual motor starters

10 to 80 A – with thermal and electromagnetic protection



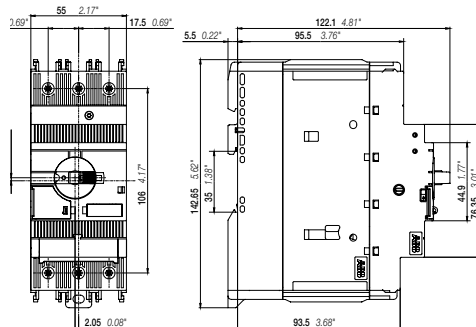
MS165-65

2CDC241007V0017

MS165 is a compact and powerful range for motor protection up to 45 kW (400 V) / 80 A in width of 55 mm. This type has also a clear and reliable indication of fault in a separate window in the event of short-circuit tripping. Further features are the built-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starter is suitable for three- and single-phase applications. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signaling contacts, undervoltage releases, shunt trips, power in-feed blocks are available as accessory. These are suitable throughout the MS116/MS132/MS165-range.

Rated operational power 400 V	Setting range	Short-circuit breaking capacity Ics at 400 V AC	Rated instantaneous short-circuit current setting Ii	Type	Order code	Weight (1 pce)
AC-3 kW	A	kA	A			kg
7.5	10 ... 16	100	240	MS165-16	1SAM451000R1011	0.950
7.5	14 ... 20	100	300	MS165-20	1SAM451000R1012	0.950
11	18 ... 25	100	375	MS165-25	1SAM451000R1013	0.960
15	23 ... 32	100	480	MS165-32	1SAM451000R1014	0.970
22	30 ... 42	50	630	MS165-42	1SAM451000R1015	0.970
22	40 ... 54	30	810	MS165-54	1SAM451000R1016	0.970
30	52 ... 65	30	975	MS165-65	1SAM451000R1017	0.980
37	62 ... 73	30	1022	MS165-73	1SAM451000R1018	1.000
45	70 ... 80	30	1120	MS165-80	1SAM451000R1019	1.000

Note: Manual motor starters should always be selected so that the actual motor current is within the setting range.



MS165

Main dimensions mm, inches

2CDC131062C0201

MO165 manual motor starters magnetic only

16 to 80 A – with electromagnetic protection



MO165-65

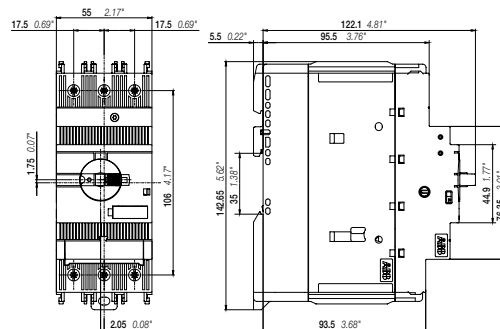
2CDC241008V0017

The MO165 manual motor starter magnetic only is a compact and powerful range for motor protection up to 45 kW (400 V AC) in width of 55 mm. The devices are used to manually switch on and off loads/motors and to protect them reliably and without the need for a fuse from short-circuits. The manual motor starter offers a rated service short-circuit breaking capacity up to 100 kA at 400 V AC. A combination together with overload relays or motor controllers allows the protection of motors. Further features are the built-in disconnect function, trip-free mechanism and a rotary handle with a clear switch position indication.

The manual motor starters magnetic only are suitable for three- and single-phase applications. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signaling contacts, undervoltage releases, shunt trips, 3-phase bus bars and power in-feed blocks are available as accessory.

Rated operational power 400 V	Rated operational current	Short-circuit breaking capacity Ics at 400 V AC	Rated instantaneous short-circuit current setting Ii	Type	Order code	Weight (1 pce)
AC-3 kW	A	kA	A			kg
7.5	16	100	240	MO165-16	1SAM461000R1011	0.950
7.5	20	100	300	MO165-20	1SAM461000R1012	0.950
11	25	100	375	MO165-25	1SAM461000R1013	0.960
15	32	100	480	MO165-32	1SAM461000R1014	0.970
22	42	50	630	MO165-42	1SAM461000R1015	0.970
22	54	30	810	MO165-54	1SAM461000R1016	0.970
30	65	30	975	MO165-65	1SAM461000R1017	0.980
37	73	30	1022	MO165-73	1SAM461000R1018	1.000
45	80	30	1120	MO165-80	1SAM461000R1019	1.000

Note: For overload protection of motors, an appropriate thermal or electronic overload relay must be used.



MO165

Main dimensions mm, inches

2CDC131062C0201

MS116, MS132, MS165, MO132, MO165

Technical data

Main circuit – Utilization characteristics according to IEC/EN

Type	MS116	MS132	MS165	MO132	MO165
Standards	IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1				
Rated operational voltage Ue	690 V AC	690 V AC / 250 V DC	690 V AC / 250 V DC	690 V AC	690 V AC / 250 V DC
Rated frequency	50/60 Hz	DC, 50/60 Hz	DC, 50/60 Hz	50/60 Hz	DC, 50/60 Hz
Operational frequency	50/60 Hz	0 ... 400 Hz	0 ... 400 Hz	0 ... 400 Hz	0 ... 400 Hz
Trip class	10A	10	10	-	-
Number of poles	3				
Duty time	100%				
Mechanical durability	100000 cycles	100000 cycles	50000 cycles	100000 cycles	50000 cycles
Electrical durability	up to 10 A	up to 100000 cycles	up to 25000 cycles	up to 100000 cycles	up to 50000 cycles
	up to 16 A	100000 cycles	50000 cycles	50000 cycles	25000 cycles
	20 ... 65 A	50000 cycles	50000 cycles	25000 cycles	25000 cycles
	65 ... 80 A	-	-	20000 cycles	-
Rated impulse withstand voltage Uimp	6 kV	6 kV	8 kV	6 kV	8 kV
Rated insulation voltage Ui	690 V	690 V	1000 V	690 V	1000 V
Rated operational current Ie	See ordering details				
Rated operational current DC-5 Ie 3 conducting paths in series up to 250 V	-	See "Rated operational current Ie"	See "Rated operational current Ie"	-	See "Rated operational current Ie"
Rated instantaneous short-circuit current setting Ii	See ordering details				
Rated service short-circuit breaking capacity Ics	See table "Short-circuit breaking capacity and back-up fuses"				
Rated ultimate short-circuit breaking capacity Icu	See table "Short-circuit breaking capacity and back-up fuses"				
Rated service short-circuit breaking capacity DC Ics 3 conducting paths in series up to 250 V	-	10 kA	100 kA	-	100 kA

Short-circuit breaking capacity and back-up fuses

Ics Rated service short-circuit breaking capacity

Icu Rated ultimate short-circuit breaking capacity

Icc Prospective short-circuit current at installation location

Note: Maximum rated current of the back-up fuses if $I_{cc} > I_{cs}$

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC		
	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A
MS116-0.16	50	100	-(1)	50	100	-(1)	30	100	-(1)	30	100	-(1)	30	100	-(1)
MS116-0.25	50	100	-(1)	50	100	-(1)	30	100	-(1)	30	100	-(1)	30	100	-(1)
MS116-0.4	50	100	-(1)	50	100	-(1)	30	100	-(1)	30	100	-(1)	30	100	-(1)
MS116-0.63	50	100	-(1)	50	100	-(1)	30	100	-(1)	30	100	-(1)	30	100	-(1)
MS116-1.0	50	100	-(1)	50	100	-(1)	30	100	-(1)	30	100	-(1)	30	100	-(1)
MS116-1.6	50	100	-(1)	50	100	-(1)	30	100	-(1)	30	100	-(1)	30	100	-(1)
MS116-2.5	50	75	-(1)	50	75	-(1)	10	30	25 (2)	10	20	25 (2)	5	10	25 (2)
MS116-4.0	50	75	-(1)	50	75	-(1)	6	18	25 (2)	6	15	25 (2)	2	3	25 (2)
MS116-6.3	50	50	-(1)	50	50	-(1)	6	18	63 (2)	6	10	63 (2)	2	3	40 (2)
MS116-10	50	50	-(1)	50	50	-(1)	6	18	63 (2)	6	10	63 (2)	2	3	50 (2)
MS116-12	25	50	80 (2)	25	50	80 (2)	6	15	63 (2)	6	10	63 (2)	2	3	50 (2)
MS116-16	16	16	80 (2)	16	16	80 (2)	6	15	63 (2)	4	10	63 (2)	2	3	63 (2)
MS116-20	10	16	125 (2)	10	16	125 (2)	3	15	125 (2)	3	10	125 (2)	2	3	80 (2)
MS116-25	10	16	125 (2)	10	16	125 (2)	3	15	125 (2)	3	10	125 (2)	2	3	100 (2)
MS116-32	10	16	125 (2)	10	16	125 (2)	3	15	125 (2)	3	10	125 (2)	2	3	100 (2)

(1) No back-up fuse required, because short-circuit proof up to 50 kA

(2) Rated back-up fuse for short-circuit up to 50 kA

MS116, MS132, MS165, MO132, MO165

Technical data

Short-circuit breaking capacity and back-up fuses

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC		
	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A
MS132-0.16	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-0.25	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-0.4	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-0.63	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-1.0	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-1.6	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-2.5	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-4.0	100	100	-(1)	100	100	-(1)	30	30	35 (2)	20	20	35 (2)	3	3	32 (2)
MS132-6.3	100	100	-(1)	100	100	-(1)	30	30	63 (2)	20	20	63 (2)	3	3	50 (2)
MS132-10	100	100	-(1)	100	100	-(1)	20	20	100 (2)	20	20	100 (2)	3	3	50 (2)
MS132-12	100	100	-(1)	100	100	-(1)	20	20	100 (2)	20	20	100 (2)	3	3	63 (2)
MS132-16	100	100	-(1)	100	100	-(1)	20	20	125 (2)	20	20	125 (2)	3	3	63 (2)
MS132-20	100	100	-(1)	100	100	-(1)	20	20	125 (2)	20	20	125 (2)	3	3	80 (2)
MS132-25	50	50	125 (2)	50	50	125 (2)	20	20	125 (2)	10	10	125 (2)	3	3	100 (2)
MS132-32	25	50	125 (2)	25	50	125 (2)	20	20	125 (2)	10	10	125 (2)	3	3	100 (2)

(1) No back-up fuse required, because short-circuit proof up to 100 kA
 (2) Rated back-up fuse for short-circuit up to 100 kA

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC			250 V DC (3)		
	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A
MS165-16	100	100	-(1)	100	100	-(1)	75	75	125 (2)	40	40	125 (2)	10	10	63 (2)	100	100	-(1)
MS165-20	100	100	-(1)	100	100	-(1)	75	75	125 (2)	40	40	125 (2)	10	10	63 (2)	100	100	-(1)
MS165-25	100	100	-(1)	100	100	-(1)	50	50	125 (2)	30	30	125 (2)	10	10	80 (2)	100	100	-(1)
MS165-32	100	100	-(1)	100	100	-(1)	50	50	125 (2)	30	30	125 (2)	10	10	100 (2)	100	100	-(1)
MS165-42	50	50	125 (2)	50	50	125 (2)	50	50	125 (2)	30	30	125 (2)	10	10	100 (2)	100	100	-(1)
MS165-54	30	50	125 (2)	30	50	125 (2)	30	45	125 (2)	20	20	125 (2)	6	8	100 (2)	100	100	-(1)
MS165-65	30	50	125 (2)	30	50	125 (2)	30	45	125 (2)	20	20	125 (2)	6	8	100 (2)	100	100	-(1)
MS165-73	30	30	-	30	30	-	6	8	-	6	8	-	6	8	-	-	-	-
MS165-80	30	30	-	30	30	-	6	8	-	6	8	-	6	8	-	-	-	-

(1) No back-up fuse required, short-circuit proof up to 100 kA
 (2) Rated back-up fuse for short-circuit up to 100 kA
 (3) 3 poles in series

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC		
	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A
MO132-0.16	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MO132-0.25	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MO132-0.4	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MO132-0.63	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MO132-1.0	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MO132-1.6	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MO132-2.5	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MO132-4.0	100	100	-(1)	100	100	-(1)	30	30	35 (2)	20	20	35 (2)	3	3	32 (2)
MO132-6.3	100	100	-(1)	100	100	-(1)	30	30	63 (2)	20	20	63 (2)	3	3	50 (2)
MO132-10	100	100	-(1)	100	100	-(1)	20	20	100 (2)	20	20	100 (2)	3	3	50 (2)
MO132-12	100	100	-(1)	100	100	-(1)	20	20	100 (2)	20	20	100 (2)	3	3	63 (2)
MO132-16	100	100	-(1)	100	100	-(1)	20	20	125 (2)	20	20	125 (2)	3	3	63 (2)
MO132-20	100	100	-(1)	100	100	-(1)	20	20	125 (2)	20	20	125 (2)	3	3	80 (2)
MO132-25	50	50	125 (2)	50	50	125 (2)	10	10	125 (2)	10	10	125 (2)	3	3	100 (2)
MO132-32	25	50	125 (2)	25	50	125 (2)	10	10	125 (2)	10	10	125 (2)	3	3	100 (2)

(1) No back-up fuse required, because short-circuit proof up to 100 kA
 (2) Rated back-up fuse for short-circuit up to 100 kA

MS116, MS132, MS165, MO132, MO165

Technical data

Short-circuit breaking capacity and back-up fuses

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC			250 V DC (3)		
	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A
MO165-16	100	100	-(1)	100	100	-(1)	75	75	125 (2)	40	40	125 (2)	10	10	63 (2)	100	100	-(1)
MO165-20	100	100	-(1)	100	100	-(1)	75	75	125 (2)	40	40	125 (2)	10	10	63 (2)	100	100	-(1)
MO165-25	100	100	-(1)	100	100	-(1)	50	50	125 (2)	30	30	125 (2)	10	10	80 (2)	100	100	-(1)
MO165-32	100	100	-(1)	100	100	-(1)	50	50	125 (2)	30	30	125 (2)	10	10	100 (2)	100	100	-(1)
MO165-42	50	50	125 (2)	50	50	125 (2)	50	50	125 (2)	30	30	125 (2)	10	10	100 (2)	100	100	-(1)
MO165-54	30	50	125 (2)	30	50	125 (2)	30	45	125 (2)	20	20	125 (2)	6	8	100 (2)	100	100	-(1)
MO165-65	30	50	125 (2)	30	50	125 (2)	30	45	125 (2)	20	20	125 (2)	6	8	100 (2)	100	100	-(1)
MO165-73	30	30	-	30	30	-	6	8	-	6	8	-	6	8	-			
MO165-80	30	30	-	30	30	-	6	8	-	6	8	-	6	8	-			

(1) No back-up fuse required, short-circuit proof up to 100 kA

(2) Rated back-up fuse for short-circuit up to 100 kA

(3) 3 poles in series

Main circuit – Utilization characteristics according to UL/CSA

Type	MS116	MS132	MS165	MO132	MO165
Standards	UL 60947-1, UL 60947-4-1 (UL 508), CSA C22.2 No.60947-4-1 (CSA C22.2 No.14)				
Rated operational voltage Ue acc. to UL/CSA	600 V AC	600 V AC	600 V AC	600 V AC	600 V AC
Trip class	10A	10		-	
Motor ratings (1)	See table "Motor ratings, three phase"				
Horsepower	See table "Motor ratings, three phase"				
Full Load Amps (FLA)	See table "Motor ratings, three phase"				
Locked Rotor Amps (LRA)	See table "Motor ratings, three phase"				

(1) See product data sheets for UL/CSA single phase motor and general use ratings.

UL/CSA ratings overview

Type	MS116	MS132	MS165	MO132	MO165
Manual Motor Controller	x	x	x	x	x
Manual Motor Controller, Suitable as Motor Disconnect	x	x	x	x	x
Manual Motor Controller, Suitable for use in Group Installations	x	x	x	x	x
Manual Motor Controller, Suitable for Tap Conductor Protection in Group Installations	-	x	x	x	x
Manual self-protected Combination Motor Controller (Type E)	-	x	x (up to 65 A)	-	-
Combination Motor Controller (Type F)	-	with AF contactor	with AF contactor (up to 65 A)	with AF contactor and EOL	with AF contactor and EOL (up to 65 A)

MS116, MS132, MS165, MO132, MO165

Technical data

UL/CSA Motor ratings, three phase – MS116

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MS116-0.16	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96
MS116-0.25	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5
MS116-0.40	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4
MS116-0.63	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78
MS116-1.0	-	1	6	-	1	6	-	1	6	-	1	6	1/2	0.9	8
MS116-1.6	-	1.6	9.6	-	1.6	9.6	-	1.6	9.6	3/4	1.6	9.6	3/4	1.6	9.6
MS116-2.5	1/2	2.5	15	1/2	2.5	15	1/2	2.5	15	1	2.5	15	1 1/2	2.5	15
MS116-4.0	3/4	4	24	3/4	4	24	1	4	24	2	4	24	3	3.9	25.6
MS116-6.3	1	6.3	37.8	1	6.3	37.8	1 1/2	6.3	37.8	3	4.8	32	5	6.1	36.8
MS116-10	2	7.8	57.5	2	7.5	55	3	9.6	64	5	7.6	46	7 1/2	9	50.8
MS116-12	3	11	73.6	3	10.6	71	3	9.6	64	7 1/2	11	63.5	10	11	64.8
MS116-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MS116-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MS116-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MS116-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	25	27	146

UL/CSA Motor ratings, three phase – MS132

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MS132-0.16	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96
MS132-0.25	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5
MS132-0.40	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4
MS132-0.63	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78
MS132-1.0	-	1	6	-	1	6	-	1	6	-	1	6	1/2	1	6
MS132-1.6	-	1.6	9.6	-	1.6	9.6	-	1.6	9.6	3/4	1.6	9.6	3/4	1.6	9.6
MS132-2.5	1/2	2.5	15	1/2	2.5	15	1/2	2.5	15	1	2.5	15	1-1/2	2.5	15
MS132-4.0	3/4	4	24	3/4	4	24	1	4	24	2	4	24	3	3.9	25.6
MS132-6.3	1	6.3	37.8	1	6.3	37.8	1 1/2	6.3	37.8	3	4.8	32	5	6.1	36.8
MS132-10	2	7.8	57.5	2	7.5	55	3	9.6	64	5	7.6	46	7 1/2	9	50.8
MS132-12	3	11	73.6	3	10.6	71	3	9.6	64	7 1/2	11	63.5	10	11	64.8
MS132-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MS132-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MS132-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MS132-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	25	27	146

UL/CSA Motor ratings, three phase – MS165

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MS165-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MS165-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MS165-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MS165-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	30	32	174
MS165-42	10	32.2	186.3	10	30.8	179	15	42	232	30	40	218	40	41	232
MS165-54	15	48.3	267	15	46.2	257	20	54	290	40	52	290	50	52	290
MS165-65	20	62.1	334	20	59.4	321	20	54	290	50	65	363	60	62	348
MS165-73	20	62.1	334	20	59.4	321	25	68	365	50	65	363	60	62	348
MS165-80	25	78.2	420	25	74.8	404	30	80	435	60	77	435	75	77	434

hp Horsepower
FLA Full Load Amps
LRA Locked Rotor Amps

Note: Manual motor starters should always be selected so that the actual motor current is within the setting range; see ordering detail pages. Horsepower (hp) ratings are for reference only.

MS116, MS132, MS165, MO132, MO165

Technical data

UL/CSA Motor ratings, three phase – MO132

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MO132-0.16	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96
MO132-0.25	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5
MO132-0.40	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4
MO132-0.63	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78
MO132-1.0	-	1	6	-	1	6	-	1	6	-	1	6	1/2	1	6
MO132-1.6	-	1.6	9.6	-	1.6	9.6	-	1.6	9.6	3/4	1.6	9.6	3/4	1.6	9.6
MO132-2.5	1/2	2.5	15	1/2	2.5	15	1/2	2.5	15	1	2.5	15	1 1/2	2.5	15
MO132-4.0	3/4	4	24	3/4	4	24	1	4	24	2	4	24	3	3.9	25.6
MO132-6.3	1	6.3	37.8	1	6.3	37.8	1 1/2	6.3	37.8	3	4.8	32	5	6.1	36.8
MO132-10	2	7.8	57.5	2	7.5	55	3	9.6	64	5	7.6	46	7 1/2	9	50.8
MO132-12	3	11	73.6	3	10.6	71	3	9.6	64	7 1/2	11	63.5	10	11	64.8
MO132-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MO132-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MO132-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MO132-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	25	27	146

UL/CSA Motor ratings, three phase – MO165

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MO165-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MO165-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MO165-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MO165-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	30	32	174
MO165-42	10	32.2	186.3	10	30.8	179	15	42	232	30	40	218	40	41	232
MO165-54	15	48.3	267	15	46.2	257	20	54	290	40	52	290	50	52	290
MO165-65	20	62.1	334	20	59.4	321	20	54	290	50	65	363	60	62	348
MO165-73	20	62.1	334	20	59.4	321	25	68	365	50	65	363	60	62	348
MO165-80	25	78.2	420	25	74.8	404	30	80	435	60	77	435	75	77	434

MS116, MS132, MS165, MO132, MO165

Technical data

UL/CSA Maximum short-circuit current ratings – MS165

Type	Manual Motor Controllers								Manual self-protected Combination Motor Controllers (Type E)		
	Branch circuit protection, max. size per NEC/CEC (1)		for motor disconnect		for group installations		for tap conductor protection in group installations				
	Fuses A	Circuit breaker A	480 V kA	600 V kA	480 V kA	600 V kA	480 V kA	600 V kA	480Y / 277 V kA	600Y / 347 V kA	
MS165-16	Any Listed fuses. Size per NEC/CEC	Any Listed UL489 / CSA C22.2 No.5 circuit breaker. Size per NEC/CEC	65	30	65	30	65	30	65	30	
MS165-20			65	30	65	30	65	30	65	30	
MS165-25			65	30	65	30	65	30	65	30	
MS165-32			65	30	65	30	65	30	65	30	
MS165-42			65	30	65	30	65	30	65	-	
MS165-54			65	30	65	30	65	30	65	-	
MS165-65			65	30	65	30	65	30	65	-	
MS165-73			50	10							
MS165-80			50	10							

(1) NEC: NFPA®70 National Electrical Code®; CEC: CSA C22.1 Canadian Electrical Code.

UL/CSA Maximum short-circuit current ratings – MS165 with AF contactors

Type	Manual self-protected Combination Motor Controllers (Type F) Coordination type 1				Manual self-protected Combination Motor Controllers (Type F) Coordination type 2					
	Minimum contactor size	480Y / 277 V MS165-80		Minimum contactor size	600Y / 347 V		Minimum contactor size	480Y / 277 V		
		480Y / 277 V kA	600Y / 347 V kA		480Y / 277 V kA	600Y / 347 V kA				
MS165-16	AF09...AF38	65		AF09...AF38	50		AF26...AF38	65	AF09...AF38	30
MS165-20	AF26...AF38	65		AF26...AF38	50		AF26...AF38	65	AF09...AF38	30
MS165-25	AF26...AF38	65		AF26...AF38	50		AF26...AF38	65	AF40...AF65	30
MS165-32	AF26...AF38	65		AF26...AF38	50		AF26...AF38	65	AF40...AF65	30
MS165-42	AF40...AF65	65		-	-		AF40...AF65	65	-	-
MS165-54	AF40...AF65	65		-	-		AF40...AF65	65	-	-
MS165-65	AF40...AF65	65		-	-		AF40...AF65	65	-	-
MS165-73										
MS165-80										

More coordination tables are available in our SOC (selected optimized coordination) tool: <https://applications.it.abb.com/SOC/Motor>

UL/CSA Maximum short-circuit current ratings – MO132

Type	Manual Motor Controllers							
	Branch circuit protection, max. size per NEC/CEC (1)		for motor disconnect		for group installations		for tap conductor protection in group installations	
	Fuses A	Circuit breaker A	480 V kA	600 V kA	480 V kA	600 V kA	480 V kA	600 V kA
MO132-0.16	Any Listed fuses. Size per NEC/CEC	Any Listed UL489 / CSA C22.2 No.5 circuit breaker. Size per NEC/CEC	65	47	65	47	65	47
MO132-0.25			65	47	65	47	65	47
MO132-0.40			65	47	65	47	65	47
MO132-0.63			65	47	65	47	65	47
MO132-1.0			65	47	65	47	65	47
MO132-1.6			65	47	65	47	65	47
MO132-2.5			65	47	65	47	65	47
MO132-4.0			65	47	65	47	65	47
MO132-6.3			65	18	65	35	65	18
MO132-10			65	18	65	35	65	18
MO132-12			30	18	35	35	30	18
MO132-16			30	18	35	35	30	18
MO132-20			30	18	35	35	30	18
MO132-25			30	18	35	35	30	18
MO132-32			30	18	35	35	30	18

(1) NEC: NFPA®70 National Electrical Code®; CEC: CSA C22.1 Canadian Electrical Code.

MS116, MS132, MS165, MO132, MO165

Technical data

UL/CSA Maximum short-circuit current ratings – MO165

Type	Manual Motor Controllers								
	Branch circuit protection, max. size per NEC/CEC (1)		for motor disconnect		for group installations		for tap conductor protection in group installations		
	Fuses A	Circuit breaker A	480 V kA	600 V kA	480 V kA	600 V kA	480 V kA	600 V kA	
MO165-16	Any Listed fuses. Size per NEC/CEC	Any Listed UL489 / CSA C22.2 No.5 circuit breaker. Size per NEC/CEC	65	30	65	30	65	30	
MO165-20			65	30	65	30	65	30	
MO165-25			65	30	65	30	65	30	
MO165-32			65	30	65	30	65	30	
MO165-42			65	30	65	30	65	30	
MO165-54			65	30	65	30	65	30	
MO165-65			65	30	65	30	65	30	
MO165-73									
MO165-80									

(1) NEC: NFPA®70 National Electrical Code®; CEC: CSA C22.1 Canadian Electrical Code.

UL/CSA Maximum short-circuit current ratings – MO165 with AF contactors

Type	Combination Motor Controllers (Type F)					
	Coordination type 1					
	480Y / 277 V kA	OL Relay	Contactor	600Y / 347 V kA	OL Relay	Contactor
MO165-16	65	EF19-18.9	AF09...AF38	50	EF19-18.9	AF09...AF38
MO165-20	65	EF45-30	AF26...AF38	50	EF45-30	AF26...AF38
MO165-25	65	EF45-30	AF26...AF38	50	EF45-30	AF26...AF38
MO165-32	65	EF45-45	AF26...AF38	50	EF45-45	AF26...AF38
MO165-42	65	EF65	AF40...AF65	-	-	-
MO165-54	65	EF65	AF40...AF65	-	-	-
MO165-65	65	EF65	AF40...AF65	-	-	-
MO165-73						
MO165-80						

UL/CSA Maximum short-circuit current ratings – MO165 with AF contactors

Type	Combination Motor Controllers (Type F)					
	Coordination type 2					
	480Y / 277 V kA	OL Relay	Contactor	600Y / 347 V kA	OL Relay	Contactor
MO165-16	65	TF42	AF09...AF38	30	TF42	AF09...AF38
MO165-20	65	TF42	AF26...AF38	30	TF42	AF09...AF38
MO165-25	65	TF42	AF26...AF38	50	TF42	AF26...AF38
MO165-32	65	TF42	AF26...AF38	50	TF42	AF26...AF38
MO165-42	65	TF65	AF40...AF65	-	-	-
MO165-54	65	TF65	AF40...AF65	-	-	-
MO165-65	65	TF65	AF40...AF65	-	-	-
MO165-73						
MO165-80						

MS116, MS132, MS165, MO132, MO165





Technical data





General technical data






Type	MS116	MS132	MS165	MO132	MO165
Pollution degree	3	3	3	3	3
Phase loss sensitivity	Yes	Yes	Yes	No	No
Disconnect function acc. to IEC/EN 60947-2	Yes	Yes	Yes	Yes	Yes
Ambient air temperature					
Operation					
Open - compensated	-25 ... +55 °C	-25 ... +60 °C	-25 ... +60 °C	-	-
Open	-25 ... +70 °C	-25 ... +70 °C	-25 ... +60 °C	-25 ... +60 °C	-25 ... +60 °C
Enclosed (IB132)	0 ... +40 °C	0 ... +40 °C	-	-	-
Storage	-50 ... +80 °C	-50 ... +80 °C	-50 ... +80 °C	-50 ... +80 °C	-50 ... +80 °C
Ambient air temperature compensation	Acc. to IEC/EN60947-4-1	Acc. to IEC/EN60947-4-1	Acc. to IEC/EN60947-4-1	-	-
Maximum operating altitude permissible	2000 m	2000 m	2000 m	2000 m	2000 m
Resistance to shock acc. to IEC 60068-2-27	25g / 11 ms	25g / 11 ms	25g / 11 ms	25g / 11 ms	25g / 11 ms
Resistance to vibrations acc. to IEC 60068-2-6	5g / 3 ... 150 Hz	5g / 3 ... 150 Hz	5g / 3 ... 150 Hz	5g / 3 ... 150 Hz	5g / 3 ... 150 Hz
Mounting position	Position 1-6 (optional for single mounting)	Position 1-6 (optional for single mounting)	Position 1-6 (optional for single mounting)	Position 1-6 (optional for single mounting)	Position 1-6 (optional for single mounting)
Mounting	DIN-rail (EN 60715)	DIN-rail (EN 60715)	DIN-rail (EN 60715)	DIN-rail (EN 60715)	DIN-rail (EN 60715)
Group mounting	On request	On request	On request	On request	On request
Recommended screw for mounting plate	-	-	M4	-	M4
Screw torque for mounting plate	-	-	2 Nm	-	2 Nm
Minimum distance to other units same type					
Horizontal	0 mm	0 mm	0 mm	0 mm	0 mm
Vertical	150 mm	150 mm	150 mm	150 mm	150 mm
Minimum distance to electrical conductive board					
Horizontal, up to 400 V	0 mm	0 mm	0 mm	0 mm	0 mm
Horizontal, up to 690 V	> 1.5 mm	> 1.5 mm	> 1.5 mm	> 1.5 mm	> 1.5 mm
Vertical	75 mm	75 mm	75 mm	75 mm	75 mm
Degree of protection					
Housing	IP20	IP20	IP20	IP20	IP20
Main circuit terminals	IP10	IP10 (1)	IP10	IP10	IP10

(1) Push-in Spring terminals : IP20

Connecting characteristics - Main circuit

Type	MS116 ≤ 16 A	MS116 ≥ 20 A
Connecting capacity		
 Rigid	1 or 2 x 1 ... 4 mm ²	2.5 ... 6 mm ²
 Flexible with ferrule	1 or 2 x 0.75 ... 2.5 mm ²	1 ... 6 mm ²
 Flexible with insulated ferrule	1 or 2 x 0.75 ... 2.5 mm ²	1 ... 6 mm ²
 Flexible	1 or 2 x 0.75 ... 2.5 mm ²	1 ... 6 mm ²
Stranded acc. to UL/CSA	1 or 2 x AWG 16-12	AWG 16-8
Stripping length	9 mm	10 mm
Tightening torque	0.8 ... 1.2 Nm / 10 ... 12 lb.in	2.0 Nm / 18 lb.in
Recommended screwdriver	Pozidriv 2	Pozidriv 2





Type	MS132 ≤ 10 A	MS132 ≥ 12 A
Connecting capacity		
 Rigid	1 or 2 x 1 ... 4 mm ²	1 ... 2.5 mm ² 2.5 ... 6 mm ²
 Flexible with ferrule	1 or 2 x 0.75 ... 2.5 mm ²	0.75 ... 6 mm ²
 Flexible with insulated ferrule	1 or 2 x 0.75 ... 2.5 mm ²	0.75 ... 6 mm ²
 Flexible	1 or 2 x 0.75 ... 2.5 mm ²	1 ... 2.5 mm ² 2.5 ... 6 mm ²
Stranded acc. to UL/CSA	1 or 2 x AWG 16-12	AWG 16-8
Stripping length	9 mm	10 mm
Tightening torque	0.8 ... 1.2 Nm / 10 ... 12 lb.in	2.0 Nm / 18 lb.in
Recommended screwdriver	Pozidriv 2	Pozidriv 2





Type	MS132-K with Push-in Spring terminals
Connecting capacity	
 Rigid solid	1 or 2 x 1 ... 2.5 mm ²
 Rigid stranded	1 or 2 x 1 ... 6 mm ²
 Flexible with ferrule	1 or 2 x 0.5 ... 4 mm ²
 Flexible with insulated ferrule	1 x 0.5 ... 4 mm ² 1/2 x 0.5 ... 2.5 mm ²
 Flexible	1 or 2 x 0.75 ... 4 mm ²
Stranded acc. to UL/CSA	1/2 x AWG 18 ... AWG 10 1 x AWG 8
Wire stripping length	12 mm
Screwdriver	Flat Ø 3 mm x 0.5 mm





MS116, MS132, MS165, MO132, MO165

Technical data

Connecting characteristics - Main circuit

Type	MS165	
Connecting capacity		
 Rigid stranded	1 or 2 x	1 ... 50 mm ²
 Flexible with ferrule	1 or 2 x	1 ... 35 mm ²
 Flexible with insulated ferrule	1 or 2 x	1 ... 35 mm ²
 Flexible	1 or 2 x	1 ... 35 mm ²
Stranded acc. to UL/CSA	1 or 2 x	AWG 16-0
Stripping length	16 mm	
Tightening torque	4.0 Nm / 35 lb.in	
Recommended screw driver	Pozidriv 2	

Type	MO132 ≤ 10 A		MO132 ≥ 12 A
Connecting capacity			
 Rigid	1 or 2 x	1 ... 4 mm ²	1 ... 2.5 mm ² 2.5 ... 6 mm ²
 Flexible with ferrule	1 or 2 x	0.75 ... 2.5 mm ²	0.75 ... 6 mm ²
 Flexible with insulated ferrule	1 or 2 x	0.75 ... 2.5 mm ²	0.75 ... 6 mm ²
 Flexible	1 or 2 x	0.75 ... 2.5 mm ²	1 ... 2.5 mm ² 2.5 ... 6 mm ²
Stranded acc. to UL/CSA	1 or 2 x	AWG 16-12	AWG 16-8
Stripping length	9 mm		10 mm
Tightening torque	0.8 ... 1.2 Nm / 10 ... 12 lb.in		2.0 Nm / 18 lb.in
Recommended screw driver	Pozidriv 2		Pozidriv 2

Type	MO165	
Connecting capacity		
 Rigid stranded	1 or 2 x	1 ... 50 mm ²
 Flexible with ferrule	1 or 2 x	1 ... 35 mm ²
 Flexible with insulated ferrule	1 or 2 x	1 ... 35 mm ²
 Flexible	1 or 2 x	1 ... 35 mm ²
Stranded acc. to UL/CSA	1 or 2 x	AWG 16-0
Stripping length	16 mm	
Tightening torque	4.0 Nm / 35 lb.in	
Recommended screw driver	Pozidriv 2	