Manual motor starters

Thermal- and electromagnetic release	Type	MS116	MS132	
Magnetic release only	Type	-		MO132
Phase loss sensitivity		Yes	Yes	No
Switch postion		ON/OFF	ON/OFF/TRIP	
Magnetic trip indication		-	Yes	
Lockable handle without accessories		-	Yes	
Disconnecting feature		Yes	Yes	
Width		45 mm	45 mm	
Setting range for thermal release		0.1 ... 32 A	0.1 ... 32 A	
Rated operational voltage U_e		690 V AC	690 V AC / 250 V DC	
Rated frequency		50/60 Hz	DC, 50/60 Hz	
Trip class		10A	10	
Short-circuit breaking capacity I_{cs}	**400 V AC**	Up to 50 kA	Up to 100 kA	
Ambient air temperature open compensated		-25 ... +55 °C	-25 ... +60 °C	

Main accessories

Auxiliary contacts			
Front mounting		HKF1	
Side mounting		HK1	
Signalling contacts			
Tripped alarm		SK1	
Short-circuit alarm		-	CK1
Auxiliary trip units			
Shunt trip		AA1	
Undervoltage release		UA1	
Busbar systems			
3-phase busbar		PS1	
Feeder terminals		S1	

MS116 manual motor starters
0.10 to 32 A – with thermal and electromagnetic protection


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MS116-16


2CDC241001F0011

MS116-25


2CDC241013F0011

MS116-0.16-HKF1-11


2CDC241012F0011

MS116-32-HKF1-11

Description

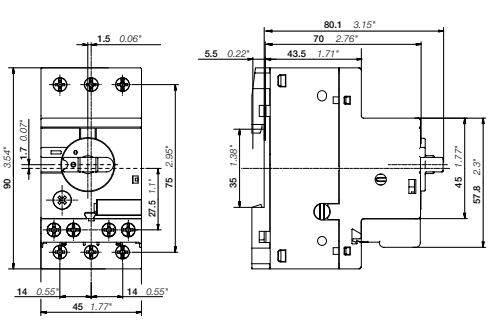
Manual motor starters (MMS) are protection devices for the main circuit. They combine motor control and protection in a single device. MMS are used mainly to switch motors manually ON/OFF and protect them and the installation fuse less against short-circuit, overload and phase failures. Fuse less protection with a manual motor starter saves costs, space and ensures a quick reaction under short-circuit condition, by switching off the motor within milliseconds.

MS116 is a compact and economic range for motor protection up to 15.5 kW (400 V) / 32 A in width of 45 mm. Further features are the build-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. Auxiliary contacts, signalling contacts, undervoltage releases, shunt trips, three-phase bus bars, power in-feed blocks and locking devices for protection against unauthorized changes are available as accessory.

Ordering details

Rated operational power 400 V AC-3	Rated operational current	Short-circuit breaking capacity I_{cs} at 400 V AC	Rated instantaneous short-circuit current setting I_i	Type	Order code		Weight (1 pce)
kW	A	kA	A				kg
0.03	0.10 ... 0.16	50	1.56	MS116-0.16	1SAM250000R1001		0.225
0.06	0.16 ... 0.25	50	2.44	MS116-0.25	1SAM250000R1002		0.225
0.09	0.25 ... 0.40	50	3.90	MS116-0.4	1SAM250000R1003		0.225
0.12	0.40 ... 0.63	50	6.14	MS116-0.63	1SAM250000R1004		0.225
0.25	0.63 ... 1.00	50	11.50	MS116-1.0	1SAM250000R1005		0.225
0.55	1.00 ... 1.60	50	18.40	MS116-1.6	1SAM250000R1006		0.265
0.75	1.60 ... 2.50	50	28.75	MS116-2.5	1SAM250000R1007		0.265
1.5	2.50 ... 4.00	50	50.00	MS116-4.0	1SAM250000R1008		0.265
2.2	4.00 ... 6.30	50	78.75	MS116-6.3	1SAM250000R1009		0.265
4.0	6.30 ... 10.0	50	150	MS116-10	1SAM250000R1010		0.265
5.5	8.00 ... 12.0	25	180	MS116-12	1SAM250000R1012		0.265
7.5	10.0 ... 16.0	16	240	MS116-16	1SAM250000R1011		0.265
9.0	16.0 ... 20.0	10	300	MS116-20	1SAM250000R1013		0.310
12.5	20.0 ... 25.0	10	375	MS116-25	1SAM250000R1014		0.310
15.5	25.0 ... 32.0	10	480	MS116-32	1SAM250000R1015		0.310
0.03	0.10 ... 0.16	50	1.56	MS116-0.16-HKF1-11	1SAM250005R1001		0.240
0.06	0.16 ... 0.25	50	2.44	MS116-0.25-HKF1-11	1SAM250005R1002		0.240
0.09	0.25 ... 0.40	50	3.90	MS116-0.4-HKF1-11	1SAM250005R1003		0.240
0.12	0.40 ... 0.63	50	6.14	MS116-0.63-HKF1-11	1SAM250005R1004		0.240
0.25	0.63 ... 1.00	50	11.50	MS116-1.0-HKF1-11	1SAM250005R1005		0.240
0.55	1.00 ... 1.60	50	18.40	MS116-1.6-HKF1-11	1SAM250005R1006		0.280
0.75	1.60 ... 2.50	50	28.75	MS116-2.5-HKF1-11	1SAM250005R1007		0.280
1.5	2.50 ... 4.00	50	50.00	MS116-4.0-HKF1-11	1SAM250005R1008		0.280
2.2	4.00 ... 6.30	50	78.75	MS116-6.3-HKF1-11	1SAM250005R1009		0.280
4.0	6.30 ... 10.0	50	150	MS116-10.0-HKF1-11	1SAM250005R1010		0.280
5.5	8.00 ... 12.0	25	180	MS116-12.0-HKF1-11	1SAM250005R1012		0.280
7.5	10.0 ... 16.0	16	240	MS116-16.0-HKF1-11	1SAM250005R1011		0.280
9.0	16.0 ... 20.0	10	300	MS116-20-HKF1-11	1SAM250005R1013		0.326
12.5	20.0 ... 25.0	10	375	MS116-25-HKF1-11	1SAM250005R1014		0.326
15.5	25.0 ... 32.0	10	480	MS116-32-HKF1-11	1SAM250005R1015		0.326

Main dimensions mm, *inches*



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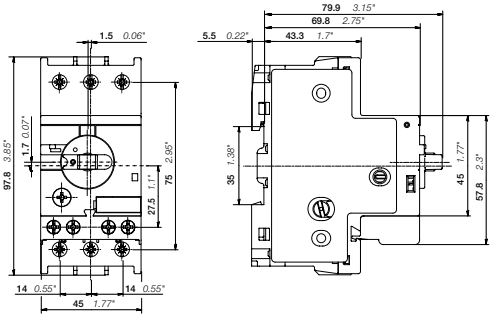
MS116 ≤ 16 A & MS116-HKF1-11 ≤ 16 A



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MS116 ≥ 20 A & MS116-HKF1-11 ≥ 20 A

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MS116 manual motor starters
Technical data

Main circuit – Utilization characteristics according to IEC/EN

Type	MS116
Standards	IEC/EN 60947–2, IEC/EN 60947-4-1, IEC/EN 60947-1
Rated operational voltage U_e	690 V AC
Rated frequency	50/60 Hz
Trip class	10A
Number of poles	3
Duty time	100 %
Rated impulse withstand voltage U_{imp}	6 kV
Mechanical durability	100000 operations
Electrical durability, up to 16 A	100000 operations
Electrical durability, 20...32 A	50000 operations
Rated insulation voltage U_i	690 V AC
Rated operational current I_e	See ordering details
Rated instantaneous short-circuit current setting I_i	See ordering details
Rated service short-circuit breaking capacity I_{cs}	See table "Short-circuit breaking capacity and back-up fuses"
Rated ultimate short-circuit breaking capacity I_{cu}	See table "Short-circuit breaking capacity and back-up fuses"

Short-circuit breaking capacity and back-up fuses

I_{cs} Rated service short-circuit breaking capacity

I_{cu} Rated ultimate short-circuit breaking capacity

I_{cc} 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		
	I_{cs} kA	I_{cu} kA	gG, aM A	I_{cs} kA	I_{cu} kA	gG, aM A	I_{cs} kA	I_{cu} kA	gG, aM A	I_{cs} kA	I_{cu} kA	gG, aM A	I_{cs} kA	I_{cu} kA	gG, aM A
MS116-0.16	No back-up fuse required up to I_{cc} = 50 kA									No back-up fuse required up to I_{cc} = 30 kA					
MS116-0.25															
MS116-0.4															
MS116-0.63															
MS116-1.0															
MS116-1.6															
MS116-2.5							10	10	25	10	10	25	5	5	25
MS116-4.0							6	6	25	6	6	25	2	2	25
MS116-6.3							6	6	63	6	6	63	2	2	40
MS116-10							6	6	63	6	6	63	2	2	50
MS116-12	25	25	80	25	25	80	6	6	63	6	6	63	2	2	50
MS116-16	16	16	80	16	16	80	6	6	63	4	4	63	2	2	63
MS116-20	10	15	-	10	15	-	3	6	-	3	4	-	2	2	-
MS116-25	10	15	-	10	15	-	3	6	-	3	4	-	2	2	-
MS116-32	10	10	-	10	10	-	3	6	-	3	4	-	2	2	-

MS116-10: No need for back-up fuse in networks with a prospective current of up to 50 kA at 400 V.
MS116-16: No need for back-up fuse in networks with a prospective current of up to 16 kA at 400 V.
With an approbiate 80 A type gG fuse the device can be used in a network with a prospective current of up to 100 kA.
MS116-32: No need for back-up fuse in networks with a prospective current of up to 10 kA at 400 V.

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MS116 manual motor starters
Technical data

Main circuit – Utilization characteristics according to UL/CSA

Type		MS116
Standards		UL 508, CSA 22.2 No. 14
Maximum operational voltage		600 V AC
Manual motor controller ratings		See table "UL 508 – Manual motor controller"
Trip rating		125 % FLA
Motor ratings	Horse power	See table "Motor rating, three phase"
	Full load amps (FLA)	See table "Motor rating, three phase"
	Locked rotor amps (LRA)	See table "Motor rating, three phase"

Motor rating, three phase

hp Horse power

FLA Full load amps

LRA Locked rotor amps

Type	110-120 V AC			220-240 V AC			440-480 V AC			500-600 V AC		
	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
MS116-0.25	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5
MS116-0.4	-	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
MS116-1.0	-	1.0	6.0	-	1.0	6.0		1.0	6.0	1/2	0.9	8
MS116-1.6	-	1.6	9.6	-	1.6	9.6	3/4	1.6	12.5	3/4	1.3	10
MS116-2.5	-	2.5	15.0	1/2	2.2	20	1	2.1	15	1-1/2	2.4	16
MS116-4.0	-	4.0	16.0	1	4.2	30	2	3.4	25	3	3.9	25.6
MS116-6.3	1/2	4.4	40	1-1/2	6.4	40	3	4.8	32	5	6.1	36.8
MS116-10	1	8.4	60	3	9.6	64	5	7.6	46	7-1/2	9	50.8
MS116-12	1-1/2	12	80	3	9.6	64	7-1/2	11	63.5	10	11	64.8
MS116-16	2	13.6	100	5	15.2	92	10	14	81	10	11	64.8
MS116-20	3	19.2	128	5	15.2	92	10	14	81	15	17	93
MS116-25	3	19.2	128	7-1/2	22	127	15	21	116	20	22	116
MS116-32	5	30.4	184	10	28	162	20	27	145	25	27	146

UL 508 – Manual motor controller

Type	Maximum fuse type K5 o. RK5 per UL/NEC	Maximum short-circuit current for motor disconnect[1]		for group installation	
	480 V / 600 V	480 V	600 V	480 V	600 V
	A	kA	kA	kA	kA
MS116-0.16	100	30	5	30	5
MS116-0.25	100	30	5	30	5
MS116-0.4	100	30	5	30	5
MS116-0.63	100	30	5	30	5
MS116-1.0	100	30	5	30	5
MS116-1.6	100	30	5	30	5
MS116-2.5	100	30	5	30	5
MS116-4.0	100	18	5	18	5
MS116-6.3	100	18	5	18	5
MS116-10	100	18	5	18	5
MS116-12	100	18	5	18	5
MS116-16	100	18	5	18	5
MS116-20	100	18	5	18	5
MS116-25	100	18	5	18	5
MS116-32	100	18	5	18	5

[1] Suitable as motor disconnect only when provided with padlock SA1 or SA3...

2CDC131039C0201

MS116 manual motor starters
Technical data

General technical data

Type		MS116
Pollution degree		3
Phase loss sensitivity		Yes
Disconnect function acc. to IEC/EN 60947-2		Yes
Ambient air temperature		
Operation	Open - compensated	-25 ... +55 °C
	Open	-25 ... +70 °C
	Enclosed (IB132)	0 ... +40 °C
Storage		-50 ... +80 °C
Ambient air temperature compensation		Acc. to IEC/EN60947-4-1
Maximum operating altitude permissible		2000 m
Resistance to shock acc. to IEC 60068-2-27		25 g / 11 ms
Resistance to vibrations acc. to IEC 60068-2-6		5 g / 3 ... 150 Hz
Mounting position		Position 1-6 (optional for single mounting)
Mounting		DIN-rail (EN 60715)
Group mounting		On request
Minimum distance to other units same type	Horizontal	0 mm
	Vertical	150 mm
Minimum distance to electrical conductive board	Horizontal, up to 400 V	0 mm
	Horizontal, up to 690 V	> 1.5 mm
	Vertical	75 mm
Degree of protection	Housing	IP20
	Main circuit terminals	IP20

Connecting characteristics

Main circuit

Type			MS116 ≤ 16 A	MS116 ≥ 20 A
Connecting capacity				
	Solid	**1 or 2 x**	1 ... 4 mm²	2.5 ... 6 mm²
	Flexible	**1 or 2 x**	0.75 ... 2.5 mm²	1 ... 6 mm²
	Stranded acc. to UL/CSA	**1 or 2 x**	AWG 16-12	AWG 12-8
	Flexible acc. to UL/CSA	**1 or 2 x**	AWG 16-12	AWG 12-8
Stripping length			9 mm	10 mm
Tightening torques			0.8 ... 1.2 Nm / 10 ... 12 lb.in	2.0 Nm / 18 lb.in
Connection screw			M3.5 (Pozidriv 2 / 5.5 mm)	M4 (Pozidriv 2 / 6.5 mm)

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