

# MS116-20



Products → Low Voltage Products and Systems → Circuit Breakers → Manual Motor Starters

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→ Manual Motor Starters

## General Information

<b>Extended Product Type:</b>	MS116-20
<b>Product ID:</b>	1SAM250000R1013
<b>EAN:</b>	4013614405655
<b>Catalog Description:</b>	MS116-20 Manual Motor Starter
<b>Long Description:</b>	<p>The MS116-20 manual motor starter (also known as motor protection circuit breaker or manual motor protector) is a compact 45 mm width device with a rated operational current of <math>I_e = 20.0</math> A. This device is used to manually switch on and off motors and to protect them reliably and without the need for a fuse from short-circuits, overload and phase failures. The manual motor starter offers a rated service short-circuit breaking capacity <math>I_{cs} = 10</math> kA at 400 VAC and trip class 10A. 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, signaling contacts, undervoltage releases, shunt trips, 3-phase bus bars, power in-feed blocks and locking devices for protection against unauthorized changes are available as accessory.</p>

## Ordering

<b>Minimum Order Quantity:</b>	1 piece
<b>Customs Tariff Number:</b>	85362010

## Popular Downloads

<b>Data Sheet, Technical Information:</b>	2CDC131025D0201
<b>Data Sheet, Technical Information (Part 2):</b>	1SAM200505F0013
<b>Data Sheet, Technical Information (Part 3):</b>	1SAM200507F0001 1SAM200507F0002 1SAM200507F0003 1SAM200508F0001 1SAM200508F0002 1SAM200508F0003
<b>Instructions and Manuals:</b>	2CDC131011M6802
<b>Dimension Diagram:</b>	1SAM200420F0001

## Dimensions

<b>Product Net Width:</b>	45 mm
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**Product Net Height:** 97.8 mm

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**Product Net Depth / Length:** 86.55 mm

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**Product Net Weight:** 0.31 kg

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## Technical

**Rated Service Short-Circuit** (230 V AC) 10 kA

**Breaking Capacity ( $I_{cs}$ ):** (400 V AC) 10 kA  
(440 V AC) 3 kA  
(500 V AC) 3 kA  
(690 V AC) 2 kA

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**Rated Ultimate Short-Circuit** (230 V AC) 15 kA

**Breaking Capacity ( $I_{cu}$ ):** (400 V AC) 15 kA  
(440 V AC) 6 kA  
(500 V AC) 4 kA  
(690 V AC) 2 kA

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**Rated Instantaneous Short-Circuit** 300 A

**Current Setting ( $I_i$ ):**

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**Setting Range:** 18 ... 25 A

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**Rated Operational Power AC-3** (400 V) Three Phase 7.5 kW  
**( $P_e$ ):**

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**Rated Operational Voltage:** Main Circuit 690 V AC

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**Rated Operational Current ( $I_e$ ):** 20 A

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**Rated Operational Current AC-3** 20 A  
**( $I_e$ ):**

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**Rated Frequency (f):** Main Circuit 50 Hz  
Main Circuit 60 Hz

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**Rated Impulse Withstand Voltage** Main Circuit 6 kV  
**( $U_{imp}$ ):**

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**Rated Insulation Voltage ( $U_i$ ):** 690 V

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**Power Loss:** at Rated Operating Conditions per Pole 1.5 ... 2.3 W

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**Number of Poles:** 3

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**Conventional Free-air Thermal** Main Circuit 20 A  
**Current ( $I_{th}$ ):**

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**Degree of Protection:** Housing IP20  
Main Circuit Terminals IP10

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**Pollution Degree:** 3

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**Electrical Durability:** 50000 cycle

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**Mechanical Durability:** 100000 cycle

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**Terminal Type:** Screw Terminals

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<b>Connecting Capacity Main Circuit:</b>	Flexible with Ferrule 1/2x 0.75 ... 6 mm <sup>2</sup> Flexible with Insulated Ferrule 1/2x 0.75 ... 6 mm <sup>2</sup> Flexible 1/2x 1 ... 2.5 mm <sup>2</sup> Flexible 1/2x 2.5 ... 6 mm <sup>2</sup> Rigid 1/2x 1 ... 2.5 mm <sup>2</sup> Rigid 1/2x 2.5 ... 6 mm <sup>2</sup>
<b>Connecting Capacity Auxiliary Circuit:</b>	Flexible with Ferrule 1/2x 0.75 ... 1.5 mm <sup>2</sup> Flexible with Insulated Ferrule 1/2x 0.75 ... 1.5 mm <sup>2</sup> Flexible 1/2x 0.75 ... 1.5 mm <sup>2</sup> Rigid 1/2x 1 ... 1.5 mm <sup>2</sup>
<b>Tightening Torque:</b>	Main Circuit 2 N·m
<b>Wire Stripping Length:</b>	Main Circuit 10 mm
<b>Recommended Screw Driver:</b>	Pozidriv 2
<b>Mounting Position:</b>	Position 1 to 6
<b>Mounting on DIN Rail:</b>	TH35-15 (35 x 15 mm Mounting Rail) acc. to IEC 60715 TH35-7.5 (35 x 7.5 mm Mounting Rail) acc. to IEC 60715
<b>Minimum Mounting Distance:</b>	Electrical Conductive Board, Horizontal - Up to 400 V 0 mm Electrical Conductive Board, Horizontal - Up to 690 V 1.5 mm Electrical Conductive Board, Vertical 75 mm Other Device Same Type, Horizontal 0 mm Other Device Same Type, Vertical 150 mm
<b>Actuator Type:</b>	Rotary Handle
<b>Contact Position Indication:</b>	ON / OFF
<b>Standards:</b>	IEC/EN 60947-1 IEC/EN 60947-2 IEC/EN 60947-4-1 UL 60947-1 UL 60947-4-1

## Environmental

<b>Ambient Air Temperature:</b>	Around the Enclosure 0 ... +40 °C Operation -25 ... +70 °C Operation Compensated -25 ... +55 °C Storage -50 ... +80 °C
<b>Ambient Air Temperature Compensation:</b>	Yes
<b>Maximum Operating Altitude Permissible:</b>	2000 m
<b>Resistance to Shock acc. to IEC 60068-2-27:</b>	11 ms Pulse 25g
<b>Resistance to Vibrations acc. to IEC 60068-2-6:</b>	2g / 5 ... 150 Hz
<b>RoHS Status:</b>	Following EU Directive 2011/65/EU

## Technical UL/CSA

<b>Maximum Operating Voltage UL/CSA:</b>	Main Circuit 600 V AC
<b>Ampere Rating UL/CSA:</b>	20 A
<b>Horsepower Rating UL/CSA:</b>	(200 V AC) Three Phase 5 Hp (208 V AC) Three Phase 5 Hp (220 ... 240 V AC) Three Phase 5 Hp (440 ... 480 V AC) Three Phase 10 Hp (550 ... 600 V AC) Three Phase 15 Hp
<b>Full Load Amps Motor Use:</b>	(200 V AC) Three Phase 17.5 A (208 V AC) Three Phase 16.7 A (220 ... 240 V AC) Three Phase 15.2 A (440 ... 480 V AC) Three Phase 10 A (550 ... 600 V AC) Three Phase 15 A
<b>Locked Rotor Amps:</b>	(200 V AC) Three Phase 105.8 A (208 V AC) Three Phase 102 A (220 ... 240 V AC) Three Phase 92 A (440 ... 480 V AC) Three Phase 81 A (550 ... 600 V AC) Three Phase 93 A
<b>General Use Rating UL/CSA:</b>	(600 V AC) 20 A
<b>Connecting Capacity Main Circuit UL/CSA:</b>	Flexible 1/2x 16-8 AWG Stranded 1/2x 16-8 AWG
<b>Connecting Capacity Auxiliary Circuit UL/CSA:</b>	Flexible 1/2x 16-14 AWG Stranded 1/2x 16-14 AWG
<b>Tightening Torque UL/CSA:</b>	Main Circuit 18 in·lb
<b>Contact Rating UL/CSA:</b>	B300 R300

## Certificates and Declarations (Document Number)

<b>ABS Certificate:</b>	1SAA963000-0104
<b>BV Certificate:</b>	1SAA963000-0204
<b>CB Certificate:</b>	1SAA963000-2003
<b>CCC Certificate:</b>	1SAA963000-3804
<b>cUL Certificate:</b>	cUL_E137861
<b>Declaration of Conformity - CE:</b>	1SAD938517-0060
<b>DNV Certificate:</b>	1SAA963000-0303
<b>DNV GL Certificate:</b>	1SAA963000-0303
<b>EAC Certificate:</b>	1SAA963000-2701
<b>Environmental Information:</b>	1SAA963001-2401
<b>GL Certificate:</b>	1SAA963000-0402
<b>GOST Certificate:</b>	1SAA963001-2702
<b>Instructions and Manuals:</b>	2CDC131011M6802

<b>LR Certificate:</b>	1SAA963000-0505
<b>RMRS Certificate:</b>	1SAA918000-0704
<b>RoHS Information:</b>	1SAD938517-0060
<b>UL Certificate:</b>	UL_E137861

## Container Information

<b>Package Level 1 Units:</b>	1 piece
<b>Package Level 1 Width:</b>	92 mm
<b>Package Level 1 Depth / Length:</b>	102 mm
<b>Package Level 1 Height:</b>	50 mm
<b>Package Level 1 Gross Weight:</b>	0.325 kg
<b>Package Level 1 EAN:</b>	4013614405655
<b>Package Level 2 Units:</b>	40 piece
<b>Package Level 2 Width:</b>	280 mm
<b>Package Level 2 Depth / Length:</b>	395 mm
<b>Package Level 2 Height:</b>	210 mm
<b>Package Level 2 Gross Weight:</b>	13.386 kg
<b>Package Level 2 EAN:</b>	4013614408731

## Classifications

<b>Object Classification Code:</b>	F
<b>E-nummer:</b>	3111951
<b>ETIM 4:</b>	EC000074 - Motor protective circuit-breaker
<b>ETIM 5:</b>	EC000074 - Motor protective circuit-breaker
<b>ETIM 6:</b>	EC000074 - Motor protection circuit-breaker
<b>ETIM 7:</b>	EC000074 - Motor protection circuit-breaker
<b>eClass:</b>	7.0 27370401
<b>UNSPSC:</b>	39121521

## Accessories

Identifier	Description	Type	Qty	Unit Of Measure
1SAM101923R0002	MSMN Driver	MSMN	1	piece
1SAM101923R0012	MSMNO Driver	MSMNO	1	piece
1SAM101924R0003	MSOX-32 Driver Shaft	MSOX-32	1	piece
1SAM101924R0013	MSOX-30 Driver Shaft	MSOX-30	1	piece
1SAM201901R1001	HKF1-11 Auxiliary Contact	HKF1-11	1	piece

<b>Identifier</b>	<b>Description</b>	<b>Type</b>	<b>Qty</b>	<b>Unit Of Measure</b>
1SAM201901R1002	HKF1-20 Auxiliary Contact	HKF1-20	1	piece
1SAM201901R1003	HKF1-10 Auxiliary Contact	HKF1-10	1	piece
1SAM201901R1004	HKF1-01 Auxiliary Contact	HKF1-01	1	piece
1SAM201902R1001	HK1-11 Auxiliary Contact	HK1-11	1	piece
1SAM201902R1002	HK1-20 Auxiliary Contact	HK1-20	1	piece
1SAM201902R1003	HK1-02 Auxiliary Contact	HK1-02	1	piece
1SAM201902R1004	HK1-20L Auxiliary Contact	HK1-20L	1	piece
1SAM201903R1001	SK1-11 Signal Contact	SK1-11	1	piece
1SAM201903R1002	SK1-20 Signal Contact	SK1-20	1	piece
1SAM201903R1003	SK1-02 Signal Contact	SK1-02	1	piece
1SAM201904R1001	UA1-24 Undervoltage Release	UA1-24	1	piece
1SAM201904R1002	UA1-48 Undervoltage Release	UA1-48	1	piece
1SAM201904R1003	UA1-60 Undervoltage Release	UA1-60	1	piece
1SAM201904R1004	UA1-110 Undervoltage Release	UA1-110	1	piece
1SAM201904R1005	UA1-230 Undervoltage Release	UA1-230	1	piece
1SAM201904R1006	UA1-400 Undervoltage Release	UA1-400	1	piece
1SAM201904R1007	UA1-415 Undervoltage Release	UA1-415	1	piece
1SAM201904R1008	UA1-208 Undervoltage Release	UA1-208	1	piece
1SAM201904R1010	UA1-20 Undervoltage Release	UA1-20	1	piece
1SAM201906R1102	PS1-2-0-65 Busbar	PS1-2-0-65	1	piece
1SAM201906R1103	PS1-3-0-65 Busbar	PS1-3-0-65	1	piece
1SAM201906R1104	PS1-4-0-65 Busbar	PS1-4-0-65	1	piece
1SAM201906R1105	PS1-5-0-65 Busbar	PS1-5-0-65	1	piece
1SAM201906R1112	PS1-2-1-65 Busbar	PS1-2-1-65	1	piece
1SAM201906R1113	PS1-3-1-65 Busbar	PS1-3-1-65	1	piece
1SAM201906R1114	PS1-4-1-65 Busbar	PS1-4-1-65	1	piece

<b>Identifier</b>	<b>Description</b>	<b>Type</b>	<b>Qty</b>	<b>Unit Of Measure</b>
1SAM201906R1115	PS1-5-1-65 Busbar	PS1-5-1-65	1	piece
1SAM201906R1122	PS1-2-2-65 Busbar	PS1-2-2-65	1	piece
1SAM201906R1123	PS1-3-2-65 Busbar	PS1-3-2-65	1	piece
1SAM201906R1124	PS1-4-2-65 Busbar	PS1-4-2-65	1	piece
1SAM201906R1125	PS1-5-2-65 Busbar	PS1-5-2-65	1	piece
1SAM201907R1101	S1-M1-25 Power Infeed Block	S1-M1-25	1	piece
1SAM201907R1102	S1-M2-25 Power Infeed Block	S1-M2-25	1	piece
1SAM201907R1103	S1-M3-25 Power Infeed Block	S1-M3-25	1	piece
1SAM201908R1001	BS1-3 Protection Cover	BS1-3	1	piece
1SAM201909R1001	FS116 Screw Fixing Kit	FS116	1	piece
1SAM201909R1021	MSAH1 Shaft Supporter	MSAH1	1	piece
1SAM201910R1001	AA1-24 Shunt Trip	AA1-24	1	piece
1SAM201910R1002	AA1-110 Shunt Trip	AA1-110	1	piece
1SAM201910R1003	AA1-230 Shunt Trip	AA1-230	1	piece
1SAM201910R1004	AA1-400 Shunt Trip	AA1-400	1	piece
1SAM201911R1010	IB132-G Enclosure	IB132-G	1	piece
1SAM201911R1011	IB132-Y Enclosure	IB132-Y	1	piece
1SAM201911R1012	IB132-F Enclosure	IB132-F	1	piece
1SAM201912R1010	DMS132-G Door Mounting Kit	DMS132-G	1	piece
1SAM201912R1011	DMS132-Y Door Mounting Kit	DMS132-Y	1	piece
1SAM201914R1001	PB1-1-32 Connecting Link	PB1-1-32	1	piece
1SAM201914R1002	S1-PB1-25 Power Infeed Block	S1-PB1-25	1	piece
1SAM201916R1103	PS1-3-0-100 Busbar	PS1-3-0-100	1	piece
1SAM201916R1104	PS1-4-0-100 Busbar	PS1-4-0-100	1	piece
1SAM201916R1105	PS1-5-0-100 Busbar	PS1-5-0-100	1	piece
1SAM201916R1113	PS1-3-1-100 Busbar	PS1-3-1-100	1	piece

Identifier	Description	Type	Qty	Unit Of Measure
1SAM201916R1114	PS1-4-1-100 Busbar	PS1-4-1-100	1	piece
1SAM201916R1115	PS1-5-1-100 Busbar	PS1-5-1-100	1	piece
1SAM201916R1123	PS1-3-2-100 Busbar	PS1-3-2-100	1	piece
1SAM201920R1000	MSH-AR Shaft Alignment Ring	MSH-AR	1	piece
1SAM201920R1001	MSHD-LB Handles	MSHD-LB	1	piece
1SAM201920R1002	MSHD-LY Handles	MSHD-LY	1	piece

