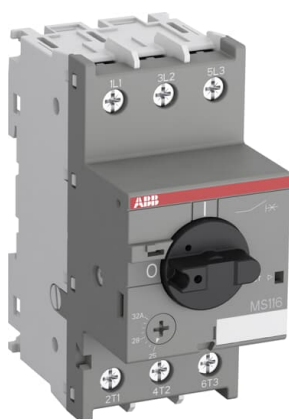


## PRODUCT-DETAILS

# MS116-20

## MS116-20 Manual Motor Starter



### General Information

|                       |                               |
|-----------------------|-------------------------------|
| Extended Product Type | MS116-20                      |
| Product ID            | 1SAM250000R1013               |
| EAN                   | 4013614405655                 |
| Catalog Description   | MS116-20 Manual Motor Starter |

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Long Description | <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

|                        |          |
|------------------------|----------|
| Minimum Order Quantity | 1 piece  |
| Customs Tariff Number  | 85362010 |

### Popular Downloads

|                                   |                 |
|-----------------------------------|-----------------|
| Data Sheet, Technical Information | 2CDC131025D0201 |
| Instructions and                  | 2CDC131011M6802 |

## Manuals

|                                   |                                                       |
|-----------------------------------|-------------------------------------------------------|
| Instructions and Manuals (Part 2) | 2CDC131060M0202                                       |
| Time-Current Characteristic Curve | 1SAM200505F0013                                       |
| I <sup>2</sup> t Characteristic   | 1SAM200507F0001<br>1SAM200507F0002<br>1SAM200507F0003 |
| Cut-off Current Characteristic    | 1SAM200508F0001<br>1SAM200508F0002<br>1SAM200508F0003 |
| Dimension Diagram                 | 1SAM200420F0001                                       |

## Dimensions

|                            |         |
|----------------------------|---------|
| Product Net Width          | 45 mm   |
| Product Net Height         | 97.8 mm |
| Product Net Depth / Length | 85.4 mm |
| Product Net Weight         | 0.31 kg |

## Technical

|                                                                     |                                                                                                 |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Rated Service Short-Circuit Breaking Capacity (I <sub>cs</sub> )    | (230 V AC) 10 kA<br>(400 V AC) 10 kA<br>(440 V AC) 3 kA<br>(500 V AC) 3 kA<br>(690 V AC) 2 kA   |
| Rated Ultimate Short-Circuit Breaking Capacity (I <sub>cu</sub> )   | (230 V AC) 16 kA<br>(400 V AC) 16 kA<br>(440 V AC) 15 kA<br>(500 V AC) 10 kA<br>(690 V AC) 3 kA |
| Rated Instantaneous Short-Circuit Current Setting (I <sub>i</sub> ) | 300 A                                                                                           |
| Setting Range                                                       | 16 ... 20 A                                                                                     |
| Rated Operational Power AC-3 (P <sub>e</sub> )                      | (400 V) Three Phase 7.5 kW                                                                      |
| Rated Operational Power AC-3e (P <sub>e</sub> )                     | (400 V) Three Phase 7.5 kW                                                                      |
| Rated Operational Voltage                                           | Main Circuit 690 V AC                                                                           |
| Rated Operational Current (I <sub>e</sub> )                         | 20 A                                                                                            |
| Rated Operational Current AC-3 (I <sub>e</sub> )                    | 20 A                                                                                            |
| Rated Operational Current AC-3e (I <sub>e</sub> )                   | 20 A                                                                                            |
| Rated Frequency (f)                                                 | Main Circuit 50 Hz<br>Main Circuit 60 Hz                                                        |
| Rated Impulse Withstand Voltage (U <sub>imp</sub> )                 | Main Circuit 6 kV                                                                               |
| Rated Insulation Voltage (U <sub>i</sub> )                          | 690 V                                                                                           |
| Power Loss                                                          | at Rated Operating Conditions per Pole 1.5 W                                                    |
| Number of Poles                                                     | 3                                                                                               |
| Conventional Free-air Thermal Current (I <sub>th</sub> )            | Main Circuit 20 A                                                                               |
| Degree of Protection                                                | Housing IP20<br>Main Circuit Terminals IP10                                                     |
| Pollution Degree                                                    | 3                                                                                               |

|                                     |                                                                                                                                                                                                                                                                                                |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Electrical Durability               | 50000 cycle                                                                                                                                                                                                                                                                                    |
| Mechanical Durability               | 100000 cycle                                                                                                                                                                                                                                                                                   |
| Terminal Type                       | Screw Terminals                                                                                                                                                                                                                                                                                |
| Connecting Capacity<br>Main Circuit | Flexible with Ferrule 1/2x 0.75 ... 6 mm <sup>2</sup><br>Flexible with Insulated Ferrule 1/2x 0.75 ... 6 mm <sup>2</sup><br>Flexible 1/2x 1 ... 2.5 mm <sup>2</sup><br>Flexible 1/2x 2.5 ... 6 mm <sup>2</sup><br>Rigid 1/2x 1 ... 2.5 mm <sup>2</sup><br>Rigid 1/2x 2.5 ... 6 mm <sup>2</sup> |
| Tightening Torque                   | Main Circuit 2 N·m                                                                                                                                                                                                                                                                             |
| Wire Stripping Length               | Main Circuit 10 mm                                                                                                                                                                                                                                                                             |
| Recommended Screw<br>Driver         | Pozidriv 2                                                                                                                                                                                                                                                                                     |
| Mounting Position                   | Position 1 to 6                                                                                                                                                                                                                                                                                |
| Mounting on DIN Rail                | TH35-15 (35 x 15 mm Mounting Rail) acc. to IEC 60715<br>TH35-7.5 (35 x 7.5 mm Mounting Rail) acc. to IEC 60715                                                                                                                                                                                 |
| Minimum Mounting<br>Distance        | Electrical Conductive Board, Horizontal - Up to 400 V 0 mm<br>Electrical Conductive Board, Horizontal - Up to 690 V 1.5 mm<br>Electrical Conductive Board, Vertical 75 mm<br>Other Device Same Type, Horizontal 0 mm<br>Other Device Same Type, Vertical 150 mm                                |
| Actuator Type                       | Rotary Handle                                                                                                                                                                                                                                                                                  |
| Contact Position<br>Indication      | ON / OFF                                                                                                                                                                                                                                                                                       |
| Standards                           | IEC/EN 60947-1<br>IEC/EN 60947-2<br>IEC/EN 60947-4-1<br>UL 60947-1<br>UL 60947-4-1                                                                                                                                                                                                             |

## Technical UL/CSA

|                                            |                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Short-Circuit Current<br>Rating (SCCR)     | Any UL Listed Fuses or Circuit-Breakers, Group Installations (480 V AC) 18 kA<br>Any UL Listed Fuses or Circuit-Breakers, Group Installations (600 V AC) 5 kA<br>Any UL Listed Fuses or Circuit-Breakers, Motor Disconnect (480 V AC) 18 kA<br>Any UL Listed Fuses or Circuit-Breakers, Motor Disconnect (600 V AC) 5 kA |
| Maximum Operating<br>Voltage UL/CSA        | Main Circuit 600 V AC                                                                                                                                                                                                                                                                                                    |
| Ampere Rating UL/CSA                       | 20 A                                                                                                                                                                                                                                                                                                                     |
| Horsepower Rating<br>UL/CSA                | (200 V AC) Three Phase 5 Hp<br>(208 V AC) Three Phase 5 Hp<br>(220 ... 240 V AC) Three Phase 5 Hp<br>(440 ... 480 V AC) Three Phase 10 Hp<br>(550 ... 600 V AC) Three Phase 15 Hp                                                                                                                                        |
| Full Load Amps Motor<br>Use                | (200 V AC) Three Phase 17.5 A<br>(208 V AC) Three Phase 16.7 A<br>(220 ... 240 V AC) Three Phase 15.2 A<br>(440 ... 480 V AC) Three Phase 10 A<br>(550 ... 600 V AC) Three Phase 15 A                                                                                                                                    |
| Locked Rotor Amps                          | (200 V AC) Three Phase 105.8 A<br>(208 V AC) Three Phase 102 A<br>(220 ... 240 V AC) Three Phase 92 A<br>(440 ... 480 V AC) Three Phase 81 A<br>(550 ... 600 V AC) Three Phase 93 A                                                                                                                                      |
| General Use Rating<br>UL/CSA               | (600 V AC) 20 A                                                                                                                                                                                                                                                                                                          |
| Connecting Capacity<br>Main Circuit UL/CSA | Flexible 1/2x 16-8 AWG<br>Stranded 1/2x 16-8 AWG                                                                                                                                                                                                                                                                         |
| Tightening Torque<br>UL/CSA                | Main Circuit 18 in-lb                                                                                                                                                                                                                                                                                                    |

## Environmental

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

## Certificates and Declarations (Document Number)

|                                   |                                                       |
|-----------------------------------|-------------------------------------------------------|
| ABS Certificate                   | 1SAA963000-0104                                       |
| BV Certificate                    | 1SAA963000-0204                                       |
| CB Certificate                    | 1SAA963000-2003                                       |
| CQC Certificate                   | CQC2011010307506570<br>CQC2014010307744794            |
| cUL Certificate                   | cUL_E137861                                           |
| Cut-off Current Characteristic    | 1SAM200508F0001<br>1SAM200508F0002<br>1SAM200508F0003 |
| Declaration of Conformity - CCC   | 2020980307003705<br>2020980307003043                  |
| Declaration of Conformity - CE    | 1SAD938522-0060                                       |
| Declaration of Conformity - UKCA  | 1SAD938500-1060                                       |
| DNV Certificate                   | 1SAA963000-0304                                       |
| DNV GL Certificate                | 1SAA963000-0304                                       |
| EAC Certificate                   | 1SAA963000-2701                                       |
| Environmental Information         | 1SAC200050H0009                                       |
| GL Certificate                    | 1SAA963000-0402                                       |
| GOST Certificate                  | 1SAA963001-2702                                       |
| I <sup>2</sup> t Characteristic   | 1SAM200507F0001<br>1SAM200507F0002<br>1SAM200507F0003 |
| Instructions and Manuals          | 2CDC131011M6802                                       |
| Instructions and Manuals (Part 2) | 2CDC131060M0202                                       |
| KC Certificate                    | 1SAA963000-1501                                       |
| LR Certificate                    | 1SAA963000-0505                                       |
| RMRS Certificate                  | 1SAA918000-0704                                       |
| RoHS Information                  | 1SAD938517-0060                                       |
| Time-Current Characteristic Curve | 1SAM200505F0013                                       |
| UL Certificate                    | UL_E137861                                            |

## Container Information

|                         |             |
|-------------------------|-------------|
| Package Level 1 Units   | box 1 piece |
| Package Level 1 Width   | 92 mm       |
| Package Level 1 Depth / | 102 mm      |

## Length

|                                |                 |
|--------------------------------|-----------------|
| Package Level 1 Height         | 50 mm           |
| Package Level 1 Gross Weight   | 0.325 kg        |
| Package Level 1 EAN            | 4013614405655   |
| Package Level 2 Units          | carton 40 piece |
| Package Level 2 Width          | 280 mm          |
| Package Level 2 Depth / Length | 395 mm          |
| Package Level 2 Height         | 210 mm          |
| Package Level 2 Gross Weight   | 13.386 kg       |
| Package Level 2 EAN            | 4013614408731   |

## Classifications

|                                    |                                                         |
|------------------------------------|---------------------------------------------------------|
| Object Classification Code         | F                                                       |
| ETIM 4                             | EC000074 - Motor protective circuit-breaker             |
| ETIM 5                             | EC000074 - Motor protective circuit-breaker             |
| ETIM 6                             | EC000074 - Motor protection circuit-breaker             |
| ETIM 7                             | EC000074 - Motor protection circuit-breaker             |
| eClass                             | V11.0 : 27370401                                        |
| UNSPSC                             | 39121521                                                |
| IDEA Granular Category Code (IGCC) | 4845 >> 3 Pole Motor Circuit Protector Circuit Breakers |
| E-Number (Finland)                 | 3705873                                                 |
| E-Number (Sweden)                  | 3111951                                                 |

## Accessories

| Identifier      | Description                 | Type     | Quantity | Unit Of Measure |
|-----------------|-----------------------------|----------|----------|-----------------|
| 1SAM201901R1001 | HKF1-11 Auxiliary Contact   | HKF1-11  | 1        | piece           |
| 1SAM201901R1201 | HKF1-11K Auxiliary Contact  | HKF1-11K | 1        | piece           |
| 1SAM201901R1002 | HKF1-20 Auxiliary Contact   | HKF1-20  | 1        | piece           |
| 1SAM201901R1202 | HKF1-20K Auxiliary Contact  | HKF1-20K | 1        | piece           |
| 1SAM201901R1004 | HKF1-01 Auxiliary Contact   | HKF1-01  | 1        | piece           |
| 1SAM201901R1003 | HKF1-10 Auxiliary Contact   | HKF1-10  | 1        | piece           |
| 1SAM201902R1002 | HK1-20 Auxiliary Contact    | HK1-20   | 1        | piece           |
| 1SAM201902R1202 | HK1-20K Auxiliary Contact   | HK1-20K  | 1        | piece           |
| 1SAM201902R1001 | HK1-11 Auxiliary Contact    | HK1-11   | 1        | piece           |
| 1SAM201902R1201 | HK1-11K Auxiliary Contact   | HK1-11K  | 1        | piece           |
| 1SAM201902R1003 | HK1-02 Auxiliary Contact    | HK1-02   | 1        | piece           |
| 1SAM201902R1203 | HK1-02K Auxiliary Contact   | HK1-02K  | 1        | piece           |
| 1SAM201902R1004 | HK1-20L Auxiliary Contact   | HK1-20L  | 1        | piece           |
| 1SAM201902R1204 | HK1-20LK Auxiliary Contact  | HK1-20LK | 1        | piece           |
| 1SAM201903R1002 | SK1-20 Signal Contact       | SK1-20   | 1        | piece           |
| 1SAM201903R1202 | SK1-20K Signal Contact      | SK1-20K  | 1        | piece           |
| 1SAM201903R1001 | SK1-11 Signal Contact       | SK1-11   | 1        | piece           |
| 1SAM201903R1201 | SK1-11K Signal Contact      | SK1-11K  | 1        | piece           |
| 1SAM201903R1003 | SK1-02 Signal Contact       | SK1-02   | 1        | piece           |
| 1SAM201903R1203 | SK1-02K Signal Contact      | SK1-02K  | 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           |
| 1SAM201904R1010 | UA1-20 Undervoltage Release | UA1-20   | 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 |
| 1SAM201904R1008 | UA1-208 Undervoltage Release              | UA1-208     | 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 |
| 1SAM201904R1009 | UA1-575 Undervoltage Release              | UA1-575     | 1 | piece |
| 1SAM201906R1102 | PS1-2-0-65 Busbar                         | PS1-2-0-65  | 1 | piece |
| 1SAM201906R1112 | PS1-2-1-65 Busbar                         | PS1-2-1-65  | 1 | piece |
| 1SAM201906R1122 | PS1-2-2-65 Busbar                         | PS1-2-2-65  | 1 | piece |
| 1SAM201916R1103 | PS1-3-0-100 Busbar                        | PS1-3-0-100 | 1 | piece |
| 1SAM201906R1103 | PS1-3-0-65 Busbar                         | PS1-3-0-65  | 1 | piece |
| 1SAM201916R1113 | PS1-3-1-100 Busbar                        | PS1-3-1-100 | 1 | piece |
| 1SAM201906R1113 | PS1-3-1-65 Busbar                         | PS1-3-1-65  | 1 | piece |
| 1SAM201916R1123 | PS1-3-2-100 Busbar                        | PS1-3-2-100 | 1 | piece |
| 1SAM201906R1123 | PS1-3-2-65 Busbar                         | PS1-3-2-65  | 1 | piece |
| 1SAM201916R1104 | PS1-4-0-100 Busbar                        | PS1-4-0-100 | 1 | piece |
| 1SAM201906R1104 | PS1-4-0-65 Busbar                         | PS1-4-0-65  | 1 | piece |
| 1SAM201916R1114 | PS1-4-1-100 Busbar                        | PS1-4-1-100 | 1 | piece |
| 1SAM201906R1114 | PS1-4-1-65 Busbar                         | PS1-4-1-65  | 1 | piece |
| 1SAM201906R1124 | PS1-4-2-65 Busbar                         | PS1-4-2-65  | 1 | piece |
| 1SAM201916R1105 | PS1-5-0-100 Busbar                        | PS1-5-0-100 | 1 | piece |
| 1SAM201906R1105 | PS1-5-0-65 Busbar                         | PS1-5-0-65  | 1 | piece |
| 1SAM201916R1115 | PS1-5-1-100 Busbar                        | PS1-5-1-100 | 1 | piece |
| 1SAM201906R1115 | PS1-5-1-65 Busbar                         | PS1-5-1-65  | 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 |
| 1SAM201913R1103 | S1-M3-35 Power Infeed Block               | S1-M3-35    | 1 | piece |
| 1SAM201914R1002 | S1-PB1-25 Power Infeed Block              | S1-PB1-25   | 1 | piece |
| 1SAM201914R1001 | PB1-1-32 Connecting Link                  | PB1-1-32    | 1 | piece |
| 1SAM201908R1001 | BS1-3 Protection Cover                    | BS1-3       | 1 | piece |
| 1SAM201909R1001 | FS116 Screw Fixing Kit                    | FS116       | 1 | piece |
| GJF1101903R0001 | SA1 - Terminals and Installation Material | SA1         | 1 | piece |
| GJF1101903R0002 | SA2 - Terminals and Installation Material | SA2         | 1 | piece |
| GJF1101903R0003 | SA3 - Terminals and Installation Material | SA3         | 1 | piece |
| 1SAM201911R1012 | IB132-F Enclosure                         | IB132-F     | 1 | piece |
| 1SAM201911R1010 | IB132-G Enclosure                         | IB132-G     | 1 | piece |
| 1SAM201911R1011 | IB132-Y Enclosure                         | IB132-Y     | 1 | piece |
| 1SAM201912R1010 | DMS132-G Door Mounting Kit                | DMS132-G    | 1 | piece |
| 1SAM201912R1011 | DMS132-Y Door Mounting Kit                | DMS132-Y    | 1 | piece |
| 1SAM201909R1021 | MSAH1 Shaft Supporter                     | MSAH1       | 1 | piece |
| 1SAM201920R1001 | MSHD-LB Handles                           | MSHD-LB     | 1 | piece |
| 1SAM201920R1002 | MSHD-LY Handles                           | MSHD-LY     | 1 | piece |
| 1SAM201920R1000 | MSH-AR Shaft Alignment Ring               | MSH-AR      | 1 | piece |
| 1SAM101923R0002 | MSMN Driver                               | MSMN        | 1 | piece |
| 1SAM101923R0012 | MSMNO Driver                              | MSMNO       | 1 | piece |
| 1SCA101647R1001 | OXS6X85 SHAFT                             | OXS6X85     | 1 | piece |
| 1SCA108043R1001 | OXS6X105 SHAFT                            | OXS6X105    | 1 | piece |
| 1SCA101655R1001 | OXS6X130 SHAFT                            | OXS6X130    | 1 | piece |
| 1SCA101659R1001 | OXS6X180 SHAFT                            | OXS6X180    | 1 | piece |

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## Categories

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

Low Voltage Products and Systems → Control Products → Manual Motor Starters → Manual Motor Starters

