

## PRODUCT-DETAILS

# MS116-2.5

## MS116-2.5 Manual Motor Starter 1.6 ... 2.5 A

### General Information

|                       |                                              |
|-----------------------|----------------------------------------------|
| Extended Product Type | MS116-2.5                                    |
| Product ID            | 1SAM250000R1007                              |
| EAN                   | 4013614320309                                |
| Catalog Description   | MS116-2.5 Manual Motor Starter 1.6 ... 2.5 A |

#### Long Description

The MS116-2.5 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  $I_e = 2.5$  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  $I_{cs} = 50$  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.

### Ordering

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

### Popular Downloads

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

|                                      |                                                       |
|--------------------------------------|-------------------------------------------------------|
| Instructions and Manuals<br>(Part 2) | 2CDC131060M0202                                       |
| Time-Current<br>Characteristic Curve | 1SAM200505F0107                                       |
| I <sup>2</sup> t Characteristic      | 1SAM200507F0001<br>1SAM200507F0002<br>1SAM200507F0003 |
| Cut-off Current<br>Characteristic    | 1SAM200508F0001<br>1SAM200508F0002<br>1SAM200508F0003 |
| CAD Dimensional<br>Drawing           | 2CDC001079B0201                                       |
| Dimension Diagram                    | 1SAM200422F0001                                       |

## Dimensions

|                               |          |
|-------------------------------|----------|
| Product Net Width             | 45 mm    |
| Product Net Height            | 90 mm    |
| Product Net Depth /<br>Length | 85.6 mm  |
| Product Net Weight            | 0.265 kg |

## Technical

|                                                                           |                                                                                                  |
|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Rated Service Short-<br>Circuit Breaking Capacity<br>(I <sub>cs</sub> )   | (230 V AC) 50 kA<br>(400 V AC) 50 kA<br>(440 V AC) 10 kA<br>(500 V AC) 10 kA<br>(690 V AC) 5 kA  |
| Rated Ultimate Short-<br>Circuit Breaking Capacity<br>(I <sub>cu</sub> )  | (230 V AC) 75 kA<br>(400 V AC) 75 kA<br>(440 V AC) 30 kA<br>(500 V AC) 20 kA<br>(690 V AC) 10 kA |
| Rated Instantaneous<br>Short-Circuit Current<br>Setting (I <sub>i</sub> ) | 31.3 A                                                                                           |
| Setting Range                                                             | 1.6 ... 2.5 A                                                                                    |
| Rated Operational Power<br>AC-3 (P <sub>e</sub> )                         | (400 V) Three Phase 0.75 kW                                                                      |
| Rated Operational Power<br>AC-3e (P <sub>e</sub> )                        | (400 V) Three Phase 0.75 kW                                                                      |
| Rated Operational Voltage                                                 | Main Circuit 690 V AC                                                                            |
| Rated Operational Current<br>(I <sub>e</sub> )                            | 2.5 A                                                                                            |
| Rated Operational Current<br>AC-3 (I <sub>e</sub> )                       | 2.5 A                                                                                            |
| Rated Operational Current<br>AC-3e (I <sub>e</sub> )                      | 2.5 A                                                                                            |
| Rated Frequency (f)                                                       | Main Circuit 50 Hz<br>Main Circuit 60 Hz                                                         |
| Rated Impulse Withstand<br>Voltage (U <sub>imp</sub> )                    | Main Circuit 6 kV                                                                                |
| Rated Insulation Voltage<br>(U <sub>i</sub> )                             | 690 V                                                                                            |
| Power Loss                                                                | at Rated Operating Conditions per Pole 0.7 ... 1.8 W                                             |
| Number of Poles                                                           | 3                                                                                                |
| Conventional Free-air<br>Thermal Current (I <sub>th</sub> )               | Main Circuit 2.5 A                                                                               |
| Degree of Protection                                                      | Housing IP20<br>Main Circuit Terminals IP10                                                      |
| Pollution Degree                                                          | 3                                                                                                |
| Electrical Durability                                                     | 100000 cycle                                                                                     |
| Mechanical Durability                                                     | 100000 cycle                                                                                     |
| Terminal Type                                                             | Screw Terminals                                                                                  |

|                                  |                                                                                                                                                                                                                                                                 |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connecting Capacity Main Circuit | Flexible with Ferrule 1/2x 0.75 ... 2.5 mm <sup>2</sup><br>Flexible with Insulated Ferrule 1/2x 0.75 ... 2.5 mm <sup>2</sup><br>Flexible 1/2x 0.75 ... 2.5 mm <sup>2</sup><br>Rigid 1/2x 1 ... 4 mm <sup>2</sup>                                                |
| Tightening Torque                | Main Circuit 0.8 ... 1.2 N·m                                                                                                                                                                                                                                    |
| Wire Stripping Length            | Main Circuit 9 mm                                                                                                                                                                                                                                               |
| Recommended Screw Driver         | Pozidriv 2                                                                                                                                                                                                                                                      |
| Mounting Position                | any; 1 ... 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 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 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 Rating (SCCR)     | Any UL Listed Fuses or Circuit-Breakers, Group Installations (480 V AC) 30 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) 30 kA<br>Any UL Listed Fuses or Circuit-Breakers, Motor Disconnect (600 V AC) 5 kA |
| Maximum Operating Voltage UL/CSA        | Main Circuit 600 V AC                                                                                                                                                                                                                                                                                                    |
| Horsepower Rating UL/CSA                | (200 V AC) Three Phase 0.5 Hp<br>(208 V AC) Three Phase 0.5 Hp<br>(220 ... 240 V AC) Three Phase 0.5 Hp<br>(440 ... 480 V AC) Three Phase 1 Hp<br>(550 ... 600 V AC) Three Phase 1.5 Hp                                                                                                                                  |
| Full Load Amps Motor Use                | (200 V AC) Three Phase 2.5 A<br>(208 V AC) Three Phase 2.5 A<br>(220 ... 240 V AC) Three Phase 2.5 A<br>(440 ... 480 V AC) Three Phase 2.5 A<br>(550 ... 600 V AC) Three Phase 2.5 A                                                                                                                                     |
| Locked Rotor Amps                       | (200 V AC) Three Phase 15 A<br>(208 V AC) Three Phase 15 A<br>(220 ... 240 V AC) Three Phase 15 A<br>(440 ... 480 V AC) Three Phase 15 A<br>(550 ... 600 V AC) Three Phase 15 A                                                                                                                                          |
| General Use Rating UL/CSA               | (600 V AC) 2.5 A                                                                                                                                                                                                                                                                                                         |
| Connecting Capacity Main Circuit UL/CSA | Flexible 1/2x 16-12 AWG<br>Stranded 1/2x 16-12 AWG                                                                                                                                                                                                                                                                       |
| Tightening Torque UL/CSA                | Main Circuit 10 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 | 5g / 3 ... 150 Hz                                                                                                               |
| RoHS Status                                    | Following EU Directive 2011/65/EU and Amendment 2015/863 July 22, 2019                                                          |

## Certificates and Declarations (Document Number)

|                                      |                                                       |
|--------------------------------------|-------------------------------------------------------|
| ABS Certificate                      | 1SAA963000-0104                                       |
| BV Certificate                       | 1SAA963000-0204                                       |
| CB Certificate                       | 1SAA963005-2003<br>1SAA963006-2001                    |
| CQC Certificate                      | CQC2011010307506570<br>CQC2014010307744794            |
| Cut-off Current<br>Characteristic    | 1SAM200508F0001<br>1SAM200508F0002<br>1SAM200508F0003 |
| Declaration of Conformity<br>- CCC   | 2020980307003705<br>2020980307003043                  |
| Declaration of Conformity<br>- CE    | 1SAD101100-3401                                       |
| Declaration of Conformity<br>- UKCA  | 1SAD201100-3401                                       |
| DNV Certificate                      | 1SAA963000-0304                                       |
| DNV GL Certificate                   | 1SAA963000-0304                                       |
| EAC Certificate                      | 1SAA963000-2701                                       |
| Environmental Information            | 1SAC200050H0009                                       |
| GL Certificate                       | 1SAA963000-0402                                       |
| I <sup>pt</sup> Characteristic       | 1SAM200507F0001<br>1SAM200507F0002<br>1SAM200507F0003 |
| Instructions and Manuals             | 2CDC131011M6802                                       |
| Instructions and Manuals<br>(Part 2) | 2CDC131060M0202                                       |
| KC Certificate                       | 1SAA963000-1501                                       |
| LR Certificate                       | 1SAA963000-0505                                       |
| REACH Declaration                    | 1SAA960005-4502                                       |
| RMRS Certificate                     | 1SAA918000-0704                                       |
| RoHS Information                     | 1SAA963006-4502                                       |
| Time-Current<br>Characteristic Curve | 1SAM200505F0107                                       |
| UL Certificate                       | E137861-20001218                                      |

## Container Information

|                                   |                 |
|-----------------------------------|-----------------|
| Package Level 1 Units             | box 1 piece     |
| Package Level 1 Width             | 92 mm           |
| Package Level 1 Depth /<br>Length | 95 mm           |
| Package Level 1 Height            | 50 mm           |
| Package Level 1 Gross<br>Weight   | 0.28 kg         |
| Package Level 1 EAN               | 4013614320309   |
| Package Level 2 Units             | carton 40 piece |
| Package Level 2 Width             | 280 mm          |
| Package Level 2 Depth /<br>Length | 395 mm          |
| Package Level 2 Height            | 210 mm          |
| Package Level 2 Gross<br>Weight   | 11.586 kg       |
| Package Level 2 EAN               | 4013614408670   |

## 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 |
| ETIM 8                             | EC000074 - Motor protection circuit-breaker |
| eClass                             | V11.0 : 27370401                            |
| UNSPSC                             | 39121521                                    |
| IDEA Granular Category Code (IGCC) | 4731 >> Manual Starters                     |
| E-Number (Finland)                 | 3706007                                     |
| E-Number (Sweden)                  | 3111942                                     |

## 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 Signaling Contact     | SK1-20      | 1        | piece           |
| 1SAM201903R1202 | SK1-20K Signaling Contact    | SK1-20K     | 1        | piece           |
| 1SAM201903R1005 | SK1-20AR Signaling Contact   | SK1-20AR    | 1        | piece           |
| 1SAM201903R1205 | SK1-20ARK Signaling Contact  | SK1-20ARK   | 1        | piece           |
| 1SAM201903R1001 | SK1-11 Signaling Contact     | SK1-11      | 1        | piece           |
| 1SAM201903R1201 | SK1-11K Signaling Contact    | SK1-11K     | 1        | piece           |
| 1SAM201903R1004 | SK1-11AR Signaling Contact   | SK1-11AR    | 1        | piece           |
| 1SAM201903R1204 | SK1-11ARK Signaling Contact  | SK1-11ARK   | 1        | piece           |
| 1SAM201903R1003 | SK1-02 Signaling Contact     | SK1-02      | 1        | piece           |
| 1SAM201903R1203 | SK1-02K Signaling Contact    | SK1-02K     | 1        | piece           |
| 1SAM201903R1006 | SK1-02AR Signaling Contact   | SK1-02AR    | 1        | piece           |
| 1SAM201903R1206 | SK1-02ARK Signaling Contact  | SK1-02ARK   | 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 |
| 1SCA101655R1001 | OXS6X130 SHAFT                          | OXS6X130    | 1 | piece |
| 1SAM101923R0012 | MSMNO Driver                            | MSMNO       | 1 | piece |
| 1SCA101659R1001 | OXS6X180 SHAFT                          | OXS6X180    | 1 | piece |
| 1SCA101647R1001 | OXS6X85 SHAFT                           | OXS6X85     | 1 | piece |
| 1SCA108043R1001 | OXS6X105 SHAFT                          | OXS6X105    | 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