



PRODUCT-DETAILS

# MS165-16

## MS165-16 Manual Motor Starter 10 ... 16 A



General Information

|                       |                                           |
|-----------------------|-------------------------------------------|
| Extended Product Type | MS165-16                                  |
| Product ID            | 1SAM451000R1011                           |
| EAN                   | 4013614486050                             |
| Catalog Description   | MS165-16 Manual Motor Starter 10 ... 16 A |

Long Description

MS165 is a compact and powerful range for motor protection up to 45 kW (400 V) / 80 A in width of 55 mm. They offer a reliable protection for motors in the event of overload or phase failure. The devices have trip class 10.

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 build-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starter (also known as motor protection circuit breaker or manual motor protector) 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.

Ordering

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

## Popular Downloads

|                                   |                 |
|-----------------------------------|-----------------|
| Data Sheet, Technical Information | 2CDC131083D0201 |
| Instructions and Manuals          | 2CDC131081M6801 |
| Instructions and Manuals (Part 2) | 2CDC131060M0202 |
| Ex Operating Instructions         | 2CDC131087M6801 |
| Time-Current Characteristic Curve | 1SAM400505F0001 |
| I <sup>2</sup> t Characteristic   | 1SAM400506F0001 |
| Cut-off Current Characteristic    | 1SAM400507F0001 |
| CAD Dimensional Drawing           | 2CDC001079B0201 |
| Dimension Diagram                 | 1SAM400401F0001 |

## Dimensions

|                            |           |
|----------------------------|-----------|
| Product Net Width          | 55 mm     |
| Product Net Height         | 142.65 mm |
| Product Net Depth / Length | 122.1 mm  |
| Product Net Weight         | 0.95 kg   |

## Technical

|                                                                     |                                                                                                                                           |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Rated Service Short-Circuit Breaking Capacity (I <sub>cs</sub> )    | (230 V AC) 100 kA<br>(250 V DC) 3 Poles in Series 100 kA<br>(400 V AC) 100 kA<br>(440 V AC) 75 kA<br>(500 V AC) 40 kA<br>(690 V AC) 10 kA |
| Rated Ultimate Short-Circuit Breaking Capacity (I <sub>cu</sub> )   | (230 V AC) 100 kA<br>(250 V DC) 100 kA<br>(400 V AC) 100 kA<br>(440 V AC) 75 kA<br>(500 V AC) 40 kA<br>(690 V AC) 10 kA                   |
| Rated Instantaneous Short-Circuit Current Setting (I <sub>i</sub> ) | 240 A                                                                                                                                     |
| Setting Range                                                       | 10 ... 16 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<br>Main Circuit 250 V DC                                                                                            |
| Rated Operational Current (I <sub>e</sub> )                         | 16 A                                                                                                                                      |
| Rated Operational Current AC-3 (I <sub>e</sub> )                    | 16 A                                                                                                                                      |
| Rated Operational Current AC-3e (I <sub>e</sub> )                   | 16 A                                                                                                                                      |
| Rated Operational Current DC-5 (I <sub>e</sub> )                    | 16 A                                                                                                                                      |
| Rated Frequency (f)                                                 | Main Circuit 50 Hz<br>Main Circuit 60 Hz                                                                                                  |
| Operating Frequency (f <sub>sw</sub> )                              | 0 ... 415 Hz                                                                                                                              |
| Rated Impulse Withstand Voltage (U <sub>imp</sub> )                 | Main Circuit 8 kV                                                                                                                         |
| Rated Insulation Voltage (U <sub>i</sub> )                          | 1000 V                                                                                                                                    |

|                                                    |                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Loss                                         | at Rated Operating Conditions per Pole 1.49 ... 3.81 W                                                                                                                                                                                                                                                                           |
| Number of Poles                                    | 3P                                                                                                                                                                                                                                                                                                                               |
| Conventional Free-air Thermal Current ( $I_{th}$ ) | Main Circuit 16 A                                                                                                                                                                                                                                                                                                                |
| Degree of Protection                               | Housing IP20<br>Main Circuit Terminals IP10                                                                                                                                                                                                                                                                                      |
| Pollution Degree                                   | 3                                                                                                                                                                                                                                                                                                                                |
| Electrical Durability                              | 25000 cycle                                                                                                                                                                                                                                                                                                                      |
| Mechanical Durability                              | Nr. Operations 50000 cycle                                                                                                                                                                                                                                                                                                       |
| Terminal Type                                      | Screw Terminals                                                                                                                                                                                                                                                                                                                  |
| Connecting Capacity Main Circuit                   | Flexible with Ferrule 1/2x 1 ... 35 mm <sup>2</sup><br>Flexible with Insulated Ferrule 1/2x 1 ... 35 mm <sup>2</sup><br>Flexible 1/2x 1 ... 35 mm <sup>2</sup><br>Rigid 1/2x 1 ... 4 mm <sup>2</sup><br>Solid 1/2x 1 ... 4 mm <sup>2</sup><br>Stranded 1/2x 1 ... 50 mm <sup>2</sup>                                             |
| Tightening Torque                                  | Main Circuit 4 N·m                                                                                                                                                                                                                                                                                                               |
| Wire Stripping Length                              | Main Circuit 16 mm                                                                                                                                                                                                                                                                                                               |
| Recommended Screw Driver                           | Pozidriv 2                                                                                                                                                                                                                                                                                                                       |
| Mounting Position                                  | 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 1000 V 1.5 mm<br>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 / TRIP                                                                                                                                                                                                                                                                                                                  |
| Standards                                          | CSA 22.2 No. 14<br>IEC/EN 60947-1<br>IEC/EN 60947-2<br>IEC/EN 60947-4-1<br>UL 60947-4-1                                                                                                                                                                                                                                          |

## Technical UL/CSA

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Short-Circuit Current Rating (SCCR) | Manual Self-Protected Combination Controllers (Type E), (480Y / 277 V AC) 65 kA<br>Manual Self-Protected Combination Controllers (Type E), (600Y / 347 V AC) 30 kA<br>Any UL Listed Fuses or Circuit-Breakers, Group Installations (480 V AC) 65 kA<br>Any UL Listed Fuses or Circuit-Breakers, Group Installations (600 V AC) 30 kA<br>Any UL Listed Fuses or Circuit-Breakers, Motor Disconnect (480 V AC) 65 kA<br>Any UL Listed Fuses or Circuit-Breakers, Motor Disconnect (600 V AC) 30 kA<br>Any UL Listed Fuses or Circuit-Breakers, Tap Conductor Protection in Group Installations (480Y / 277 V AC) 65 kA<br>Any UL Listed Fuses or Circuit-Breakers, Tap Conductor Protection in Group Installations (600Y / 347 V AC) 30 kA |
| Maximum Operating Voltage UL/CSA    | Main Circuit 600 V AC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Horsepower Rating UL/CSA            | (200 V AC) Three Phase 3 Hp<br>(208 V AC) Three Phase 3 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 10 Hp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Full Load Amps Motor Use            | (200 V AC) Three Phase 11 A<br>(208 V AC) Three Phase 10.6 A<br>(220 ... 240 V AC) Three Phase 15.2 A<br>(440 ... 480 V AC) Three Phase 14 A<br>(550 ... 600 V AC) Three Phase 11 A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Locked Rotor Amps                   | (200 V AC) Three Phase 73.6 A<br>(208 V AC) Three Phase 71 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 64.8 A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                                            |                                                  |
|--------------------------------------------|--------------------------------------------------|
| General Use Rating<br>UL/CSA               | (600 V AC) 16 A                                  |
| Connecting Capacity Main<br>Circuit UL/CSA | Flexible 1/2x 16-0 AWG<br>Stranded 1/2x 16-0 AWG |
| Tightening Torque<br>UL/CSA                | Main Circuit 35 in-lb                            |

## Environmental

|                                               |                                                                                            |
|-----------------------------------------------|--------------------------------------------------------------------------------------------|
| Ambient Air Temperature                       | Operation -25 ... +60 °C<br>Operation Compensated -25 ... +60 °C<br>Storage -50 ... +80 °C |
| Ambient Air Temperature<br>Compensation       | Yes                                                                                        |
| Maximum Operating<br>Altitude Permissible     | 2000 m                                                                                     |
| Resistance to Shock acc.<br>to IEC 60068-2-27 | 11 ms Pulse 25g                                                                            |
| Resistance to Vibrations                      | Mounted on Mounting Plate: 5g 3 ... 150 Hz<br>Mounted on DIN-Rail: 4g 3 ... 150 Hz         |

## Material Compliance

|                                                   |                                                                        |
|---------------------------------------------------|------------------------------------------------------------------------|
| Conflict Minerals<br>Reporting Template<br>(CMRT) | 9AKK108467A5658                                                        |
| REACH Declaration                                 | 1SAA963005-4502                                                        |
| RoHS Information                                  | 1SAA963006-4502                                                        |
| RoHS Status                                       | Following EU Directive 2011/65/EU and Amendment 2015/863 July 22, 2019 |
| Toxic Substances Control<br>Act - TSCA            | 2CMT2023-006539                                                        |
| WEEE B2C / B2B                                    | Business To Business                                                   |
| WEEE Category                                     | 5. Small Equipment (No External Dimension More Than 50 cm)             |

## ABB EcoSolutions

|                                            |                 |
|--------------------------------------------|-----------------|
| End Of Life Disassembling<br>Instructions  | 1SAC200284H0001 |
| Environmental Product<br>Declaration - EPD | 1SAC200253H0001 |

## Certificates and Declarations

|                                     |                     |
|-------------------------------------|---------------------|
| ABS Certificate                     | 1SAA963002-0101     |
| ATEX Certificate                    | 1SAA918001-3901     |
| BV Certificate                      | 1SAA963002-0201     |
| CB Certificate                      | 1SAA918002-2002     |
| CCC Certificate                     | 2024010307654703    |
| CQC Certificate                     | CQC2015010307760141 |
| Cut-off Current<br>Characteristic   | 1SAM400507F0001     |
| Declaration of Conformity<br>- CCC  | 2020980307003042    |
| Declaration of Conformity<br>- CE   | 1SAD101100-3408     |
| Declaration of Conformity<br>- UKCA | 1SAD201100-3408     |
| DNV GL Certificate                  | 1SAA963002-0301     |
| EAC Certificate                     | 1SAA963000-2701     |
| I <sup>pt</sup> Characteristic      | 1SAM400506F0001     |
| IECEX Certificate                   | 1SAA918000-4001     |

|                  |                                      |
|------------------|--------------------------------------|
| KC Certificate   | 1SAA963001-1501                      |
| LR Certificate   | 1SAA918001-0501                      |
| RMRS Certificate | 1SAA918000-0704                      |
| UL Certificate   | E137861-20150206<br>E345003-20150206 |

## Container Information

|                                |                 |
|--------------------------------|-----------------|
| Package Level 1 Units          | box 1 piece     |
| Package Level 1 Width          | 64 mm           |
| Package Level 1 Depth / Length | 177 mm          |
| Package Level 1 Height         | 140 mm          |
| Package Level 1 Gross Weight   | 1.1 kg          |
| Package Level 1 EAN            | 4013614486050   |
| Package Level 2 Units          | carton 12 piece |
| Package Level 2 Width          | 330 mm          |
| Package Level 2 Depth / Length | 400 mm          |
| Package Level 2 Height         | 320 mm          |
| Package Level 2 Gross Weight   | 13 kg           |
| Package Level 2 EAN            | 4013614503917   |

## External Classifications and Standards

|                                    |                                             |
|------------------------------------|---------------------------------------------|
| Object Classification Code         | F                                           |
| 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)                 | 3707284                                     |
| E-Number (Norway)                  | 4364120                                     |
| E-Number (Sweden)                  | 3110051                                     |

## Accessories

| Identifier      | Description                                                    | Type     | Quantity | Unit Of Measure |
|-----------------|----------------------------------------------------------------|----------|----------|-----------------|
| 1SAM201901R1001 | HKF1-11 Aux.-contact for front mounting                        | HKF1-11  | 1        | piece           |
| 1SAM201901R1201 | HKF1-11K Aux.-contact for frontmounting with Push-In terminals | HKF1-11K | 1        | piece           |
| 1SAM201901R1002 | HKF1-20 Aux.-contact 2NO, front mounting                       | HKF1-20  | 1        | piece           |
| 1SAM201901R1202 | HKF1-20K Aux.-contact for frontmounting with Push-In terminals | HKF1-20K | 1        | piece           |
| 1SAM201901R1004 | HKF1-01 Aux.-contact for front mounting                        | HKF1-01  | 1        | piece           |
| 1SAM201901R1003 | HKF1-10 Aux.-contact for front mounting                        | HKF1-10  | 1        | piece           |
| 1SAM201902R1002 | HK1-20 Aux.-contact 2 NO                                       | HK1-20   | 1        | piece           |
| 1SAM201902R1202 | HK1-20K Aux.-contact 2 NO with Push-In terminals               | HK1-20K  | 1        | piece           |
| 1SAM201902R1001 | HK1-11 Aux.-contact 1 NO + 1 NC                                | HK1-11   | 1        | piece           |
| 1SAM201902R1201 | HK1-11K Aux.-contact 1 NO + 1 NC with Push-In terminals        | HK1-11K  | 1        | piece           |
| 1SAM201902R1003 | HK1-02 Aux.-contact 2 NC                                       | HK1-02   | 1        | piece           |

|                 |                                                                           |             |   |       |
|-----------------|---------------------------------------------------------------------------|-------------|---|-------|
| 1SAM201902R1203 | HK1-02K Aux.-contact 2 NC with Push-In terminals                          | HK1-02K     | 1 | piece |
| 1SAM201902R1004 | HK1-20L Aux.-cont. w. 2 lead contacts 2 NO                                | HK1-20L     | 1 | piece |
| 1SAM201902R1204 | HK1-20LK Aux.-cont. w. 2 leading contacts 2 NO, with Push-In terminals    | HK1-20LK    | 1 | piece |
| 1SAM201903R1002 | SK1-20 Signaling Contact 2 NO                                             | SK1-20      | 1 | piece |
| 1SAM201903R1202 | SK1-20K Signaling Contact 2 NO with Push-In terminals                     | SK1-20K     | 1 | piece |
| 1SAM201903R1005 | SK1-20AR Signaling Contact, 2NO with screw terminals                      | SK1-20AR    | 1 | piece |
| 1SAM201903R1205 | SK1-20ARK Signaling Contact, 2NO with Push-in Spring terminals            | SK1-20ARK   | 1 | piece |
| 1SAM201903R1001 | SK1-11 Signaling Contact 1 NO + 1 NC                                      | SK1-11      | 1 | piece |
| 1SAM201903R1201 | SK1-11K Signaling Contact 1 NO + 1 NC with Push-In terminals              | SK1-11K     | 1 | piece |
| 1SAM201903R1004 | SK1-11AR Signaling Contact, 1NO+1NC with screw terminals                  | SK1-11AR    | 1 | piece |
| 1SAM201903R1204 | SK1-11ARK Signaling Contact, 1NO+1NC with Push-in Spring terminals        | SK1-11ARK   | 1 | piece |
| 1SAM201903R1003 | SK1-02 Signaling Contact 2 NC                                             | SK1-02      | 1 | piece |
| 1SAM201903R1203 | SK1-02K Signaling Contact 2 NC with Push-In terminals                     | SK1-02K     | 1 | piece |
| 1SAM201903R1006 | SK1-02AR Signaling Contact, 2NC with screw terminals                      | SK1-02AR    | 1 | piece |
| 1SAM201903R1206 | SK1-02ARK Signaling Contact, 2NC with Push-in Spring terminals            | SK1-02ARK   | 1 | piece |
| 1SAM301901R1002 | CK1-20 Short-Circuit Signaling Contact 2 NO                               | CK1-20      | 1 | piece |
| 1SAM301901R1001 | CK1-11 Short-Circuit Signaling Contact 1 NO + 1 NC                        | CK1-11      | 1 | piece |
| 1SAM301901R1003 | CK1-02 Short-Circuit Signaling Contact 2 NC                               | CK1-02      | 1 | piece |
| 1SAM201910R1001 | AA1-24 Shunt Trip 20-24V                                                  | AA1-24      | 1 | piece |
| 1SAM201910R1002 | AA1-110 Shunt Trip 110V                                                   | AA1-110     | 1 | piece |
| 1SAM201910R1003 | AA1-230 Shunt Trip 200-240V                                               | AA1-230     | 1 | piece |
| 1SAM201910R1004 | AA1-400 Shunt Trip 350-415V                                               | AA1-400     | 1 | piece |
| 1SAM201904R1010 | UA1-20 Undervoltage release 20V 50Hz / 24V 60 Hz                          | UA1-20      | 1 | piece |
| 1SAM201904R1001 | UA1-24 Undervoltage release 24 V                                          | UA1-24      | 1 | piece |
| 1SAM201904R1002 | UA1-48 Undervoltage release 48V                                           | UA1-48      | 1 | piece |
| 1SAM201904R1003 | UA1-60 Undervoltage release 60V                                           | UA1-60      | 1 | piece |
| 1SAM201904R1004 | UA1-110 Undervoltage release 110V 110V 50Hz/120V 60Hz                     | UA1-110     | 1 | piece |
| 1SAM201904R1008 | UA1-208 Undervoltage release 208V 60Hz                                    | UA1-208     | 1 | piece |
| 1SAM201904R1005 | UA1-230 Undervoltage release 230 V 50 Hz / 240 V 60 Hz                    | UA1-230     | 1 | piece |
| 1SAM201904R1006 | UA1-400 Undervoltage release 400V                                         | UA1-400     | 1 | piece |
| 1SAM201904R1007 | UA1-415 Undervoltage release 415V 415V 50Hz/480V 60Hz                     | UA1-415     | 1 | piece |
| 1SAM201904R1009 | UA1-575 Undervoltage release 575V 60Hz                                    | UA1-575     | 1 | piece |
| 1SAM401923R1003 | S2-M3-50 3-phase Power infeed Block for MS165, 50 mm <sup>2</sup>         | S2-M3-50    | 1 | piece |
| 1SAM401920R1002 | PS2-2-0-125 3-phase busbar for 2 MS165, I <sub>e</sub> =125A              | PS2-2-0-125 | 1 | piece |
| 1SAM401920R1003 | PS2-3-0-125 3-phase busbar for 3 MS165, I <sub>e</sub> =125A              | PS2-3-0-125 | 1 | piece |
| 1SAM401920R1004 | PS2-4-0-125 3-phase busbar for 4 MS165, I <sub>e</sub> =125A              | PS2-4-0-125 | 1 | piece |
| 1SAM401920R1022 | PS2-2-2-125 3-phase busbar for 2 MS165 with 2 HK/SK, I <sub>e</sub> =125A | PS2-2-2-125 | 1 | piece |
| 1SAM401920R1023 | PS2-3-2-125 3-phase busbar for 3 MS165 with 2 HK/SK, I <sub>e</sub> =125A | PS2-3-2-125 | 1 | piece |
| 1SAM401920R1024 | PS2-4-2-125 3-phase busbar for 4 MS165 with 2 HK/SK, I <sub>e</sub> =125A | PS2-4-2-125 | 1 | piece |
| 1SAM401921R1001 | BS2-3 Protection Cover for busbars                                        | BS2-3       | 1 | piece |
| 1SAM401922R1001 | KA165 Terminal Shroud for MS165/MO165                                     | KA165       | 1 | piece |
| GJF1101903R0002 | Terminals and Installation Material                                       | SA2         | 1 | piece |

|                 |                                                                           |          |   |       |
|-----------------|---------------------------------------------------------------------------|----------|---|-------|
| 1SAM201920R1011 | MSHD-LTB Handle, IP64, black, 3 times lockable, defeatable, 0-TRIP-I      | MSHD-LTB | 1 | piece |
| 1SAM201920R1012 | MSHD-LTY Handle, IP64, red/yellow, 3 times lockable, defeatable, 0-TRIP-I | MSHD-LTY | 1 | piece |
| 1SAM201920R1000 | MSH-AR Shaft alignment ring suitable for MSHD and MSH handles             | MSH-AR   | 1 | piece |
| 1SAM101923R0002 | MSMN Driver w. screw for manual motor staters, 6x6                        | MSMN     | 1 | piece |
| 1SAM101923R0012 | MSMNO Driver w/o coding w. screw for manual motor staters, 6x6            | 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 |

Categories

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

