

Manual motor starters & circuit breakers for transformer protection

Manual motor starters

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With thermal and electromagnetic protection

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With thermal and electromagnetic protection

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MS and MO manual motor starters

A complete motor protection concept



Fuseless protection saves costs, space and ensures a quick reaction under overload and short-circuit condition by switching off the motor within milliseconds. The full range of motor starters offers protection from 0.1 A to up to 100 A. The new family range has a harmonized range of accessories and offers the same features up to 80 A.



Protection and control

Protect equipment and installations

ABB offers a broad range of manual motor starters, for protection and control in almost every situation including hazardous areas, protecting installations from short-circuits, overloads and phase failures while also controlling the current flow through a simple ON/OFF switch.



Continuous operation

Secure uptime

Fuseless motor protection reduces maintenance costs and downtimes by avoiding fuse replacement after faults. Furthermore, MS132 and MS165 feature a magnetic trip indicator making troubleshooting easier.



Speed up your projects

Simplified design

Manual motor starters can be connected easily with ABB contactors or soft starters using the respective accessory. Additionally, the main range of accessories is shared across multiple starters (both with screw and Push-in Spring terminals available), making logistics and planning simpler.

MS and MO manual motor starters

A complete motor protection concept

Right solution for your application
MS116 offers protection up to 32 A and a breaking capacity up to 100 kA – all in a 45 mm wide housing. They are designed to meet requirements of most standard applications.

All-in-one
ABB offers fuseless protection against short-circuits, phase failures and overloads including disconnect function – all in one single compact product.

Troubleshooting made easy
MS132 and MS165 feature a magnetic trip indicator. This way, every tripping event will be distinguished, making troubleshooting a lot easier and faster.

High performance in compact size
MS132 and MS165 manual motor starters cover short-circuit breaking capacities up to 100 kA. In addition, every manual motor starter is temperature compensated up to 60 °C.



Protection wherever you are

Manual motor starters are suitable for worldwide use. The wide range of certifications covers standards like IEC (CB), cULus, CCC, EAC and various ship approvals. MS132 and MS165 also apply to ATEX standards for hazardous areas.



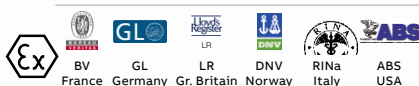
Ready for IE3 motors

MS116/MS132/MO132/MS165/MO165 comply with the latest standards. They are "IE3 ready" and will protect the new generation of high efficiency motors.



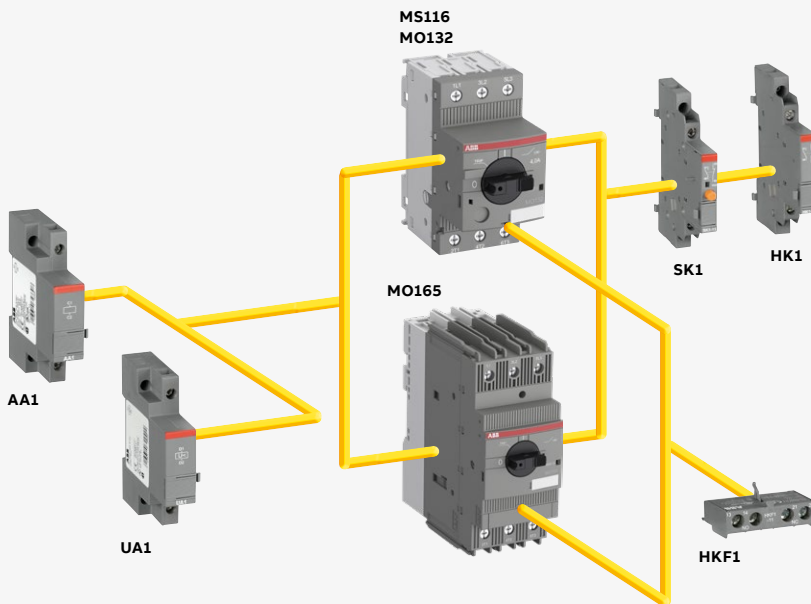
Just push it

With the new Push-in Spring terminals, one push is all you need for a faster than ever installation, an easier than ever wiring and a reliable as ever connection.



Protection and control

The right accessories for your applications

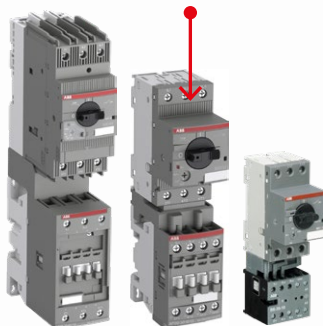


Harmonized range of accessories

All types up to 80 A share the same main accessories like auxiliary contacts, signaling contacts, shunt trips and undervoltage releases. This significantly reduces the part list and makes selection of the right accessories easy.



Save wiring time
and avoid mistakes by
using a connecting link

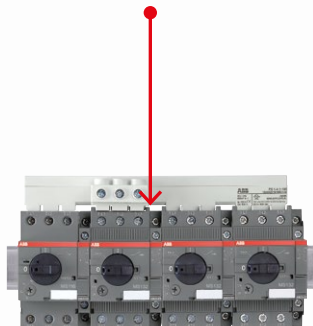


Easy to connect

Save wiring time and avoid mistakes by using a connecting link between ABB manual motor starters and soft starters or contactors. This creates harmonious and compact starter combinations that are easy to mount.



**Up to 5 manual
motor starters**
can be fitted next
to each other



Busbar connectors and enclosures

With busbar connectors, up to 5 manual motor starters can be fitted next to each other with optional spacing for auxiliary contacts. Enclosures or door handle kits are available as well.



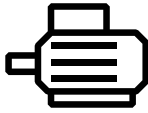
With a lockable handle
maintenance will be safe
for every technician



Safety at work

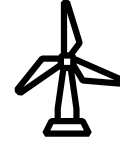
With a lockable handle maintenance will be safe for every technician. For MS132 and MS165 a lock can seal the handle without the need for an additional accessory.

Application examples



Motor protection

No matter what type of starter is required by the application (direct-on-line, star-delta, soft starter or variable frequency drive), MS and MO manual motor starters (also known as motor protection circuit breakers or manual motor protectors) are the right protection devices for electric motors from 100 mA up to 100 A.



Starter protection

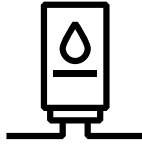
MO (magnetic-only) manual motor starters are typically used, when motor overload protection is provided by a separate overload protection device. This setup is specially beneficial for applications that require auto- or remote-reset of the starter in case of an overload tripping event (e.g. windmills or HVAC fans).



Circuit protection and control

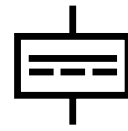
ABB's manual motor starters are fuseless circuit breakers (approved acc. to IEC60947-2) that can be used to control circuits and protect cables / lines in industrial and commercial applications from overloads and short-circuits. The built-in disconnect function allows the usage as main On-/Off-switch, typically for de-centralized applications (e.g. small machinery or laboratory systems).





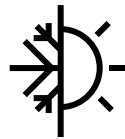
Resistive loads

Manual motor starters are not only for motors!
They are also an efficient solution for AC-1 applications,
where it is required to protect and switch resistive loads
(for example resistive furnaces or heaters).



DC loads

Manual motor starters are not only for AC applications!
MS132 and MS165 manual motor starters are also rated
for direct current loads (e.g. for motors used in solar
panel tracking systems).



Extreme conditions

Regardless if high-altitudes, shock and vibration environments or hazardous areas, ABB's manual motor starters are designed and certified to withstand harsh conditions. Specific versions for rolling stock applications are part of our offer.



Manual motor starters

Overview



MS116



MS132



MS165

Type

Thermal and electromagnetic protection	Yes	Yes	Yes
Electromagnetic protection	-	-	-
Phase loss sensitivity	Yes	Yes	Yes
Switch position	ON/OFF	ON/OFF/TRIP	ON/OFF/TRIP
Magnetic trip indication	-	Yes	Yes
Lockable handle without accessories	-	Yes	Yes
Disconnecting feature	Yes	Yes	Yes
Width	45 mm	45 mm	55 mm
Rated operational current I _e	0.10 ... 32 A	0.10 ... 32 A	10 ... 80 A
Setting range	0.10 ... 32 A	0.10 ... 32 A	10 ... 80 A
Ambient air temperature	-25 ... +55 °C (1)	-25 ... +60 °C (1)	-25 ... +60 °C (1)

(1) Compensated

Accessories

Auxiliary contact		HKF1, HK1	
Signaling contact	for tripped alarm	SK1	
contact	for short-circuit alarm	-	CK1
Shunt trip		AA1	
Undervoltage release		UA1	

Table for short-circuit ratings for 400/415 V AC

	Standard range	Performance range
	MS116	MS132, MS165

Selection parameters

Rated operational power	Setting range for thermal release	Type	Short-circuit breaking capacity		Type	Short-circuit breaking capacity	
			I _{cu}	I _{cs}		I _{cu}	I _{cs}
0.03 kW (1)	0.1 ... 0.16 A	MS116-0.16	100 kA	50 kA	MS132-0.16 (2)	100 kA	100 kA
0.06 kW	0.16 ... 0.25 A	MS116-0.25	100 kA	50 kA	MS132-0.25 (2)	100 kA	100 kA
0.09 kW	0.25 ... 0.4 A	MS116-0.4	100 kA	50 kA	MS132-0.4 (2)	100 kA	100 kA
0.18 kW	0.4 ... 0.63 A	MS116-0.63	100 kA	50 kA	MS132-0.63 (2)	100 kA	100 kA
0.25 kW	0.63 ... 1.0 A	MS116-1.0	100 kA	50 kA	MS132-1.0 (2)	100 kA	100 kA
0.55 kW	1.0...1.6 A	MS116-1.6	100 kA	50 kA	MS132-1.6 (2)	100 kA	100 kA
0.75 kW	1.6...2.5 A	MS116-2.5	75 kA	50 kA	MS132-2.5 (2)	100 kA	100 kA
1.5 kW	2.5...4.0 A	MS116-4.0	75 kA	50 kA	MS132-4.0 (2)	100 kA	100 kA
2.2 kW	4.0...6.3 A	MS116-6.3	50 kA	50 kA	MS132-6.3 (2)	100 kA	100 kA
4.0 kW	6.3...10 A	MS116-10	10 kA	50 kA	MS132-10 (2)	100 kA	100 kA
5.5 kW	8...12 A	MS116-12	50 kA	25 kA	MS132-12	100 kA	100 kA
7.5 kW	10...16 A	MS116-16	16 kA	16 kA	MS132-16 (2) / MS165-16	100 kA	100 kA
7.5 kW	14 ... 20 A				MS165-20	100 kA	100 kA
7.5 kW	16...20 A	MS116-20	16 kA	10 kA	MS132-20 (2)	100 kA	100 kA
11 kW	18 ... 25 A				MS165-25	100 kA	100 kA
11 kW	20...25 A	MS116-25	16 kA	10 kA	MS132-25 (2)	50 kA	50 kA
15 kW	25...32 A	MS116-32	16 kA	10 kA	MS132-32 (2)	50 kA	25 kA
15 kW	23 ... 32 A				MS165-32	100 kA	100 kA
22 kW	30 ... 42 A				MS165-42	50 kA	50 kA
22 kW	40 ... 54 A				MS165-54	50 kA	30 kA
25 kW	-						
30 kW	52 ... 65 A				MS165-65	50 kA	30 kA
37 kW	62 ... 73 A				MS165-73	30 kA	30 kA
45 kW	70 ... 80 A				MS165-80	30 kA	30 kA

(1) 690 V AC

(2) Available with Push-in Spring terminals.

**MO132****MO165****MS132-T**

-	-	-
Yes	Yes	Yes
-	-	-
ON/OFF/TRIP	ON/OFF/TRIP	ON/OFF/TRIP
-	-	Yes
Yes	Yes	Yes
Yes	Yes	Yes
45 mm	55 mm	45 mm
0.16 ... 32 A	16 ... 80 A	0.16 ... 25 A
-	-	0.10 ... 25 A
-25 ... +60 °C	-25 ... +60 °C	-25 ... +60 °C (1)

HKF1, HK1	HKF1, HK1
SK1	SK1
-	CK1
AA1	AA1
UA1	UA1

Performance range	Transformer protection
MO132, MO165	MS132-T

Type	Short-circuit breaking capacity		Type	Short-circuit breaking capacity
	Icu	Ics		Icu / Ics
MO132-0.16	100 kA	100 kA	MS132-0.16T (2)	100 kA
MO132-0.25	100 kA	100 kA	MS132-0.25T (2)	100 kA
MO132-0.4	100 kA	100 kA	MS132-0.4T (2)	100 kA
MO132-0.63	100 kA	100 kA	MS132-0.63T (2)	100 kA
MO132-1.0	100 kA	100 kA	MS132-1.0T (2)	100 kA
MO132-1.6	100 kA	100 kA	MS132-1.6T (2)	100 kA
MO132-2.5	100 kA	100 kA	MS132-2.5T (2)	100 kA
MO132-4.0	100 kA	100 kA	MS132-4.0T (2)	100 kA
MO132-6.3	100 kA	100 kA	MS132-6.3T (2)	100 kA
MO132-10	100 kA	100 kA	MS132-10T (2)	100 kA
MO132-12	100 kA	100 kA	MS132-12T	100 kA
MO132-16 / MO165-16	100 kA	100 kA	MS132-16T (2)	100 kA
MO165-20	100 kA	100 kA		
MO132-20	100 kA	100 kA	MS132-20T (2)	100 kA
MO132-25 / MO165-25	50 kA / 100 kA	50 kA / 100 kA	MS132-25T (2)	50 kA
MO132-32	50 kA	25 kA	Transformer protection: The instantaneous short-circuit current setting is 20 times the rated operational current.	
MO165-32	100 kA	100 kA		
MO165-42	50 kA	50 kA		
MO165-54	50 kA	30 kA		
MO165-65	50 kA	30 kA		
MO165-73	30 kA	30 kA		
MO165-80	30 kA	30 kA		

MS116 manual motor starters

0.10 to 32 A – with thermal and electromagnetic protection



MS116-16

2CDC241004V0017



MS116-25

2CDC24101TV0017



MS116-0.16-HKF1-11

2CDC241019V0017



MS116-32-HKF1-11

2CDC241020V0017

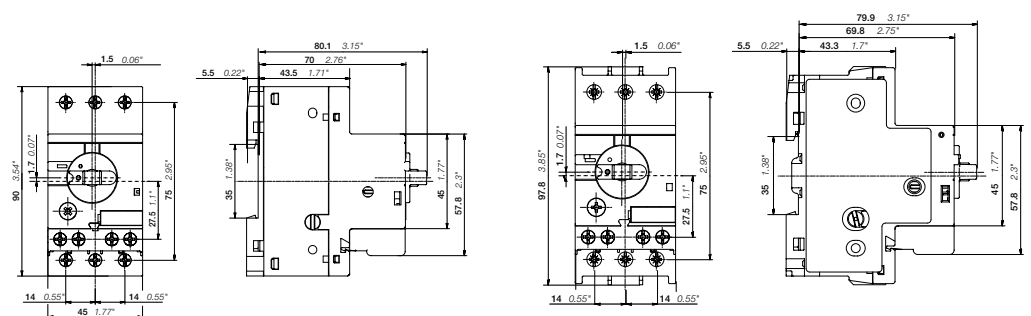
MS116 is a compact and economic range for motor protection up to 15 kW (400 V) / 32 A in width of 45 mm. Further features are the built-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starter is suitable for three- and single-phase applications. Auxiliary contacts, signaling contacts, undervoltage releases, shunt trips, power in-feed blocks and locking devices for protection against unauthorized changes are available as accessory. These are suitable throughout the MS116/MS132/MS165-range.

Rated operational power 400 V	Setting range	Short-circuit breaking capacity Ics at 400 V AC	Rated instantaneous short-circuit current setting Ii	Type	Order code	Weight (1 pce)
AC-3 kW	A	kA	A			kg
0.03 (1)	0.10 ... 0.16	50	2.00	MS116-0.16	1SAM250000R1001	0.225
0.06	0.16 ... 0.25	50	3.10	MS116-0.25	1SAM250000R1002	0.225
0.09	0.25 ... 0.40	50	5.00	MS116-0.4	1SAM250000R1003	0.225
0.18	0.40 ... 0.63	50	7.90	MS116-0.63	1SAM250000R1004	0.225
0.25	0.63 ... 1.00	50	12.5	MS116-1.0	1SAM250000R1005	0.225
0.55	1.00 ... 1.60	50	20.0	MS116-1.6	1SAM250000R1006	0.265
0.75	1.60 ... 2.50	50	31.3	MS116-2.5	1SAM250000R1007	0.265
1.50	2.50 ... 4.00	50	50.0	MS116-4.0	1SAM250000R1008	0.265
2.20	4.00 ... 6.30	50	78.8	MS116-6.3	1SAM250000R1009	0.265
4.00	6.30 ... 10.0	50	150	MS116-10	1SAM250000R1010	0.265
5.50	8.00 ... 12.0	25	180	MS116-12	1SAM250000R1012	0.265
7.50	10.0 ... 16.0	16	240	MS116-16	1SAM250000R1011	0.265
7.50	16.0 ... 20.0	10	300	MS116-20	1SAM250000R1013	0.310
11.0	20.0 ... 25.0	10	375	MS116-25	1SAM250000R1014	0.310
15.0	25.0 ... 32.0	10	480	MS116-32	1SAM250000R1015	0.310

Mounted Auxiliary Contacts 1 N.O. + 1 N.C.

0.03 (1)	0.10 ... 0.16	50	2.00	MS116-0.16-HKF1-11	1SAM250005R1001	0.240
0.06	0.16 ... 0.25	50	3.10	MS116-0.25-HKF1-11	1SAM250005R1002	0.240
0.09	0.25 ... 0.40	50	5.00	MS116-0.4-HKF1-11	1SAM250005R1003	0.240
0.18	0.40 ... 0.63	50	7.90	MS116-0.63-HKF1-11	1SAM250005R1004	0.240
0.25	0.63 ... 1.00	50	12.5	MS116-1.0-HKF1-11	1SAM250005R1005	0.240
0.55	1.00 ... 1.60	50	20.0	MS116-1.6-HKF1-11	1SAM250005R1006	0.280
0.75	1.60 ... 2.50	50	31.3	MS116-2.5-HKF1-11	1SAM250005R1007	0.280
1.50	2.50 ... 4.00	50	50.0	MS116-4.0-HKF1-11	1SAM250005R1008	0.280
2.20	4.00 ... 6.30	50	78.8	MS116-6.3-HKF1-11	1SAM250005R1009	0.280
4.00	6.30 ... 10.0	50	150	MS116-10.0-HKF1-11	1SAM250005R1010	0.280
5.50	8.00 ... 12.0	25	180	MS116-12.0-HKF1-11	1SAM250005R1012	0.280
7.50	10.0 ... 16.0	16	240	MS116-16.0-HKF1-11	1SAM250005R1011	0.280
7.50	16.0 ... 20.0	10	300	MS116-20-HKF1-11	1SAM250005R1013	0.326
11.0	20.0 ... 25.0	10	375	MS116-25-HKF1-11	1SAM250005R1014	0.326
15.0	25.0 ... 32.0	10	480	MS116-32-HKF1-11	1SAM250005R1015	0.326

Note: Manual motor starters should always be selected so that the actual motor current is within the setting range.
(1) 690 V



Main dimensions mm, inches

MS132 manual motor starters

0.10 to 32 A – with thermal and electromagnetic protection



MS132-10

2CDC41002V0013



MS132-32

2CDC41006V0017



MS132-0.16-HKF1-11

2CDC41021V0017



MS132-32-HKF1-11

MS132 is a compact and powerful range for motor protection up to 15 kW (400 V) / 32 A in width of 45 mm. 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 built-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. 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.

Rated operational power 400 V	Setting range	Short-circuit breaking capacity Ics at 400 V AC	Rated instantaneous short-circuit current setting Ii	Type	Order code	Weight (1 pce)
AC-3 kW	A	kA	A			kg
0.03 (1)	0.10 ... 0.16	100	2.00	MS132-0.16	1SAM350000R1001	0.215
0.06	0.16 ... 0.25	100	3.10	MS132-0.25	1SAM350000R1002	0.215
0.09	0.25 ... 0.40	100	5.00	MS132-0.4	1SAM350000R1003	0.215
0.18	0.40 ... 0.63	100	7.90	MS132-0.63	1SAM350000R1004	0.215
0.25	0.63 ... 1.00	100	12.5	MS132-1.0	1SAM350000R1005	0.215
0.55	1.00 ... 1.60	100	20.0	MS132-1.6	1SAM350000R1006	0.265
0.75	1.60 ... 2.50	100	31.3	MS132-2.5	1SAM350000R1007	0.265
1.50	2.50 ... 4.00	100	50.0	MS132-4.0	1SAM350000R1008	0.265
2.20	4.00 ... 6.30	100	78.8	MS132-6.3	1SAM350000R1009	0.265
4.00	6.30 ... 10.0	100	150	MS132-10	1SAM350000R1010	0.265
5.50	8.00 ... 12.0	100	180	MS132-12	1SAM350000R1012	0.310
7.50	10.0 ... 16.0	100	240	MS132-16	1SAM350000R1011	0.310
7.50	16.0 ... 20.0	100	300	MS132-20	1SAM350000R1013	0.310
11.0	20.0 ... 25.0	50	375	MS132-25	1SAM350000R1014	0.310
15.0	25.0 ... 32.0	25	480	MS132-32	1SAM350000R1015	0.310

Mounted Auxiliary Contacts 1 N.O. + 1 N.C.

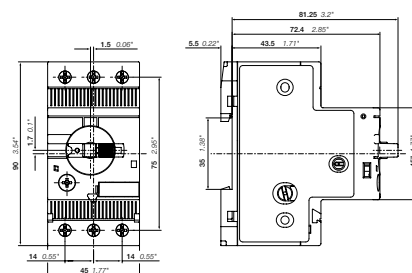
0.03 (1)	0.10 ... 0.16	100	2.00	MS132-0.16-HKF1-11	1SAM350005R1001	0.231
0.06	0.16 ... 0.25	100	3.10	MS132-0.25-HKF1-11	1SAM350005R1002	0.231
0.09	0.25 ... 0.40	100	5.0	MS132-0.4-HKF1-11	1SAM350005R1003	0.231
0.18	0.40 ... 0.63	100	7.90	MS132-0.63-HKF1-11	1SAM350005R1004	0.231
0.25	0.63 ... 1.00	100	12.5	MS132-1.0-HKF1-11	1SAM350005R1005	0.231
0.55	1.00 ... 1.60	100	20.0	MS132-1.6-HKF1-11	1SAM350005R1006	0.281
0.75	1.60 ... 2.50	100	31.3	MS132-2.5-HKF1-11	1SAM350005R1007	0.281
1.50	2.50 ... 4.00	100	50.0	MS132-4.0-HKF1-11	1SAM350005R1008	0.281
2.20	4.00 ... 6.30	100	78.8	MS132-6.3-HKF1-11	1SAM350005R1009	0.281
4.00	6.30 ... 10.0	100	150	MS132-10.0-HKF1-11	1SAM350005R1010	0.281
5.50	8.00 ... 12.0	100	180	MS132-12.0-HKF1-11	1SAM350005R1012	0.326
7.50	10.0 ... 16.0	100	240	MS132-16.0-HKF1-11	1SAM350005R1011	0.326
7.50	16.0 ... 20.0	100	300	MS132-20-HKF1-11	1SAM350005R1013	0.326
11.0	20.0 ... 25.0	50	375	MS132-25-HKF1-11	1SAM350005R1014	0.326
15.0	25.0 ... 32.0	25	480	MS132-32-HKF1-11	1SAM350005R1015	0.326

Mounted Auxiliary Contacts 2 N.O. + 0 N.C.

7.50	10 ... 16	100	240	MS132-16-HKF1-20	1SAM350006R1011	0.326
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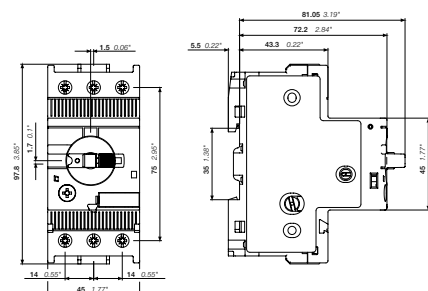
Note: Manual motor starters should always be selected so that the actual motor current is within the setting range.

(1) 690 V



MS132 ≤ 10 A

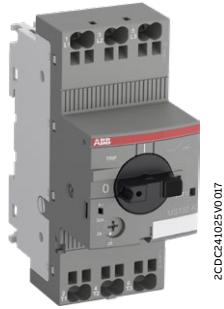
Main dimensions mm, inches



MS132 ≥ 12 A

MS132-K manual motor starters with Push-in Spring terminals

0.10 to 32 A – with thermal and electromagnetic protection



MS132-32K

2CDC241025V0017

The MS132-K series is a compact and powerful range for motor protection up to 15 kW (400 V) / 32 A with a width of only 45 mm. The innovative Push-in Spring terminals enable tool-free wiring and eliminate the need for routine re-tightening.

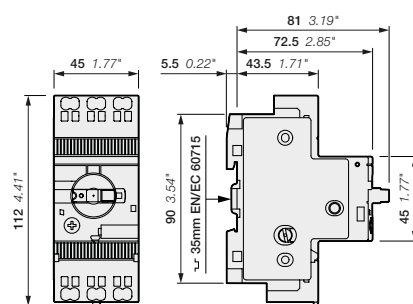
The MS132-K also has a clear and reliable indication of fault in a separate window in the event of short-circuit tripping. Further features are the built-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication.

The manual motor starter is suitable for three- and single-phase applications. 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.

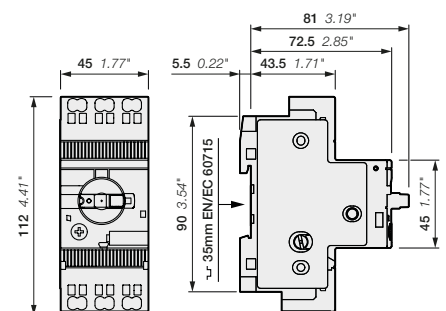
Rated operational power 400 V AC-3 kW	Setting range A	Short-circuit breaking capacity Ics at 400 V AC kA	Rated instantaneous short-circuit current setting Ii A	Type	Order code	Weight (1 pce) kg
0.03(1)	0.10 ... 0.16	100	2.00	MS132-0.16K	1SAM350010R1001	0.256
0.06	0.16 ... 0.25	100	3.10	MS132-0.25K	1SAM350010R1002	0.256
0.09	0.25 ... 0.40	100	5.00	MS132-0.4K	1SAM350010R1003	0.256
0.18	0.40 ... 0.63	100	7.90	MS132-0.63K	1SAM350010R1004	0.256
0.25	0.63 ... 1.00	100	12.5	MS132-1.0K	1SAM350010R1005	0.256
0.55	1.00 ... 1.60	100	20.0	MS132-1.6K	1SAM350010R1006	0.298
0.75	1.60 ... 2.50	100	31.3	MS132-2.5K	1SAM350010R1007	0.280
1.50	2.50 ... 4.00	100	50.0	MS132-4.0K	1SAM350010R1008	0.286
2.20	4.00 ... 6.30	100	78.8	MS132-6.3K	1SAM350010R1009	0.289
4.00	6.30 ... 10.0	100	150	MS132-10K	1SAM350010R1010	0.296
7.50	10.0 ... 16.0	100	240	MS132-16K	1SAM350010R1011	0.316
7.50	16.0 ... 20.0	100	300	MS132-20K	1SAM350010R1013	0.317
11.0	20.0 ... 25.0	50	375	MS132-25K	1SAM350010R1014	0.316
15.0	25.0 ... 32.0	25	480	MS132-32K	1SAM350010R1015	0.316

Note: Manual motor starters should always be selected so that the actual motor current is within the setting range.

(1) 690 V



MS132-K > 10 A



MS132-K ≤ 10 A

Main dimensions mm, inches

2CDC131062C0201

MS165 manual motor starters

10 to 80 A – with thermal and electromagnetic protection

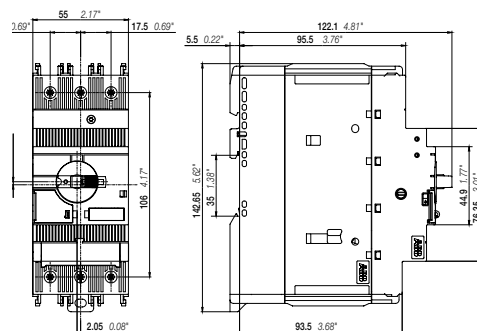


MS165-65

MS165 is a compact and powerful range for motor protection up to 45 kW (400 V) / 80 A in width of 55 mm. 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 built-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. 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.

Rated operational power 400 V	Setting range	Short-circuit breaking capacity Ics at 400 V AC	Rated instantaneous short-circuit current setting Ii	Type	Order code	Weight (1 pce)
AC-3 kW	A	kA	A			kg
7.5	10 ... 16	100	240	MS165-16	1SAM451000R1011	0.950
7.5	14 ... 20	100	300	MS165-20	1SAM451000R1012	0.950
11	18 ... 25	100	375	MS165-25	1SAM451000R1013	0.960
15	23 ... 32	100	480	MS165-32	1SAM451000R1014	0.970
22	30 ... 42	50	630	MS165-42	1SAM451000R1015	0.970
22	40 ... 54	30	810	MS165-54	1SAM451000R1016	0.970
30	52 ... 65	30	975	MS165-65	1SAM451000R1017	0.980
37	62 ... 73	30	1022	MS165-73	1SAM451000R1018	1.000
45	70 ... 80	30	1120	MS165-80	1SAM451000R1019	1.000

Note: Manual motor starters should always be selected so that the actual motor current is within the setting range.



MS165

Main dimensions mm, inches

MO132 manual motor starters magnetic only

0.16 to 32 A – with electromagnetic protection



MO132-6.3

2CDC24101BV0017



MO132-32

2CDC241015V0017

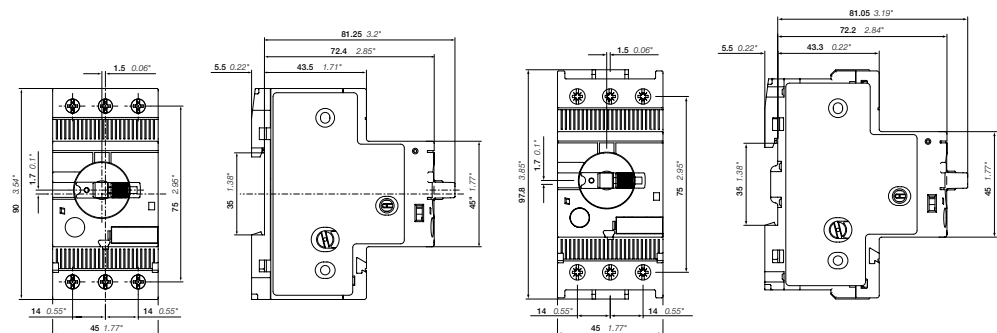
The MO132 manual motor starter magnetic only is a compact and powerful range for motor protection up to 15 kW (400 V AC) in width of 45 mm. The devices are used to manually switch on and off loads/motors and to protect them reliably and without the need for a fuse from short-circuits.

The manual motor starter offers a rated service short-circuit breaking capacity up to 100 kA at 400 V AC. A combination together with overload relays or motor controllers allows the protection of motors. Further features are the built-in disconnect function, trip-free mechanism and a rotary handle with a clear switch position indication. The manual motor starters magnetic only are suitable for three- and single-phase applications. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signaling contacts, undervoltage releases, shunt trips, 3-phase busbars and power in-feed blocks are available as accessory.

Rated operational power 400 V AC-3	Rated operational current	Short-circuit breaking capacity Ics at 400 V AC	Rated instantaneous short-circuit current setting Ii	Type	Order code	Weight (1 pce)
kW	A	kA	A			kg
0.03 (1)	0.16	100	2.00	MO132-0.16	1SAM360000R1001	0.215
0.06	0.25	100	3.10	MO132-0.25	1SAM360000R1002	0.215
0.09	0.40	100	5.00	MO132-0.4	1SAM360000R1003	0.215
0.12	0.63	100	7.90	MO132-0.63	1SAM360000R1004	0.215
0.25	1.0	100	12.5	MO132-1.0	1SAM360000R1005	0.215
0.55	1.6	100	20.0	MO132-1.6	1SAM360000R1006	0.265
0.75	2.5	100	31.3	MO132-2.5	1SAM360000R1007	0.265
1.5	4.0	100	50.0	MO132-4.0	1SAM360000R1008	0.265
2.2	6.3	100	78.8	MO132-6.3	1SAM360000R1009	0.265
4.0	10	100	125	MO132-10	1SAM360000R1010	0.265
5.5	12	100	150	MO132-12	1SAM360000R1012	0.310
7.5	16	100	200	MO132-16	1SAM360000R1011	0.310
7.5	20	100	250	MO132-20	1SAM360000R1013	0.310
11	25	50	313	MO132-25	1SAM360000R1014	0.310
15	32	25	400	MO132-32	1SAM360000R1015	0.310

Note: For overload protection of motors, an appropriate thermal or electronic overload relay must be used.

(1) 690 V



MO132 ≤ 10 A

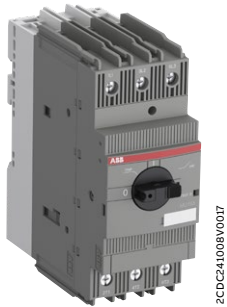
MO132 ≥ 12 A

Main dimensions mm, inches

2CDC131062C0201

MO165 manual motor starters magnetic only

16 to 80 A – with electromagnetic protection



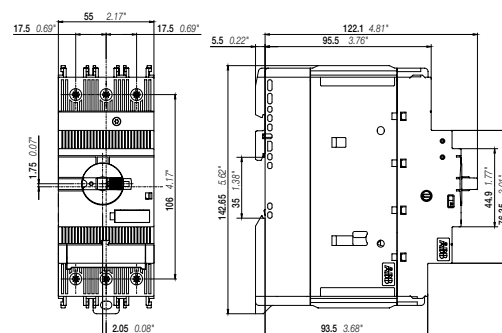
MO165-65

The MO165 manual motor starter magnetic only is a compact and powerful range for motor protection up to 45 kW (400 V AC) in width of 55 mm. The devices are used to manually switch on and off loads/motors and to protect them reliably and without the need for a fuse from short-circuits. The manual motor starter offers a rated service short-circuit breaking capacity up to 100 kA at 400 V AC. A combination together with overload relays or motor controllers allows the protection of motors. Further features are the built-in disconnect function, trip-free mechanism and a rotary handle with a clear switch position indication.

The manual motor starters magnetic only are suitable for three- and single-phase applications. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signaling contacts, undervoltage releases, shunt trips, 3-phase bus bars and power in-feed blocks are available as accessory.

Rated operational power 400 V	Rated operational current	Short-circuit breaking capacity Ics at 400 V AC	Rated instantaneous short-circuit current setting Ii	Type	Order code	Weight (1 pce)
AC-3 kW	A	kA	A			kg
7.5	16	100	240	MO165-16	1SAM461000R1011	0.950
7.5	20	100	300	MO165-20	1SAM461000R1012	0.950
11	25	100	375	MO165-25	1SAM461000R1013	0.960
15	32	100	480	MO165-32	1SAM461000R1014	0.970
22	42	50	630	MO165-42	1SAM461000R1015	0.970
22	54	30	810	MO165-54	1SAM461000R1016	0.970
30	65	30	975	MO165-65	1SAM461000R1017	0.980
37	73	30	1022	MO165-73	1SAM461000R1018	1.000
45	80	30	1120	MO165-80	1SAM461000R1019	1.000

Note: For overload protection of motors, an appropriate thermal or electronic overload relay must be used.



MO165

Main dimensions mm, inches

MS116, MS132, MS165, MO132, MO165

Technical data

Main circuit – Utilization characteristics according to IEC/EN

Type	MS116	MS132	MS165	MO132	MO165
Standards	IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1				
Rated operational voltage U _e	690 V AC	690 V AC / 250 V DC	690 V AC / 250 V DC	690 V AC	690 V AC / 250 V DC
Rated frequency	50/60 Hz	DC, 50/60 Hz	DC, 50/60 Hz	50/60 Hz	DC, 50/60 Hz
Operational frequency	50/60 Hz	0 ... 400 Hz	0 ... 400 Hz	0 ... 400 Hz	0 ... 400 Hz
Trip class	10A	10	10	–	–
Number of poles	3				
Duty time	100%				
Mechanical durability	100000 cycles	100000 cycles	50000 cycles	100000 cycles	50000 cycles
Electrical durability	up to 10 A	up to 100000 cycles	up to 25000 cycles	up to 100000 cycles	up to 50000 cycles
	up to 16 A	100000 cycles	25000 cycles	50000 cycles	25000 cycles
	20 ... 65 A	50000 cycles	25000 cycles	50000 cycles	25000 cycles
	65 ... 80 A	–	20000 cycles	–	20000 cycles
Rated impulse withstand voltage U _{imp}	6 kV	6 kV	8 kV	6 kV	8 kV
Rated insulation voltage U _i	690 V	690 V	1000 V	690 V	1000 V
Rated operational current I _e	See ordering details				
Rated operational current DC-5 I _e 3 conducting paths in series up to 250 V	–	See "Rated operational current I _e "	See "Rated operational current I _e "	–	See "Rated operational current I _e "
Rated instantaneous short-circuit current setting I _i	See ordering details				
Rated service short-circuit breaking capacity I _{cs}	See table "Short-circuit breaking capacity and back-up fuses"				
Rated ultimate short-circuit breaking capacity I _{cu}	See table "Short-circuit breaking capacity and back-up fuses"				
Rated service short-circuit breaking capacity DC I _{cs} 3 conducting paths in series up to 250 V	–	10 kA	100 kA	–	100 kA

Short-circuit breaking capacity and back-up fuses

I_{cs} Rated service short-circuit breaking capacity

I_{cu} Rated ultimate short-circuit breaking capacity

I_{cc} Prospective short-circuit current at installation location

Note: Maximum rated current of the back-up fuses if I_{cc} > I_{cs}

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC		
	I _{cs} kA	I _{cu} kA	gG, aM A	I _{cs} kA	I _{cu} kA	gG, aM A	I _{cs} kA	I _{cu} kA	gG, aM A	I _{cs} kA	I _{cu} kA	gG, aM A	I _{cs} kA	I _{cu} kA	gG, aM A
MS116-0.16	50	100	– (1)	50	100	– (1)	30	100	– (1)	30	100	– (1)	30	100	– (1)
MS116-0.25	50	100	– (1)	50	100	– (1)	30	100	– (1)	30	100	– (1)	30	100	– (1)
MS116-0.4	50	100	– (1)	50	100	– (1)	30	100	– (1)	30	100	– (1)	30	100	– (1)
MS116-0.63	50	100	– (1)	50	100	– (1)	30	100	– (1)	30	100	– (1)	30	100	– (1)
MS116-1.0	50	100	– (1)	50	100	– (1)	30	100	– (1)	30	100	– (1)	30	100	– (1)
MS116-1.6	50	100	– (1)	50	100	– (1)	30	100	– (1)	30	100	– (1)	30	100	– (1)
MS116-2.5	50	75	– (1)	50	75	– (1)	10	30	25 (2)	10	20	25 (2)	5	10	25 (2)
MS116-4.0	50	75	– (1)	50	75	– (1)	6	18	25 (2)	6	15	25 (2)	2	3	25 (2)
MS116-6.3	50	50	– (1)	50	50	– (1)	6	18	63 (2)	6	10	63 (2)	2	3	40 (2)
MS116-10	50	50	– (1)	50	50	– (1)	6	18	63 (2)	6	10	63 (2)	2	3	50 (2)
MS116-12	25	50	80 (2)	25	50	80 (2)	6	15	63 (2)	6	10	63 (2)	2	3	50 (2)
MS116-16	16	16	80 (2)	16	16	80 (2)	6	15	63 (2)	4	10	63 (2)	2	3	63 (2)
MS116-20	10	16	125 (2)	10	16	125 (2)	3	15	125 (2)	3	10	125 (2)	2	3	80 (2)
MS116-25	10	16	125 (2)	10	16	125 (2)	3	15	125 (2)	3	10	125 (2)	2	3	100 (2)
MS116-32	10	16	125 (2)	10	16	125 (2)	3	15	125 (2)	3	10	125 (2)	2	3	100 (2)

(1) No back-up fuse required, because short-circuit proof up to 50 kA

(2) Rated back-up fuse for short-circuit up to 50 kA

MS116, MS132, MS165, MO132, MO165

Technical data

Short-circuit breaking capacity and back-up fuses

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC		
	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A
MS132-0.16	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-0.25	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-0.4	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-0.63	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-1.0	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-1.6	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-2.5	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-4.0	100	100	-(1)	100	100	-(1)	30	30	35 (2)	20	20	35 (2)	3	3	32 (2)
MS132-6.3	100	100	-(1)	100	100	-(1)	30	30	63 (2)	20	20	63 (2)	3	3	50 (2)
MS132-10	100	100	-(1)	100	100	-(1)	20	20	100 (2)	20	20	100 (2)	3	3	50 (2)
MS132-12	100	100	-(1)	100	100	-(1)	20	20	100 (2)	20	20	100 (2)	3	3	63 (2)
MS132-16	100	100	-(1)	100	100	-(1)	20	20	125 (2)	20	20	125 (2)	3	3	63 (2)
MS132-20	100	100	-(1)	100	100	-(1)	20	20	125 (2)	20	20	125 (2)	3	3	80 (2)
MS132-25	50	50	125 (2)	50	50	125 (2)	20	20	125 (2)	10	10	125 (2)	3	3	100 (2)
MS132-32	25	50	125 (2)	25	50	125 (2)	20	20	125 (2)	10	10	125 (2)	3	3	100 (2)

(1) No back-up fuse required, because short-circuit proof up to 100 kA

(2) Rated back-up fuse for short-circuit up to 100 kA

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC			250 V DC (3)		
	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A
MS165-16	100	100	-(1)	100	100	-(1)	75	75	125 (2)	40	40	125 (2)	10	10	63 (2)	100	100	-(1)
MS165-20	100	100	-(1)	100	100	-(1)	75	75	125 (2)	40	40	125 (2)	10	10	63 (2)	100	100	-(1)
MS165-25	100	100	-(1)	100	100	-(1)	50	50	125 (2)	30	30	125 (2)	10	10	80 (2)	100	100	-(1)
MS165-32	100	100	-(1)	100	100	-(1)	50	50	125 (2)	30	30	125 (2)	10	10	100 (2)	100	100	-(1)
MS165-42	50	50	125 (2)	50	50	125 (2)	50	50	125 (2)	30	30	125 (2)	10	10	100 (2)	100	100	-(1)
MS165-54	30	50	125 (2)	30	50	125 (2)	30	45	125 (2)	20	20	125 (2)	6	8	100 (2)	100	100	-(1)
MS165-65	30	50	125 (2)	30	50	125 (2)	30	45	125 (2)	20	20	125 (2)	6	8	100 (2)	100	100	-(1)
MS165-73	30	30		30	30		6	8		6	8		6	8				
MS165-80	30	30		30	30		6	8		6	8		6	8				

(1) No back-up fuse required, short-circuit proof up to 100 kA

(2) Rated back-up fuse for short-circuit up to 100 kA

(3) 3 poles in series

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC		
	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A	Ics kA	Icu kA	gG, aM A
MO132-0.16	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MO132-0.25	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MO132-0.4	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MO132-0.63	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MO132-1.0	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MO132-1.6	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MO132-2.5	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MO132-4.0	100	100	-(1)	100	100	-(1)	30	30	35 (2)	20	20	35 (2)	3	3	32 (2)
MO132-6.3	100	100	-(1)	100	100	-(1)	30	30	63 (2)	20	20	63 (2)	3	3	50 (2)
MO132-10	100	100	-(1)	100	100	-(1)	20	20	100 (2)	20	20	100 (2)	3	3	50 (2)
MO132-12	100	100	-(1)	100	100	-(1)	20	20	100 (2)	20	20	100 (2)	3	3	63 (2)
MO132-16	100	100	-(1)	100	100	-(1)	20	20	125 (2)	20	20	125 (2)	3	3	63 (2)
MO132-20	100	100	-(1)	100	100	-(1)	20	20	125 (2)	20	20	125 (2)	3	3	80 (2)
MO132-25	50	50	125 (2)	50	50	125 (2)	10	10	125 (2)	10	10	125 (2)	3	3	100 (2)
MO132-32	25	50	125 (2)	25	50	125 (2)	10	10	125 (2)	10	10	125 (2)	3	3	100 (2)

(1) No back-up fuse required, because short-circuit proof up to 100 kA

(2) Rated back-up fuse for short-circuit up to 100 kA

MS116, MS132, MS165, MO132, MO165

Technical data

Short-circuit breaking capacity and back-up fuses

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC			250 V DC (3)		
	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A	Ics kA	Icu kA	gG A
MO165-16	100	100	-(1)	100	100	-(1)	75	75	125 (2)	40	40	125 (2)	10	10	63 (2)	100	100	-(1)
MO165-20	100	100	-(1)	100	100	-(1)	75	75	125 (2)	40	40	125 (2)	10	10	63 (2)	100	100	-(1)
MO165-25	100	100	-(1)	100	100	-(1)	50	50	125 (2)	30	30	125 (2)	10	10	80 (2)	100	100	-(1)
MO165-32	100	100	-(1)	100	100	-(1)	50	50	125 (2)	30	30	125 (2)	10	10	100 (2)	100	100	-(1)
MO165-42	50	50	125 (2)	50	50	125 (2)	50	50	125 (2)	30	30	125 (2)	10	10	100 (2)	100	100	-(1)
MO165-54	30	50	125 (2)	30	50	125 (2)	30	45	125 (2)	20	20	125 (2)	6	8	100 (2)	100	100	-(1)
MO165-65	30	50	125 (2)	30	50	125 (2)	30	45	125 (2)	20	20	125 (2)	6	8	100 (2)	100	100	-(1)
MO165-73	30	30		30	30		6	8		6	8		6	8				
MO165-80	30	30		30	30		6	8		6	8		6	8				

(1) No back-up fuse required, short-circuit proof up to 100 kA

(2) Rated back-up fuse for short-circuit up to 100 kA

(3) 3 poles in series

Main circuit – Utilization characteristics according to UL/CSA

Type	MS116	MS132	MS165	MO132	MO165
Standards	UL 60947-1, UL 60947-4-1 (UL 508), CSA C22.2 No.60947-4-1 (CSA C22.2 No.14)				
Rated operational voltage Ue acc. to UL/CSA	600 V AC	600 V AC	600 V AC	600 V AC	600 V AC
Trip class	10A	10		-	
Motor ratings (1)	See table "Motor ratings, three phase"				
Horsepower					
Full Load Amps (FLA)	See table "Motor ratings, three phase"				
Locked Rotor Amps (LRA)	See table "Motor ratings, three phase"				

(1) See product data sheets for UL/CSA single phase motor and general use ratings.

UL/CSA ratings overview

Type	MS116	MS132	MS165	MO132	MO165
Manual Motor Controller	x	x	x	x	x
Manual Motor Controller, Suitable as Motor Disconnect	x	x	x	x	x
Manual Motor Controller, Suitable for use in Group Installations	x	x	x	x	x
Manual Motor Controller, Suitable for Tap Conductor Protection in Group Installations	-	x	x	x	x
Manual self-protected Combination Motor Controller (Type E)	-	x	x (up to 65 A)	-	-
Combination Motor Controller (Type F)	-	with AF contactor	with AF contactor (up to 65 A)	with AF contactor and EOL	with AF contactor and EOL (up to 65 A)

MS116, MS132, MS165, MO132, MO165

Technical data

UL/CSA Motor ratings, three phase – MS116

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MS116-0.16	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96
MS116-0.25	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5
MS116-0.40	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4
MS116-0.63	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78
MS116-1.0	-	1	6	-	1	6	-	1	6	-	1	6	1/2	0.9	8
MS116-1.6	-	1.6	9.6	-	1.6	9.6	-	1.6	9.6	3/4	1.6	9.6	3/4	1.6	9.6
MS116-2.5	1/2	2.5	15	1/2	2.5	15	1/2	2.5	15	1	2.5	15	1 1/2	2.5	15
MS116-4.0	3/4	4	24	3/4	4	24	1	4	24	2	4	24	3	3.9	25.6
MS116-6.3	1	6.3	37.8	1	6.3	37.8	1 1/2	6.3	37.8	3	4.8	32	5	6.1	36.8
MS116-10	2	7.8	57.5	2	7.5	55	3	9.6	64	5	7.6	46	7 1/2	9	50.8
MS116-12	3	11	73.6	3	10.6	71	3	9.6	64	7 1/2	11	63.5	10	11	64.8
MS116-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MS116-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MS116-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MS116-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	25	27	146

UL/CSA Motor ratings, three phase – MS132

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MS132-0.16	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96
MS132-0.25	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5
MS132-0.40	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4
MS132-0.63	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78
MS132-1.0	-	1	6	-	1	6	-	1	6	-	1	6	1/2	1	6
MS132-1.6	-	1.6	9.6	-	1.6	9.6	-	1.6	9.6	3/4	1.6	9.6	3/4	1.6	9.6
MS132-2.5	1/2	2.5	15	1/2	2.5	15	1/2	2.5	15	1	2.5	15	1-1/2	2.5	15
MS132-4.0	3/4	4	24	3/4	4	24	1	4	24	2	4	24	3	3.9	25.6
MS132-6.3	1	6.3	37.8	1	6.3	37.8	1 1/2	6.3	37.8	3	4.8	32	5	6.1	36.8
MS132-10	2	7.8	57.5	2	7.5	55	3	9.6	64	5	7.6	46	7 1/2	9	50.8
MS132-12	3	11	73.6	3	10.6	71	3	9.6	64	7 1/2	11	63.5	10	11	64.8
MS132-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MS132-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MS132-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MS132-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	25	27	146

UL/CSA Motor ratings, three phase – MS165

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MS165-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MS165-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MS165-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MS165-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	30	32	174
MS165-42	10	32.2	186.3	10	30.8	179	15	42	232	30	40	218	40	41	232
MS165-54	15	48.3	267	15	46.2	257	20	54	290	40	52	290	50	52	290
MS165-65	20	62.1	334	20	59.4	321	20	54	290	50	65	363	60	62	348
MS165-73	20	62.1	334	20	59.4	321	25	68	365	50	65	363	60	62	348
MS165-80	25	78.2	420	25	74.8	404	30	80	435	60	77	435	75	77	434

hp Horsepower
FLA Full Load Amps
LRA Locked Rotor Amps

Note: Manual motor starters should always be selected so that the actual motor current is within the setting range; see ordering detail pages. Horsepower (hp) ratings are for reference only.

MS116, MS132, MS165, MO132, MO165

Technical data

UL/CSA Motor ratings, three phase – MO132

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MO132-0.16	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96	-	0.16	0.96
MO132-0.25	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5	-	0.25	1.5
MO132-0.40	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4	-	0.4	2.4
MO132-0.63	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78	-	0.63	3.78
MO132-1.0	-	1	6	-	1	6	-	1	6	-	1	6	1/2	1	6
MO132-1.6	-	1.6	9.6	-	1.6	9.6	-	1.6	9.6	3/4	1.6	9.6	3/4	1.6	9.6
MO132-2.5	1/2	2.5	15	1/2	2.5	15	1/2	2.5	15	1	2.5	15	1 1/2	2.5	15
MO132-4.0	3/4	4	24	3/4	4	24	1	4	24	2	4	24	3	3.9	25.6
MO132-6.3	1	6.3	37.8	1	6.3	37.8	1 1/2	6.3	37.8	3	4.8	32	5	6.1	36.8
MO132-10	2	7.8	57.5	2	7.5	55	3	9.6	64	5	7.6	46	7 1/2	9	50.8
MO132-12	3	11	73.6	3	10.6	71	3	9.6	64	7 1/2	11	63.5	10	11	64.8
MO132-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MO132-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MO132-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MO132-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	25	27	146

UL/CSA Motor ratings, three phase – MO165

Type	200 V AC			208 V AC			220 ... 240 V AC			440 ... 480 V AC			550 ... 600 V AC		
	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA	hp	FLA	LRA
MO165-16	3	11	73.6	3	10.6	71	5	15.2	92	10	14	81	10	11	64.8
MO165-20	5	17.5	105.8	5	16.7	102	5	15.2	92	10	14	81	15	17	93
MO165-25	5	17.5	105.8	7 1/2	24.2	140	7 1/2	22	127	15	21	116	20	22	116
MO165-32	7 1/2	25.3	146	10	30.8	179	10	28	162	20	27	145	30	32	174
MO165-42	10	32.2	186.3	10	30.8	179	15	42	232	30	40	218	40	41	232
MO165-54	15	48.3	267	15	46.2	257	20	54	290	40	52	290	50	52	290
MO165-65	20	62.1	334	20	59.4	321	20	54	290	50	65	363	60	62	348
MO165-73	20	62.1	334	20	59.4	321	25	68	365	50	65	363	60	62	348
MO165-80	25	78.2	420	25	74.8	404	30	80	435	60	77	435	75	77	434

MS116, MS132, MS165, MO132, MO165

Technical data

UL/CSA Maximum short-circuit current ratings – MS116

Type	Manual Motor Controllers		for motor disconnect (2)		for group installations	
	Branch circuit protection, max. size per NEC/CEC (1)					
	Fuses A	Circuit breaker A	480 V kA	600 V kA	480 V kA	600 V kA
MS116-0.16	Any listed fuses. Size per NEC/CEC	Any listed UL489 / CSA C22.2 N° 5 circuit breaker. Size per NEC/CEC	30	5	30	5
MS116-0.25			30	5	30	5
MS116-0.40			30	5	30	5
MS116-0.63			30	5	30	5
MS116-1.0			30	5	30	5
MS116-1.6			30	5	30	5
MS116-2.5			30	5	30	5
MS116-4.0			18	5	18	5
MS116-6.3			18	5	18	5
MS116-10			18	5	18	5
MS116-12			18	5	18	5
MS116-16			18	5	18	5
MS116-20			18	5	18	5
MS116-25			18	5	18	5
MS116-32			18	5	18	5

(1) NEC: NFPA®70 National Electrical Code®; CEC: CSA C22.1 Canadian Electrical Code.

(2) Suitable as motor disconnect with padlock adaptor SA1 or SA3.

UL/CSA Maximum short-circuit current ratings – MS132

Type	Manual Motor Controllers		for motor disconnect		for group installations		for tap conductor protection in group installations		Manual self-protected Combination Motor Controllers (Type E) (2)	
	Branch circuit protection, max. size per NEC/CEC (1)									
	Fuses A	Circuit breaker A	480 V kA	600 V kA	480 V kA	600 V kA	480 V kA	600 V kA	480Y / 277 V kA	600Y / 347 V kA
MS132-0.16	Any Listed fuses. Size per NEC/CEC	Any Listed UL489 / CSA C22.2 No.5 circuit breaker. Size per NEC/CEC	65	47	65	47	65	47	65	47
MS132-0.25			65	47	65	47	65	47	65	47
MS132-0.40			65	47	65	47	65	47	65	47
MS132-0.63			65	47	65	47	65	47	65	47
MS132-1.0			65	47	65	47	65	47	65	47
MS132-1.6			65	47	65	47	65	47	65	47
MS132-2.5			65	47	65	47	65	47	65	47
MS132-4.0			65	47	65	47	65	47	65	47
MS132-6.3			65	18	65	35	65	18	65	18
MS132-10			65	18	65	35	65	18	65	18
MS132-12			30	18	35	35	30	18	30	-
MS132-16			30	18	35	35	30	18	30	-
MS132-20			30	18	35	35	30	18	30	-
MS132-25			30	18	35	35	30	18	30	-
MS132-32			30	18	35	35	30	18	30	-

(1) NEC: NFPA®70 National Electrical Code®; CEC: CSA C22.1 Canadian Electrical Code.

(2) Requires the use of S1-M3-xx line-side terminal feeder block.

MS116, MS132, MS165, MO132, MO165

Technical data

UL/CSA Maximum short-circuit current ratings – MS132 with AF contactors

Type	Combination Motor Controllers (Type F) (1) Coordination type 1		
	Minimum contactor size	480Y / 277 V kA	600Y / 347 V kA
MS132-0.16	AF09 ... AF38	100	50
MS132-0.25	AF09 ... AF38	100	50
MS132-0.40	AF09 ... AF38	100	50
MS132-0.63	AF09 ... AF38	100	50
MS132-1.0	AF09 ... AF38	100	50
MS132-1.6	AF09 ... AF38	100	50
MS132-2.5	AF09 ... AF38	100	50
MS132-4.0	AF09 ... AF38	100	50
MS132-6.3	AF09 ... AF38	100	47
MS132-10	AF09 ... AF38	100	30
MS132-12	AF09 ... AF38	65	30
MS132-16	AF12 ... AF38	65	30
MS132-20	AF26 ... AF38	65	–
MS132-25	AF26 ... AF38	50	–
MS132-32	AF38	50	–
Type	Coordination type 2		
	Minimum contactor size	480Y / 277 V kA	600Y / 347 V kA
MS132-0.16	AF26 ... AF38	65	47
MS132-0.25	AF26 ... AF38	65	47
MS132-0.40	AF26 ... AF38	65	47
MS132-0.63	AF26 ... AF38	65	47
MS132-1.0	AF26 ... AF38	65	47
MS132-1.6	AF26 ... AF38	65	47
MS132-2.5	AF26 ... AF38	65	47
MS132-4.0	AF26 ... AF38	65	47
MS132-6.3	AF26 ... AF38	65	47
MS132-10	AF26 ... AF38	65	47
MS132-12	AF26 ... AF38	30	–
MS132-16	AF26 ... AF38	30	–
MS132-20	AF26 ... AF38	30	–
MS132-25	AF26 ... AF38	30	–
MS132-32	AF26 ... AF38	30	–

UL/CSA Maximum short-circuit current ratings – MO132 with electronic overload relays and AF contactors

Type	EOL	Combination Motor Controllers (Type F) (1) Coordination type 1		
		Minimum contactor size	480Y / 277 V kA	600Y / 347 V kA
MO132-0.16	EF19	AF09 ... AF38	100	50
MO132-0.25	EF19	AF09 ... AF38	100	50
MO132-0.40	EF19	AF09 ... AF38	100	50
MO132-0.63	EF19	AF09 ... AF38	100	50
MO132-1.0	EF19	AF09 ... AF38	100	50
MO132-1.6	EF19	AF09 ... AF38	100	50
MO132-2.5	EF19	AF09 ... AF38	100	50
MO132-4.0	EF19	AF09 ... AF38	100	50
MO132-6.3	EF19	AF09 ... AF38	100	50
MO132-10	EF19	AF09 ... AF38	100	30
MO132-12	EF19	AF09 ... AF38	65	30
MO132-16	EF19	AF12 ... AF38	65	30
MO132-20	EF19	AF16 ... AF38	65	–
MO132-25	EF45-30	AF26 ... AF38	50	–
MO132-32	EF45-45	AF38 ... AF38	50	–

NOTE : More coordination tables are available in our SOC (selected optimized coordination) tool: <https://applications.it.abb.com/SOC/Motor>.

(1) Requires the use of S1-M3-xx line-side terminal feeder block.

MS116, MS132, MS165, MO132, MO165

Technical data

UL/CSA Maximum short-circuit current ratings – MS165

Type	Manual Motor Controllers		for motor disconnect		for group installations		for tap conductor protection in group installations		Manual self-protected Combination Motor Controllers (Type E)	
	Branch circuit protection, max. size per NEC/CEC (1)									
	Fuses A	Circuit breaker A	480 V kA	600 V kA	480 V kA	600 V kA	480 V kA	600 V kA	480Y / 277 V kA	600Y / 347 V kA
MS165-16	Any Listed fuses. Size per NEC/CEC	Any Listed UL489 / CSA C22.2 No.5 circuit breaker. Size per NEC/CEC	65	30	65	30	65	30	65	30
MS165-20			65	30	65	30	65	30	65	30
MS165-25			65	30	65	30	65	30	65	30
MS165-32			65	30	65	30	65	30	65	30
MS165-42			65	30	65	30	65	30	65	30
MS165-54			65	30	65	30	65	30	65	30
MS165-65			65	30	65	30	65	30	65	30
MS165-73			50	10	50	10				
MS165-80			50	10	50	10				

(1) NEC: NFPA®70 National Electrical Code®; CEC: CSA C22.1 Canadian Electrical Code.

UL/CSA Maximum short-circuit current ratings – MS165 with AF contactors

Type	Manual self-protected Combination Motor Controllers (Type F)				Manual self-protected Combination Motor Controllers (Type F)			
	Coordination type 1				Coordination type 2			
	Minimum contactor size	480Y / 277 V kA	Minimum contactor size	600Y / 347 V kA	Minimum contactor size	480Y / 277 V kA	Minimum contactor size	600Y / 347 V kA
MS165-16	AF09...AF38	65	AF09...AF38	50	AF26...AF38	65	AF09...AF38	30
MS165-20	AF26...AF38	65	AF26...AF38	50	AF26...AF38	65	AF09...AF38	30
MS165-25	AF26...AF38	65	AF26...AF38	50	AF26...AF38	65	AF40...AF65	30
MS165-32	AF26...AF38	65	AF26...AF38	50	AF26...AF38	65	AF40...AF65	30
MS165-42	AF40...AF65	65	AF40...AF65	30	AF40...AF65	65	AF40...AF65	30
MS165-54	AF40...AF65	65	AF40...AF65	30	AF40...AF65	65	AF40...AF65	30
MS165-65	AF40...AF65	65	AF40...AF65	30	AF40...AF65	65	AF40...AF65	30
MS165-73								
MS165-80								

More coordination tables are available in our SOC (selected optimized coordination) tool:
<https://applications.it.abb.com/SOC/Motor>

UL/CSA Maximum short-circuit current ratings – MO132

Type	Manual Motor Controllers		for motor disconnect		for group installations		for tap conductor protection in group installations	
	Branch circuit protection, max. size per NEC/CEC (1)							
	Fuses A	Circuit breaker A	480 V kA	600 V kA	480 V kA	600 V kA	480 V kA	600 V kA
MO132-0.16	Any Listed fuses. Size per NEC/CEC	Any Listed UL489 / CSA C22.2 No.5 circuit breaker. Size per NEC/CEC	65	47	65	47	65	47
MO132-0.25			65	47	65	47	65	47
MO132-0.40			65	47	65	47	65	47
MO132-0.63			65	47	65	47	65	47
MO132-1.0			65	47	65	47	65	47
MO132-1.6			65	47	65	47	65	47
MO132-2.5			65	47	65	47	65	47
MO132-4.0			65	47	65	47	65	47
MO132-6.3			65	18	65	35	65	18
MO132-10			65	18	65	35	65	18
MO132-12			30	18	35	35	30	18
MO132-16			30	18	35	35	30	18
MO132-20			30	18	35	35	30	18
MO132-25			30	18	35	35	30	18
MO132-32			30	18	35	35	30	18

(1) NEC: NFPA®70 National Electrical Code®; CEC: CSA C22.1 Canadian Electrical Code.

MS116, MS132, MS165, MO132, MO165

Technical data

UL/CSA Maximum short-circuit current ratings – MO165

Type	Manual Motor Controllers							
	Branch circuit protection, max. size per NEC/CEC (1)		for motor disconnect		for group installations		for tap conductor protection in group installations	
	Fuses A	Circuit breaker A	480 V kA	600 V kA	480 V kA	600 V kA	480 V kA	600 V kA
MO165-16	Any Listed fuses. Size per NEC/CEC	Any Listed UL489 / CSA C22.2 No.5 circuit breaker. Size per NEC/CEC	65	30	65	30	65	30
MO165-20			65	30	65	30	65	30
MO165-25			65	30	65	30	65	30
MO165-32			65	30	65	30	65	30
MO165-42			65	30	65	30	65	30
MO165-54			65	30	65	30	65	30
MO165-65			65	30	65	30	65	30
MO165-73			50	10	50	10		
MO165-80			50	10	50	10		

(1) NEC: NFPA®70 National Electrical Code®; CEC: CSA C22.1 Canadian Electrical Code.

UL/CSA Maximum short-circuit current ratings – MO165 with AF contactors

Type	Combination Motor Controllers (Type F)					
	Coordination type 1					
	480Y / 277 V kA	OL Relay	Contactor	600Y / 347 V kA	OL Relay	Contactor
MO165-16	65	EF19-18.9	AF09...AF38	50	EF19-18.9	AF09...AF38
MO165-20	65	EF45-30	AF26...AF38	50	EF45-30	AF26...AF38
MO165-25	65	EF45-30	AF26...AF38	50	EF45-30	AF26...AF38
MO165-32	65	EF45-45	AF26...AF38	50	EF45-45	AF26...AF38
MO165-42	65	EF65	AF40...AF65	30	EF65	AF40...AF65
MO165-54	65	EF65	AF40...AF65	30	EF65	AF40...AF65
MO165-65	65	EF65	AF40...AF65	30	EF65	AF40...AF65
MO165-73						
MO165-80						

UL/CSA Maximum short-circuit current ratings – MO165 with AF contactors

Type	Combination Motor Controllers (Type F)					
	Coordination type 2					
	480Y / 277 V kA	OL Relay	Contactor	600Y / 347 V kA	OL Relay	Contactor
MO165-16	65	TF42	AF09...AF38	30	TF42	AF09...AF38
MO165-20	65	TF42	AF26...AF38	30	TF42	AF09...AF38
MO165-25	65	TF42	AF26...AF38	50	TF42	AF26...AF38
MO165-32	65	TF42	AF26...AF38	50	TF42	AF26...AF38
MO165-42	65	TF65	AF40...AF65	30	TF65	AF40...AF65
MO165-54	65	TF65	AF40...AF65	30	TF65	AF40...AF65
MO165-65	65	TF65	AF40...AF65	30	TF65	AF40...AF65
MO165-73						
MO165-80						

MS116, MS132, MS165, MO132, MO165

Technical data

General technical data

Type	MS116	MS132	MS165	MO132	MO165
Pollution degree	3	3	3	3	3
Phase loss sensitivity	Yes	Yes	Yes	No	No
Disconnect function acc. to IEC/EN 60947-2	Yes	Yes	Yes	Yes	Yes
Ambient air temperature					
Operation					
Open - compensated	-25 ... +55 °C	-25 ... +60 °C	-25 ... +60 °C	-	-
Open	-25 ... +70 °C	-25 ... +70 °C	-25 ... +60 °C	-25 ... +60 °C	-25 ... +60 °C
Enclosed (IB132)	0 ... +40 °C	0 ... +40 °C	-	-	-
Storage	-50 ... +80 °C	-50 ... +80 °C	-50 ... +80 °C	-50 ... +80 °C	-50 ... +80 °C
Ambient air temperature compensation	Acc. to IEC/EN60947-4-1	Acc. to IEC/EN60947-4-1	Acc. to IEC/EN60947-4-1	-	-
Maximum operating altitude permissible	2000 m	2000 m	2000 m	2000 m	2000 m
Resistance to shock acc. to IEC 60068-2-27	25g / 11 ms	25g / 11 ms	25g / 11 ms	25g / 11 ms	25g / 11 ms
Resistance to vibrations acc. to IEC 60068-2-6	5g / 3 ... 150 Hz	5g / 3 ... 150 Hz	5g / 3 ... 150 Hz	5g / 3 ... 150 Hz	5g / 3 ... 150 Hz
Mounting position	Position 1-6 (optional for single mounting)	Position 1-6 (optional for single mounting)	Position 1-6 (optional for single mounting)	Position 1-6 (optional for single mounting)	Position 1-6 (optional for single mounting)
Mounting	DIN-rail (EN 60715)	DIN-rail (EN 60715)	DIN-rail (EN 60715)	DIN-rail (EN 60715)	DIN-rail (EN 60715)
Group mounting	On request	On request	On request	On request	On request
Recommended screw for mounting plate	-	-	M4	-	M4
Screw torque for mounting plate	-	-	2 Nm	-	2 Nm
Minimum distance to other units same type	Horizontal 0 mm	Horizontal 0 mm	Horizontal 0 mm	Horizontal 0 mm	Horizontal 0 mm
	Vertical 150 mm	Vertical 150 mm	Vertical 150 mm	Vertical 150 mm	Vertical 150 mm
Minimum distance to electrical conductive board	Horizontal, up to 400 V 0 mm	Horizontal, up to 400 V 0 mm	Horizontal, up to 400 V 0 mm	Horizontal, up to 400 V 0 mm	Horizontal, up to 400 V 0 mm
	Horizontal, up to 690 V > 1.5 mm	Horizontal, up to 690 V > 1.5 mm	Horizontal, up to 690 V > 1.5 mm	Horizontal, up to 690 V > 1.5 mm	Horizontal, up to 690 V > 1.5 mm
	Vertical 75 mm	Vertical 75 mm	Vertical 75 mm	Vertical 75 mm	Vertical 75 mm
Degree of protection	Housing IP20	Housing IP20	Housing IP20	Housing IP20	Housing IP20
	Main circuit terminals IP10	Main circuit terminals IP10 (1)	Main circuit terminals IP10	Main circuit terminals IP10	Main circuit terminals IP10

(1) Push-in Spring terminals : IP20

Connecting characteristics - Main circuit

Type	MS116 ≤ 16 A	MS116 ≥ 20 A
Connecting capacity		
 Rigid	1 or 2 x 1 ... 4 mm ²	2.5 ... 6 mm ²
 Flexible with ferrule	1 or 2 x 0.75 ... 2.5 mm ²	1 ... 6 mm ²
 Flexible with insulated ferrule	1 or 2 x 0.75 ... 2.5 mm ²	1 ... 6 mm ²
 Flexible	1 or 2 x 0.75 ... 2.5 mm ²	1 ... 6 mm ²
Stranded acc. to UL/CSA	1 or 2 x AWG 16-12	AWG 16-8
Stripping length	9 mm	10 mm
Tightening torque	0.8 ... 1.2 Nm / 10 ... 12 lb.in	2.0 Nm / 18 lb.in
Recommended screwdriver	Pozidriv 2	Pozidriv 2

Type	MS132 ≤ 10 A	MS132 ≥ 12 A
Connecting capacity		
 Rigid	1 or 2 x 1 ... 4 mm ²	1 ... 2.5 mm ² 2.5 ... 6 mm ²
 Flexible with ferrule	1 or 2 x 0.75 ... 2.5 mm ²	0.75 ... 6 mm ²
 Flexible with insulated ferrule	1 or 2 x 0.75 ... 2.5 mm ²	0.75 ... 6 mm ²
 Flexible	1 or 2 x 0.75 ... 2.5 mm ²	1 ... 2.5 mm ² 2.5 ... 6 mm ²
Stranded acc. to UL/CSA	1 or 2 x AWG 16-12	AWG 16-8
Stripping length	9 mm	10 mm
Tightening torque	0.8 ... 1.2 Nm / 10 ... 12 lb.in	2.0 Nm / 18 lb.in
Recommended screwdriver	Pozidriv 2	Pozidriv 2

Type	MS132-K with Push-in Spring terminals
Connecting capacity	
 Rigid solid	1 or 2 x 1 ... 2.5 mm ²
 Rigid stranded	1 or 2 x 1 ... 6 mm ²
 Flexible with ferrule	1 or 2 x 0.5 ... 4 mm ²
 Flexible with insulated ferrule	1 x 0.5 ... 4 mm ²
	1/2 x 0.5 ... 2.5 mm ²
 Flexible	1 or 2 x 0.75 ... 4 mm ²
Stranded acc. to UL/CSA	1/2 x AWG 18 ... AWG 10
	1 x AWG 8
Wire stripping length	12 mm
Screwdriver	Flat Ø 3 mm x 0.5 mm

MS116, MS132, MS165, MO132, MO165

Technical data

Connecting characteristics - Main circuit

Type	MS165	
Connecting capacity		
 Rigid stranded	1 or 2 x	1 ... 50 mm ²
 Flexible with ferrule	1 or 2 x	1 ... 35 mm ²
 Flexible with insulated ferrule	1 or 2 x	1 ... 35 mm ²
 Flexible	1 or 2 x	1 ... 35 mm ²
Stranded acc. to UL/CSA	1 or 2 x	AWG 16-0
Stripping length		16 mm
Tightening torque		4.0 Nm / 35 lb.in
Recommended screw driver		Pozidriv 2

Type	MO132 ≤ 10 A		MO132 ≥ 12 A
Connecting capacity			
 Rigid	1 or 2 x	1 ... 4 mm ²	1 ... 2.5 mm ² 2.5 ... 6 mm ²
 Flexible with ferrule	1 or 2 x	0.75 ... 2.5 mm ²	0.75 ... 6 mm ²
 Flexible with insulated ferrule	1 or 2 x	0.75 ... 2.5 mm ²	0.75 ... 6 mm ²
 Flexible	1 or 2 x	0.75 ... 2.5 mm ²	1 ... 2.5 mm ² 2.5 ... 6 mm ²
Stranded acc. to UL/CSA	1 or 2 x	AWG 16-12	AWG 16-8
Stripping length		9 mm	10 mm
Tightening torque		0.8 ... 1.2 Nm / 10 ... 12 lb.in	2.0 Nm / 18 lb.in
Recommended screw driver		Pozidriv 2	Pozidriv 2

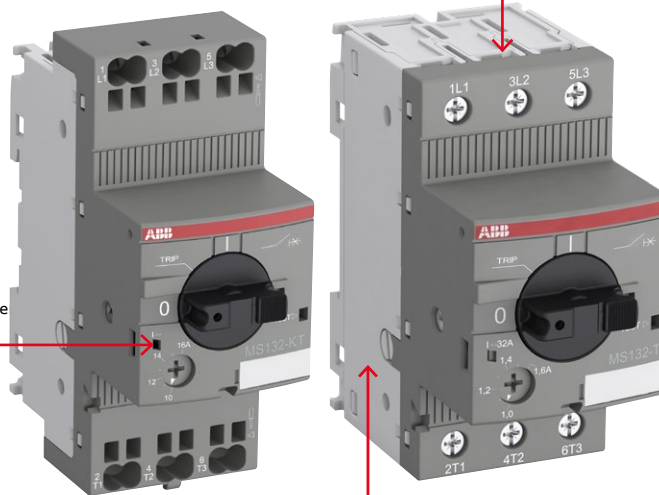
Type	MO165	
Connecting capacity		
 Rigid stranded	1 or 2 x	1 ... 50 mm ²
 Flexible with ferrule	1 or 2 x	1 ... 35 mm ²
 Flexible with insulated ferrule	1 or 2 x	1 ... 35 mm ²
 Flexible	1 or 2 x	1 ... 35 mm ²
Stranded acc. to UL/CSA	1 or 2 x	AWG 16-0
Stripping length		16 mm
Tightening torque		4.0 Nm / 35 lb.in
Recommended screw driver		Pozidriv 2

Circuit breakers for transformer protection

Low voltage transformers are used to supply power to control and auxiliary circuits in distribution and automation boards and to provide galvanic isolation. These transformers may be damaged by an electrical failure (short-circuit or overload on the primary side), therefore a proper protection should be provided.

Troubleshooting made easy

MS132-T feature a magnetic trip indicator. This way, every tripping event will be distinguished, making troubleshooting a lot easier and faster.



Complete portfolio

Manual motor starter accessories are suitable throughout the complete range. Moreover ABB offers special accessories for fast single-phase setup.



Transformer protection

MS132-T is an inrush compensated circuit breaker for control transformer protection. With the right selection, it provides overcurrent protection on the primary side of the transformer. This avoids expensive protection on the secondary side.



Circuit breakers for transformers protection are specially designed for fuseless protection of control transformers on the primary side against overloads and short-circuits.

Application example

Protection of transformers for power supply of control and auxiliary circuits, both in distribution and automation boards (checking, signaling, interlock, etc).

MS132-T circuit breakers for transformer protection

0.10 to 25 A – with thermal and electromagnetic protection



MS132-10T

2CDC24009V0017



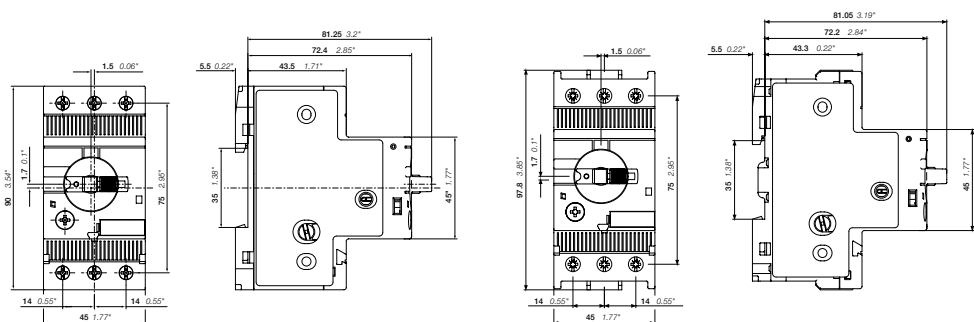
MS132-25T

2CDC241002FD014

Circuit breakers for transformer protection are electro-mechanical protection devices specially designed to protect control transformers on the primary side. They allow fuseless protection against overload and short-circuit, saving space and cost and ensuring a quick reaction under short-circuit condition by switching off the transformer within milliseconds. The short-circuit current setting is fixed to 20 times the operating current to handle the high inrush current generated by transformers. The device allows manual connection and disconnection of the transformer from the mains.

MS132-T is a 45 mm (width) compact and powerful range for transformer protection up to 12.5 kW (400 V) / 25 A. 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 built-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. 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. Moreover ABB offers special accessories for fast single phase setup.

Setting range	Short-circuit breaking capacity I _{cs} at 400 V AC kA	Rated instantaneous short-circuit current setting I _i A	Type	Order code	Weight (1 pce)
A					kg
0.10 ... 0.16	100	3.2	MS132-0.16T	1SAM340000R1001	0.215
0.16 ... 0.25	100	5	MS132-0.25T	1SAM340000R1002	0.215
0.25 ... 0.40	100	8	MS132-0.4T	1SAM340000R1003	0.215
0.40 ... 0.63	100	12.6	MS132-0.63T	1SAM340000R1004	0.215
0.63 ... 1.00	100	20	MS132-1.0T	1SAM340000R1005	0.215
1.00 ... 1.60	100	32	MS132-1.6T	1SAM340000R1006	0.265
1.60 ... 2.50	100	50	MS132-2.5T	1SAM340000R1007	0.265
2.50 ... 4.00	100	80	MS132-4.0T	1SAM340000R1008	0.265
4.00 ... 6.30	100	126	MS132-6.3T	1SAM340000R1009	0.265
6.30 ... 10.0	100	200	MS132-10T	1SAM340000R1010	0.265
8.00 ... 12.0	100	240	MS132-12T	1SAM340000R1012	0.310
10.0 ... 16.0	100	320	MS132-16T	1SAM340000R1011	0.310
16.0 ... 20.0	100	400	MS132-20T	1SAM340000R1013	0.310
20.0 ... 25.0	50	500	MS132-25T	1SAM340000R1014	0.310



Main dimensions mm, inches

MS132-KT circuit breakers for transformer protection with Push-in Spring terminals

0.10 to 25 A – with thermal and electromagnetic protection

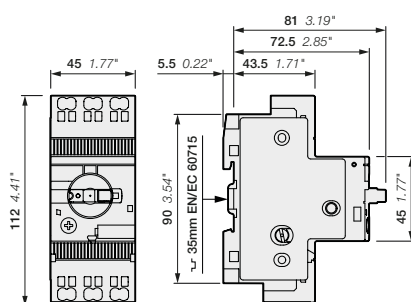


MS132-KT

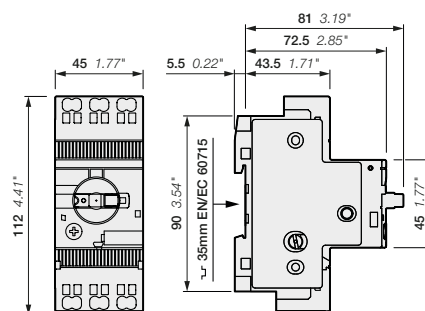
Circuit breakers for transformer protection with Push-in Spring terminals are electro-mechanical protection devices specially designed to protect control transformers on the primary side. They allow fuseless protection against overload and short-circuit, saving space and cost and ensuring a quick reaction under short-circuit condition by switching off the transformer within milliseconds. The short-circuit current setting is fixed to 20 times the operating current to handle the high inrush current generated by transformers. The device allows manual connection and disconnection of the transformer from the mains.

MS132-KT is a 45 mm (width) compact and powerful range for transformer protection up to 12.5 kW (400 V) / 25 A. 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 built-in disconnect function, temperature compensation, trip-free mechanism and a rotary handle with a clear switch position indication. The handle is lockable to protect against unauthorized changes. Auxiliary contacts, signaling contacts, undervoltage releases and shunt trips are available as accessory. These are suitable throughout the MS116/MS132/MS165-range.

Setting range	Short-circuit breaking capacity I _{cs} at 400 V AC kA	Rated instantaneous short-circuit current setting I _i A	Type	Order code	Weight (1 pce)
A					kg
0.10 ... 0.16	100	3.2	MS132-0.16KT	1SAM340010R1001	0.256
0.16 ... 0.25	100	5	MS132-0.25KT	1SAM340010R1002	0.256
0.25 ... 0.40	100	8	MS132-0.4KT	1SAM340010R1003	0.256
0.40 ... 0.63	100	12.6	MS132-0.63KT	1SAM340010R1004	0.256
0.63 ... 1.00	100	20	MS132-1.0KT	1SAM340010R1005	0.256
1.00 ... 1.60	100	32	MS132-1.6KT	1SAM340010R1006	0.298
1.60 ... 2.50	100	50	MS132-2.5KT	1SAM340010R1007	0.280
2.50 ... 4.00	100	80	MS132-4.0KT	1SAM340010R1008	0.286
4.00 ... 6.30	100	126	MS132-6.3KT	1SAM340010R1009	0.289
6.30 ... 10.0	100	200	MS132-10KT	1SAM340010R1010	0.296
10.0 ... 16.0	100	320	MS132-16KT	1SAM340010R1011	0.316
16.0 ... 20.0	100	400	MS132-20KT	1SAM340010R1013	0.317
20.0 ... 25.0	50	500	MS132-25KT	1SAM340010R1014	0.316



MS132-KT > 10 A



MS132-KT < 10 A

Main dimensions mm, inches

MS132-T, MS132-KT

Technical data

Main circuit – Utilization characteristics according to IEC/EN

Type	MS132-T / -KT
Standards	IEC/EN 60947-2, IEC/EN 60947-4-1, IEC/EN 60947-1
Rated operational voltage U _e	690 V AC
Rated frequency	50/60 Hz
Operational frequency	0 ... 400 Hz
Trip class	10
Number of poles	3
Duty time	100%
Mechanical durability	100000 cycles
Electrical durability	50000 cycles
Rated impulse withstand voltage U _{imp}	6 kV
Rated insulation voltage U _i	690 V
Rated operational current I _e	See ordering details
Rated instantaneous short-circuit current setting I _i	See ordering details
Rated service short-circuit breaking capacity I _{cs}	See table "Short-circuit breaking capacity and back-up fuses"
Rated ultimate short-circuit breaking capacity I _{cu}	See table "Short-circuit breaking capacity and back-up fuses"

Short-circuit breaking capacity and back-up fuses

I_{cs} Rated service short-circuit breaking capacity

I_{cu} Rated ultimate short-circuit breaking capacity

I_{cc} Prospective short-circuit current at installation location

Note: Maximum rated current of the back-up fuses if I_{cc} > I_{cs}

Type	230 V AC			400 V AC			440 V AC			500 V AC			690 V AC		
	I _{cs} kA	I _{cu} kA	gG, aM A	I _{cs} kA	I _{cu} kA	gG, aM A	I _{cs} kA	I _{cu} kA	gG, aM A	I _{cs} kA	I _{cu} kA	gG, aM A	I _{cs} kA	I _{cu} kA	gG, aM A
MS132-0.16T / -KT	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-0.25T / -KT	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-0.4T / -KT	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-0.63T / -KT	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-1.0T / -KT	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-1.6T / -KT	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-2.5T / -KT	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)	100	100	-(1)
MS132-4.0T / -KT	100	100	-(1)	100	100	-(1)	30	30	35 (2)	20	20	35 (2)	3	3	35 (2)
MS132-6.3T / -KT	100	100	-(1)	100	100	-(1)	30	30	63 (2)	20	20	63 (2)	3	3	50 (2)
MS132-10T / -KT	100	100	-(1)	100	100	-(1)	30	30	100 (2)	20	20	100 (2)	3	3	50 (2)
MS132-12T	100	100	-(1)	100	100	-(1)	30	30	100 (2)	20	20	100 (2)	3	3	63 (2)
MS132-16T / -KT	100	100	-(1)	100	100	-(1)	30	30	125 (2)	20	20	125 (2)	3	3	63 (2)
MS132-20T / -KT	100	100	-(1)	100	100	-(1)	30	30	125 (2)	20	20	125 (2)	3	3	80 (2)
MS132-25T / -KT	50	50	125 (2)	50	50	125 (2)	30	30	125 (2)	10	10	125 (2)	3	3	100 (2)

(1) No back-up fuse required, because short-circuit proof up to 100 kA

(2) Rated back-up fuse for short-circuits up to 100 kA

MS132-T, MS132-KT

Technical data

Main circuit – Utilization characteristics according to UL

Type	MS132-T / -KT	
Standards	UL 60947-1, UL 60947-4-1	
Rated operational voltage U _e acc. to UL/CSA	600 V AC	
Trip class	10	
Motor ratings (1)	Full Load Amps (FLA)	see table UL current ratings

(1) See product data sheets for UL/CSA single phase motor and general use (AC-1) ratings.

UL/CSA ratings overview

Type	MS132-T / -KT	
Manual Motor Controller	not applicable	
Manual Motor Controller, Suitable as Motor Disconnect	not applicable	
Manual Motor Controller, Suitable for use in Group Installations	not applicable	
Manual Motor Controller, Suitable for Tap Conductor Protection in Group Installations	x	
Manual self-protected Combination Motor Controller (Type E)	not applicable	
Combination Motor Controller (Type F)	not applicable	

UL current ratings, single-phase – MS132-T / -KT

Type	120 V AC FLA	220 ... 240 V AC FLA
MS132-0.16T / -KT	0.16	0.16
MS132-0.25T / -KT	0.25	0.25
MS132-0.4T / -KT	0.4	0.4
MS132-0.63T / -KT	0.63	0.63
MS132-1.0T / -KT	1	1
MS132-1.6T / -KT	1.6	1.6
MS132-2.5T / -KT	2.5	2.5
MS132-4.0T / -KT	4	4
MS132-6.3T / -KT	6.3	6.3
MS132-10T / -KT	9.8	10
MS132-12T	9.8	12
MS132-16T / -KT	16	12
MS132-20T / -KT	20	17
MS132-25T / -KT	24	17

UL 508 — Manual controller for tap conductor protection and for control transformers

Type	Max. short-circuit current rating when used with upstream protection device	
	480 V kA	600 V kA
MS132-0.16T / -KT	65	47
MS132-0.25T / -KT	65	47
MS132-0.4T / -KT	65	47
MS132-0.63T / -KT	65	47
MS132-1.0T / -KT	65	47
MS132-1.6T / -KT	65	47
MS132-2.5T / -KT	65	47
MS132-4.0T / -KT	65	47
MS132-6.3T / -KT	65	18
MS132-10T / -KT	65	18
MS132-12T	30	18
MS132-16T / -KT	30	18
MS132-20T / -KT	30	18
MS132-25T / -KT	30	18

MS132-T, MS132-KT

Technical data

General technical data

Type	MS132-T / - KT	
Pollution degree	3	
Phase loss sensitivity	Yes	
Disconnect function acc. to IEC/EN 60947-2	Yes	
Ambient air temperature		
Operation	Open - compensated	-25 ... +60 °C
	Open	-25 ... +70 °C
	Enclosed (IB132)	0 ... +40 °C
Storage		-50 ... +80 °C
Ambient air temperature compensation	Acc. to IEC/EN60947-4-1	
Maximum operating altitude permissible	2000 m	
Resistance to shock acc. to IEC 60068-2-27	25g / 11 ms	
Resistance to vibrations acc. to IEC 60068-2-6	5g / 3 ... 150 Hz	
Mounting position	Position 1-6 (optional for single mounting)	
Mounting	DIN-rail (EN 60715)	
Group mounting	-	
Recommended screw for mounting plate	-	
Screw torque for mounting plate	-	
Minimum distance to other units	Horizontal	0 mm
same type	Vertical	150 mm
Minimum distance to electrical conductive board	Horizontal, up to 400 V	0 mm
	Horizontal, up to 690 V	> 1.5 mm
	Vertical	75 mm
Degree of protection	Housing	IP20
	Main circuit terminals	IP10 (Push-in Spring terminals: IP20)

Connecting characteristics - main circuit

Type	MS132-T ≤ 10 A		MS132-T ≥ 12 A
Connecting capacity			
 Rigid	1 or 2 x	1 ... 4 mm ²	1 ... 2.5 mm ² 2.5 ... 6 mm ²
 Flexible with ferrule	1 or 2 x	0.75 ... 2.5 mm ²	0.75 ... 6 mm ²
 Flexible with insulated ferrule	1 or 2 x	0.75 ... 2.5 mm ²	0.75 ... 6 mm ²
 Flexible	1 or 2 x	0.75 ... 2.5 mm ²	1 ... 2.5 mm ² 2.5 ... 6 mm ²
Stranded acc. to UL/CSA	1 or 2 x	AWG 16-12	AWG 16-8
Stripping length	9 mm		10 mm
Tightening torque	0.8 ... 1.2 Nm / 10 ... 12 lb.in		2.0 Nm / 18 lb.in
Recommended screwdriver	Pozidriv 2		Pozidriv 2

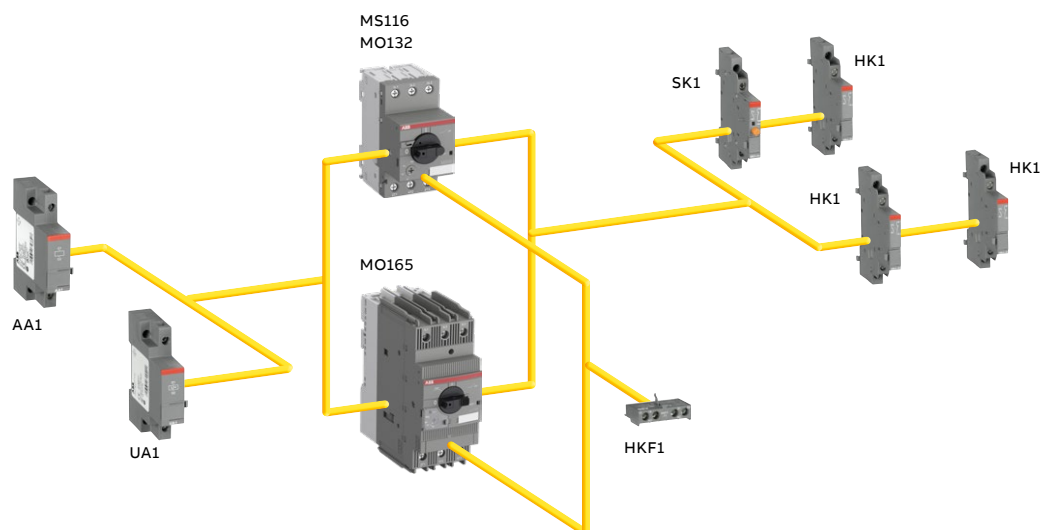
Connecting characteristics - main circuit

Type	MS132-KT with Push-in Spring terminals	
Connecting capacity		
 Rigid solid	1 or 2 x	1 ... 2.5 mm ²
 Rigid stranded	1 or 2 x	1 ... 6 mm ²
 Flexible with ferrule	1 or 2 x	0.5 ... 4 mm ²
 Flexible with insulated ferrule	1 x	0.5 ... 4 mm ²
	1/2 x	0.75 ... 4 mm ²
 Flexible	1 or 2 x	0.75 ... 4 mm ²
Stranded acc. to UL/CSA	1/2 x	AWG 18 ... AWG 10
Wire stripping length	12 mm	
Tightening torque	0.8 ... 1.2 Nm / 10 ... 12 lb.in	
Screwdriver	Flat Ø 3 mm x 0.5 mm	

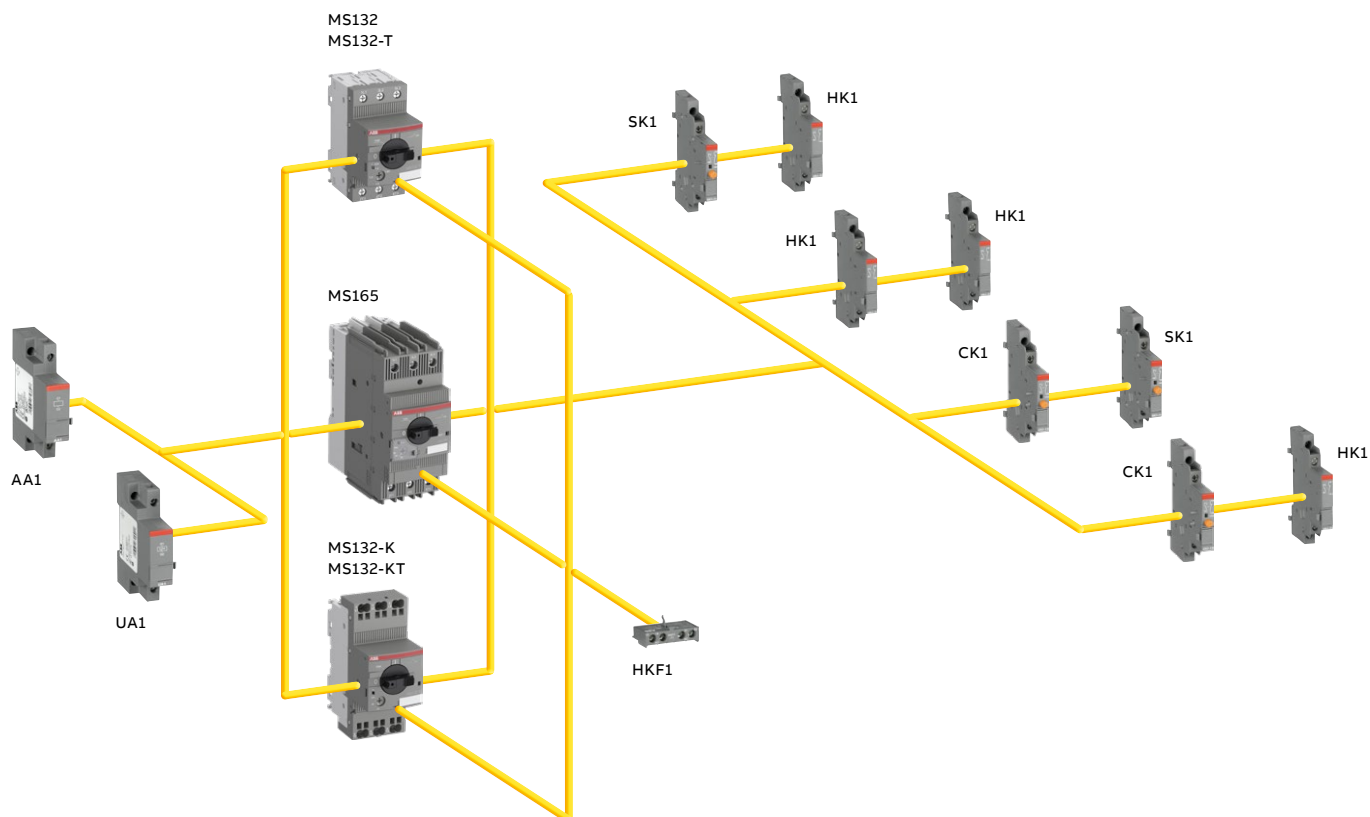
Accessories

MS116, MS132, MS165, MO132, MO165, MS132-T

Manual motor starters with accessories (MS116, MO132, MO165)



Manual motor starters (MS132, MS165) and circuit breakers for transformer protection (MS132-T) with accessories



Note: The combination of MS132-K + UA1 + CK1 is not possible

Accessories

MS116, MS132, MS165, MO132, MO165, MS132-T, MS132-K, MS132-KT



1SBC101208F0014

HKF1-11



1SBC101209F0014

HK1-11



1SBC101210F0014

SK1-11



1SBC101286F0014

CK1-11

Manual motor starters and MS132-T can be equipped with auxiliary contacts for lateral/front mounting, signaling contacts for lateral mounting, undervoltage releases and shunt trips. Two different signaling contacts are available. The accessories can be fitted wiring free and without tools. A variety of combinations is possible as required for the application. The auxiliary contacts change position with the main contacts. The signaling contact SK1 signals tripping regardless if it was caused by short-circuit or overload. The signaling contact CK1 signals tripping in case it was caused by short-circuit. Undervoltage releases are used for remote tripping of the manual motor starters, specially for emergency stop circuits. Shunt trips release the manual motor starters used for remote tripping. These main accessories are suitable throughout the MS116/MS132/MS165-range.

Suitable for	Auxiliary contacts N.O.	Auxiliary contacts N.C.	Description	Type	Order code	Pkg qty	Weight (1 pce)
							kg

Auxiliary contacts – mountable on the front

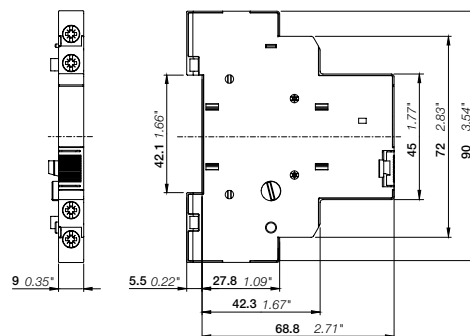
MS116, MS132,	1	1		HKF1-11	1SAM201901R1001	10	0.015
MS165, MO132,	1	0		HKF1-10	1SAM201901R1003	10	0.013
MO165, MS132-T,	0	1		HKF1-01	1SAM201901R1004	10	0.013
MS132-K, MS132-KT	2	0		HKF1-20	1SAM201901R1002	10	0.015

Auxiliary contacts – mountable on the right

MS116, MS132,	1	1	max. 2 pieces	HK1-11	1SAM201902R1001	2	0.035
MS165, MO132,	2	0	max. 2 pieces	HK1-20	1SAM201902R1002	2	0.035
MO165, MS132-T,	0	2	max. 2 pieces	HK1-02	1SAM201902R1003	2	0.035
MS132-K, MS132-KT							
MS116, MS132,	2	0	max. 2 pieces with leading contacts	HK1-20L	1SAM201902R1004	2	0.035
MO132, MS132-T,							
MS132-K, MS132-KT							

Signaling contacts – mountable on the right

MS116, MS132,	1	1	for tripped alarm	SK1-11	1SAM201903R1001	2	0.035
MS165, MO132,	2	0	for tripped alarm	SK1-20	1SAM201903R1002	2	0.035
MO165, MS132-T,	0	2	for tripped alarm	SK1-02	1SAM201903R1003	2	0.035
MS132-K, MS132-KT							
MS132, MS165,	1	1	for short-circuit alarm	CK1-11	1SAM301901R1001	2	0.035
MS132-T, MS132-K,	2	0	for short-circuit alarm	CK1-20	1SAM301901R1002	2	0.035
MS132-KT	0	2	for short-circuit alarm	CK1-02	1SAM301901R1003	2	0.035



HK1

Main dimensions mm, inches

Accessories

MS116, MS132, MS165, MO132, MO165, MS132-T



AA1-24



UA1-24

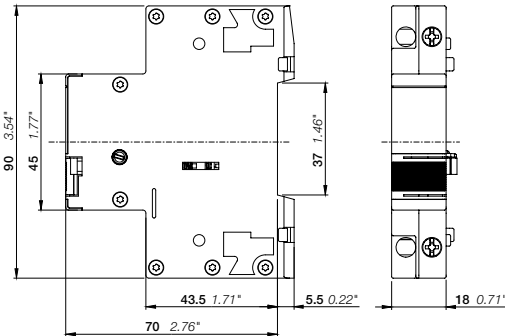
Suitable for	Rated control supply voltage		Type	Order code	Pkg qty	Weight (1 pce) kg
	50 Hz V AC	60 Hz V AC				

Shunt trips – mountable on the left

MS116, MS132, MS165, MO132, MO165, MS132-T	20 ... 24	20 ... 24	AA1-24	1SAM201910R1001	1	0.100
	110	110	AA1-110	1SAM201910R1002	1	0.100
	200 ... 240	200 ... 240	AA1-230	1SAM201910R1003	1	0.100
	350 ... 415	350 ... 415	AA1-400	1SAM201910R1004	1	0.100

Undervoltage releases – mountable on the left

MS116, MS132, MS165, MO132, MO165, MS132-T	20	24	UA1-20	1SAM201904R1010	1	0.100
	24	-	UA1-24	1SAM201904R1001	1	0.100
	48	-	UA1-48	1SAM201904R1002	1	0.100
	60	-	UA1-60	1SAM201904R1003	1	0.100
	110	120	UA1-110	1SAM201904R1004	1	0.100
	-	208	UA1-208	1SAM201904R1008	1	0.100
	230	240	UA1-230	1SAM201904R1005	1	0.100
	400	-	UA1-400	1SAM201904R1006	1	0.100
	415	480	UA1-415	1SAM201904R1007	1	0.100
	-	575	UA1-575	1SAM201904R1009	1	0.100



AA1, UA1

Main dimensions mm, inches

Accessories

With Push-in Spring terminals

Manual motor starters can be equipped with auxiliary contacts for lateral and front mounting as well as signaling contacts for lateral mounting. The accessories are equipped with Push-in Spring terminals that enable tool-free wiring. A variety of combinations is possible as required for the application. The auxiliary contacts change position with the main contacts. The signaling contact SK1 signals tripping regardless if it was caused by short-circuit or overload. These main accessories are suitable throughout the MS116/MS132/MS165-range.

Suitable for	Auxiliary contacts N.O.	Auxiliary contacts N.C.	Description	Type	Order code	Pkg qty	Weight (1 pce) kg
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Auxiliary contacts - mountable on the front

MS116, MS132,	1	1		HKF1-11K	1SAM201901R1201	10	0.016
MS165 MO132,	2	0		HKF1-20K	1SAM201901R1202	10	0.016
MO165,							
MS132-T,							
MS132-K,							
MS132-KT							

Auxiliary contacts - mountable on the right

MS116, MS132,	1	1	max. 2 pieces	HK1-11K	1SAM201902R1201	2	0.035
MS165 MO132,	2	0	max. 2 pieces	HK1-20K	1SAM201902R1202	2	0.035
MO165,	0	2	max. 2 pieces	HK1-02K	1SAM201902R1203	2	0.035
MS132-T,	2	0	with leading contacts	HK1-20LK	1SAM201902R1204	2	0.035
MS132-K,							
MS132-KT							

Signaling contacts - mountable on the right

MS116, MS132,	1	1	for tripped alarm	SK1-11K	1SAM201903R1201	2	0.035
MS165 MO132,	2	0	for tripped alarm	SK1-20K	1SAM201903R1202	2	0.035
MO165,	0	2	for tripped alarm	SK1-02K	1SAM201903R1203	2	0.035
MS132-T,							
MS132-K,							
MS132-KT							



HKF1-11K

2CDC241027V0017



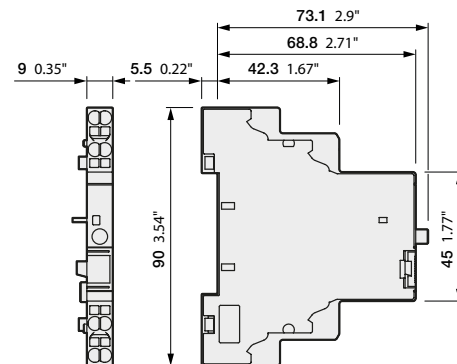
HK1-11K

2CDC241028V0017

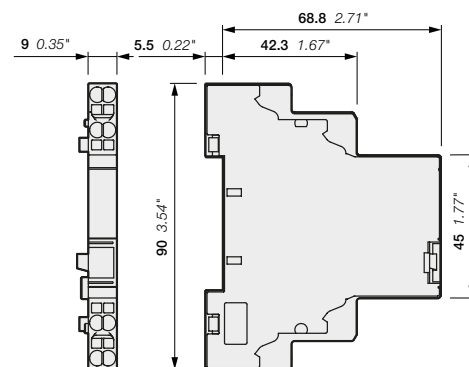


SK1-11K

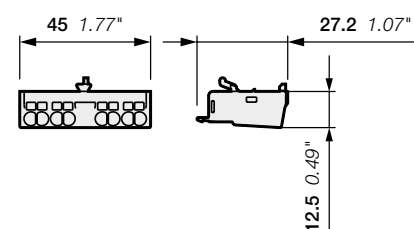
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SK1-K



HK1-K



HKF1-K

Main dimensions mm, inches

2CDC131059C0201

Accessories

MS116, MS132, MS165, MO132, MO165, MS132-T

General technical data

Type		HK1, SK1	CK1	HKF1
Standards		IEC/EN 60947-1, IEC/EN 60947-5-1		
Rated operational voltage Ue		690 V AC / 600 V DC		250 V AC / 250 V DC
Conventional free-air thermal current Ith		6 A		5 A
Rated frequency		50/60 Hz		
Rated impulse withstand voltage Uimp		6 kV		
Rated insulation voltage Ui		690 V AC		250 V AC
Pollution degree		3		
Ambient air temperature	Operation	-25 ... +60 °C		
	Storage	-50 ... +80 °C		
Resistance to shock acc. to IEC 60068-2-27		25g / 11 ms		
Resistance to vibrations acc. to IEC 60068-2-6		5g / 3 ... 150 Hz		
Ie / Rated operational current AC-15 acc. to IEC/EN 60947-5-1 for utilization category	24 V, 120 V	6 A		3 A
	240 V	4 A		1.5 A
	400 V	3 A		-
	440 V, 690 V	1 A		-
Ie / Rated operational current DC-13 acc. to IEC/EN 60947-5-1 for utilization category	24 V	2 A		1 A
	125 V	0.55 A		0.27 A
	250 V	0.27 A		0.11 A
	440 V, 600 V	0.15 A		-
Minimum switching capacity		17 V / 5 mA		
Short-circuit protective device	N.C., 95-96	10 A Type gG		
	N.O., 97-98	10 A Type gG		
Duty time		100 %		
Mounting		Right side of MMS / MS132-T		Front of MMS / MS132-T
Mounting positions		1-6		
Mechanical durability		100000 cycles	10000 cycles	-
Electrical durability		100000 cycles	10000 cycles	-

Contact utilization characteristics according to UL/CSA

Type	HK1, SK1, CK1	HKF1
Standards	UL 60947-1, UL 60947-5-1 (UL 508), CSA C22.2 No.60947-5-1 (CSA C22.2 No.14)	
Rated operational voltage U _e acc. to UL/CSA	600 V AC / 600 V DC	250 V AC / 250 V DC
Pilot duty	B600, Q600	B300, R300
AC thermal rated current	5 A	5 A
AC maximum volt-ampere making	3600 VA	3600 VA
AC maximum volt-ampere breaking	360 VA	360 VA
DC thermal rated current	2.5 A	1 A
DC maximum volt-ampere making-breaking	69 VA	28 VA

Connecting characteristics - Auxiliary circuit

Type	HK1, SK1, CK1	HKF1
Connecting capacity		
 Rigid	1 or 2 x 1 ... 1.5 mm ²	1 ... 2.5 mm ²
 Flexible with ferrule	1 or 2 x 0.5 ... 2.5 mm ² (with Push-in Spring terminals)	
 Flexible with insulated ferrule	1 or 2 x 0.75 ... 1.5 mm ²	
 Flexible	1 or 2 x 0.5 ... 2.5 mm ² (with Push-in Spring terminals)	
	0.75 ... 1.5 mm ²	
	0.5 ... 1.5 mm ² (with Push-in Spring terminals)	
	0.5 ... 2.5 mm ² (with Push-in Spring terminals)	
Stranded acc. to UL/CSA	1 or 2 x AWG 16-14	
	AWG 20 - 14 (with Push-in Spring terminals)	
Stripping length	8 mm	
	10 mm (with Push-in Spring terminals)	
Tightening torque	0.8 ... 1.2 Nm / 7 lb.in	
Recommended screw driver	Pozidriv 2	
	Flat Ø 3 mm x 0.5 mm (with Push-in Spring terminals)	

Accessories

MS116, MS132, MS165, MO132, MO165, MS132-T

General technical data

Type	UA1	AA1
Standards	IEC/EN 60947-1, IEC/EN 60947-5-1, UL 60947-1, UL 60947-5-1 (UL 508), CSA C22.2 No.60947-4-1 (CSA C22.2 No.14)	
Rated control supply voltage	see ordering details	AA1-24: 20-24 V 50/60 Hz; 20-70 V 50/60 Hz ON-Period = 5 s, 20-70 V DC ON-Period = 5 s AA1-100: 110 V 50/60 Hz; 110-200 V 50/60 Hz ON-Period = 5 s, 110-200 V DC ON-Period = 5 s AA1-230: 200-240 V 50/60 Hz, 200-350 V 50/60 Hz ON-Period = 5 s, 200-350 V DC ON-Period = 5 s AA1-400: 350-415 V 50/60 Hz, 350-500 V 50/60 Hz ON-Period = 5 s, 350-500 V DC ON-Period = 5 s
Rated frequency	see ordering details	50/60 Hz, DC
Operating voltage	Tripping	0.35 ... 0.7 x Us
	Coil operating voltage	0.7 ... 1.1 x Us
Power consumption	Pull-in	AC on request
		DC on request
	Holding	AC on request
		DC on request
Rated impulse withstand voltage Uimp	6 kV	6 kV
Rated insulation voltage Ui	690 V	690 V
Pollution degree	3	3
Ambient air temperature	Operation	-25 ... +60 °C
	Storage	-50 ... +80 °C
Resistance to shock acc. to IEC 60068-2-27	15g / 11 ms	15g / 11 ms
Resistance to vibrations acc. to IEC 60068-2-6	5g / 3 ... 150 Hz	5g / 3 ... 150 Hz
Mounting	left side of MMS / MS132-T	left side of MMS / MS132-T
Mounting positions	-	-

ON-Period: max. 5s actuation time

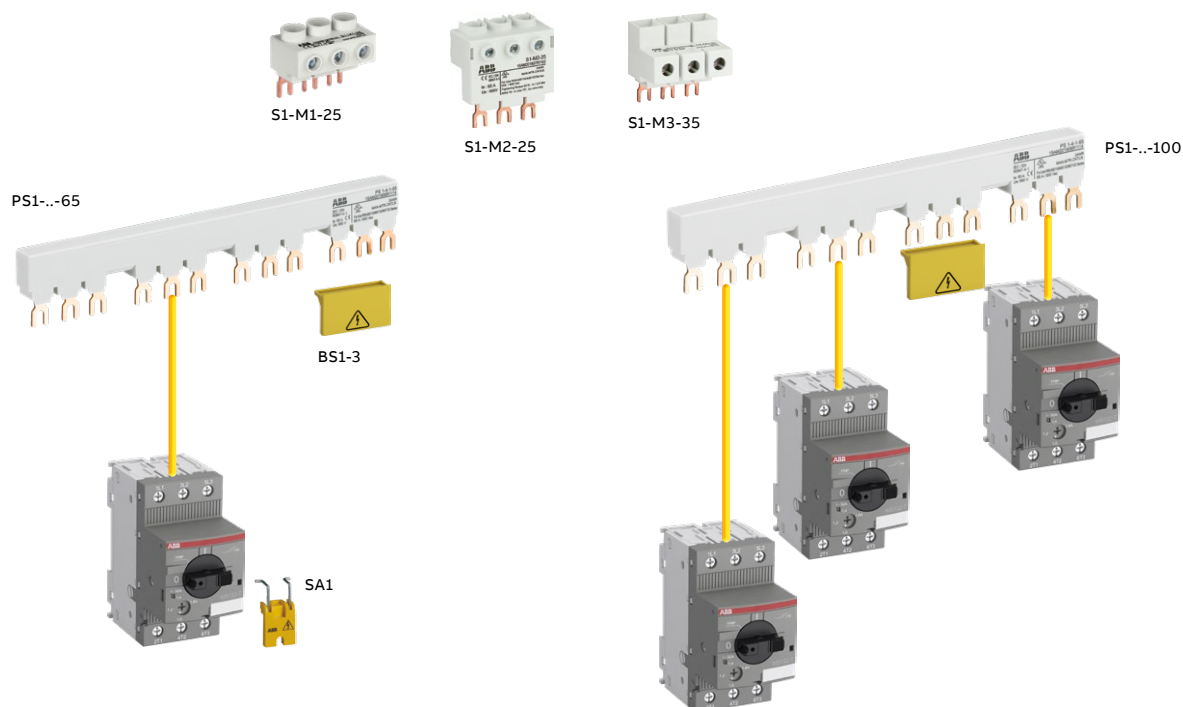
Connecting characteristics - Auxiliary circuit

Type	UA1	AA1
Connecting capacity		
 Rigid	1 or 2 x 1 ... 4 mm ²	
 Flexible with ferrule	1 or 2 x 0.75 ... 2.5 mm ²	
 Flexible with insulated ferrule	1 x 0.75 ... 2.5 mm ²	
	2 x 0.75 ... 1.5 mm ²	
 Flexible	1 or 2 x 0.75 ... 2.5 mm ²	
Stranded acc. to UL/CSA	1 or 2 x AWG 16-12	
Stripping length	10 mm	
Tightening torque	0.8 ... 1.2 Nm / 7 lb.in	
Recommended screwdriver	Pozidriv 2	

Accessories

MS116, MS132, MS165, MO132, MO165

Manual motor starters with three-phase busbar systems (MS116, MS132, MO132)

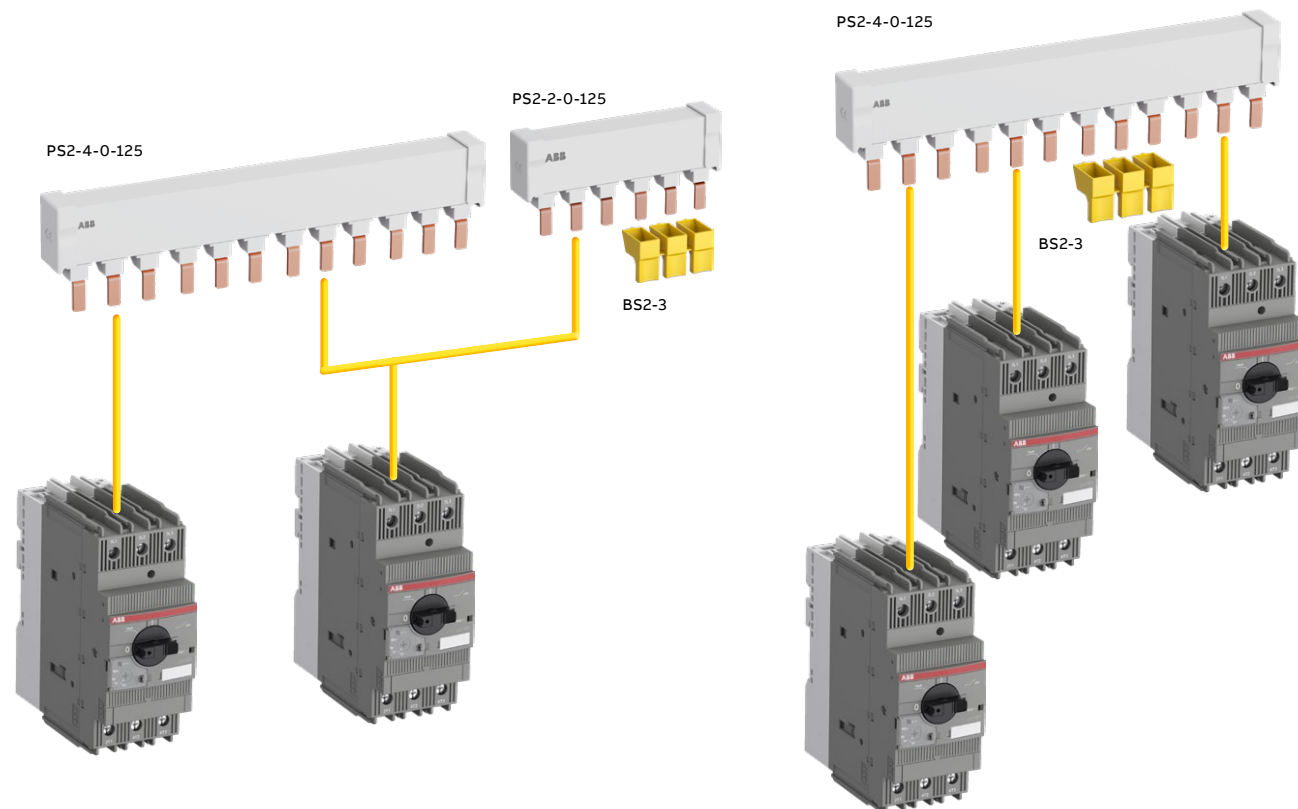


Three-phase busbar up to 65 A

Three-phase busbar up to 100 A

Note: busbars and feeder blocks are only suitable for screw versions.

Manual motor starters with three-phase busbar systems (MS165, MO165)

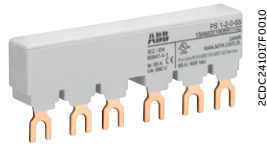


Three-phase busbar up to 125 A

Three-phase busbar up to 125 A

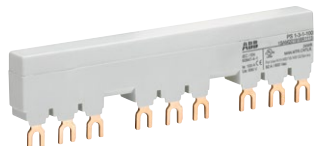
Accessories

MS116, MS132, MO132, MS132-T



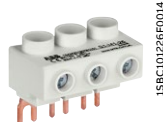
PS1-2-0-65

2CDC24101F0010



PS1-3-1-100

2CDC24101F0010



S1-M1-25

1SBC101266F0014



S1-M2-25

1SBC101266F0014



SA2



2CDC241023F0013



SA1

SK0108B91



PB1-1-32

2CDC241004F0014



S1-PB1-25

2CDC241005S0014

Three-phase busbars ensure a quick and safe connection and are therefore a cost effective solution. A variety of different three-phase busbars up to 100 A are in the assortment. Between 2 and 4 manual motor starters with none, one or two lateral auxiliary contacts can be connected. Different three-phase feeder terminals are available according to the application.

Phase connecting links and phase power infeed blocks are also available for single-phase applications.

Suitable for	Rated operational current	Number of manual motor starters	Number of lateral auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
	A						kg

Three-phase busbars

MS116, MS132, MO132	65	2	0	PS1-2-0-65	1SAM201906R1102	10	0.034
	65	3	0	PS1-3-0-65	1SAM201906R1103	10	0.055
	65	4	0	PS1-4-0-65	1SAM201906R1104	10	0.077
	65	5	0	PS1-5-0-65	1SAM201906R1105	10	0.098
	65	2	1	PS1-2-1-65	1SAM201906R1112	10	0.036
	65	3	1	PS1-3-1-65	1SAM201906R1113	10	0.060
	65	4	1	PS1-4-1-65	1SAM201906R1114	10	0.087
	65	5	1	PS1-5-1-65	1SAM201906R1115	10	0.108
	65	2	2	PS1-2-2-65	1SAM201906R1122	10	0.040
	65	3	2	PS1-3-2-65	1SAM201906R1123	10	0.067
MS116, MS132, MO132	65	4	2	PS1-4-2-65	1SAM201906R1124	10	0.095
	65	5	2	PS1-5-2-65	1SAM201906R1125	10	0.122
	100	3	0	PS1-3-0-100	1SAM201916R1103	10	0.084
	100	4	0	PS1-4-0-100	1SAM201916R1104	10	0.117
	100	5	0	PS1-5-0-100	1SAM201916R1105	10	0.154
	100	3	1	PS1-3-1-100	1SAM201916R1113	10	0.094
	100	4	1	PS1-4-1-100	1SAM201916R1114	10	0.134
	100	5	1	PS1-5-1-100	1SAM201916R1115	10	0.172
	100	3	2	PS1-3-2-100	1SAM201916R1123	10	0.105

Note: busbars are only suitable for screw versions

Suitable for	Rated operational current	Rated cross section	Mounting form	Type	Order code	Pkg qty	Weight (1 pce)
	A	mm ²					kg

Three-phase feeder terminals

MS116, MS132, MO132	65	25	Flat	S1-M1-25	1SAM201907R1101	10	0.038
	65	25	High	S1-M2-25	1SAM201907R1102	10	0.051
	65	25	UL/CSA Type E/F and IEC	S1-M3-25	1SAM201907R1103	10	0.042
	100	35	UL/CSA Type E/F and IEC	S1-M3-35	1SAM201913R1103	10	0.060

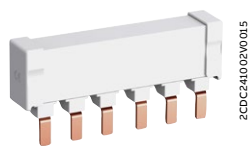
Suitable for	Description	Type	Order code	Pkg qty	Weight (1 pce)
					kg
MS116, MS132, MO132	Protection cover for busbars	BS1-3	1SAM201908R1001	50	0.003
MS116, MS132, MO132, MS132-T	Screw fixing kit	FS116	1SAM201909R1001	1	0.020
MS116	Padlock + two keys	SA2	GJF1101903R0002	10	0.020
	Lock handle	SA1	GJF1101903R0001	10	0.003
	Lock handle box SA1/SA2	SA3	GJF1101903R0003	10	0.050

Accessories for single-phase connection (IEC only)

MS116, MS132, MO132, MS132-T	Phase connecting link	PB1-1-32	1SAM201914R1001	1	0.009
	Phase power infeed block	S1-PB1-25	1SAM201914R1002	1	0.013

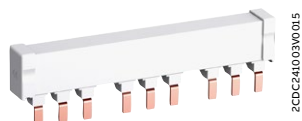
Accessories

MS165, MO165



PS2-2-0-125

2CDC24102N0015



PS2-3-0-125

2CDC24103N0015



KA165

2CDC241010V0014



BS2-3

2CDC241001V0015



SA2

2CDC241023F0013

Three-phase busbars ensure a quick and safe connection and are therefore a cost effective solution. A variety of different three-phase busbars up to 125 A are in the assortment. Between 2 and 4 manual motor starters with none, one or two lateral auxiliary contacts can be connected.

Suitable for	Rated operational current	Number of Manual motor starters	Number of lateral auxiliary contacts	Type	Order code	Pkg qty	Weight (1 pce)
	A						kg

Three-phase busbars

MS165, MO165	125	2	0	PS2-2-0-125	1SAM401920R1002	10	0.100
	125	3	0	PS2-3-0-125	1SAM401920R1003	10	0.162
	125	4	0	PS2-4-0-125	1SAM401920R1004	10	0.226
	125	2	2	PS2-2-2-125	1SAM401920R1022	10	0.117
	125	3	2	PS2-3-2-125	1SAM401920R1023	10	0.197
	125	4	2	PS2-4-2-125	1SAM401920R1024	10	0.277

Other busbar types on request.

Suitable for	Description	Type	Order code	Pkg qty	Weight (1 pce)
					kg
MS165, MO165	Terminal shroud	KA165	1SAM401922R1001	10	0.025
	Protection cover for busbars	BS2-3	1SAM401921R1001	10	0.005
	Padlock + two keys	SA2	GJF1101903R0002	10	0.020

Accessories

MS116, MS132, MS165, MO132, MO165

General technical data

Type	PS1-xxx-65		PS1-xxx-100	PS2-xxx-125	S1-Mx-25	S1-Mx-35
Standards	IEC/EN 60947-4-1, IEC/EN 60947-1, UL 60947-1, UL 60947-4-1 (UL 508), CSA C22.2 No.60947-4-1 (CSA C22.2 No.14)					
Rated operational voltage U _e	690 V					
Rated operational voltage U _e acc. to UL/CSA	600 V AC					
Rated operational current I _e	65 A	100 A	125 A	65 A	100 A	
Rated operational current I _e acc. to UL/CSA	65 A	92 A	125 A	65 A	92 A	
Rated frequency	50/60 Hz					
Rated impulse withstand voltage U _{imp}	6 kV					
Rated insulation voltage U _i	690 V AC					
Pollution degree	3					
Cross-section	10 mm ²	16 mm ²	25 mm ²	25 mm ²	35 mm ²	
Ambient air temperature	Operation	-25 ... +70 °C				
	Storage	-50 ... +80 °C				
Resistance to shock acc. to IEC 60068-2-27	25g / 11 ms					
Resistance to vibrations acc. to IEC 60068-2-6	5g / 3 ... 150 Hz					

Electrical connection - Main circuit

Type	S1-Mx-25	S1-Mx-35
Connecting capacity		
 Rigid	1 x 6 ... 25 mm ²	10 ... 35 mm ²
 Flexible with ferrule	1 x 6 ... 16 mm ²	10 ... 35 mm ²
 Flexible with insulated ferrule	1 x 6 ... 16 mm ²	10 ... 35 mm ²
 Flexible	1 x 6 ... 16 mm ²	10 ... 35 mm ²
Stranded acc. to UL/CSA	1 x AWG 10-4	AWG 8-2
Stripping length	10 mm	12 mm
Tightening torque	2.5 Nm / 22 lb.in	4.5 Nm / 40 lb.in
Recommended screwdriver	Pozidriv 2	Hexagon SW4

Accessories

MS116, MS132, MO132



IB132-Y



IB132-G



DMS132-Y



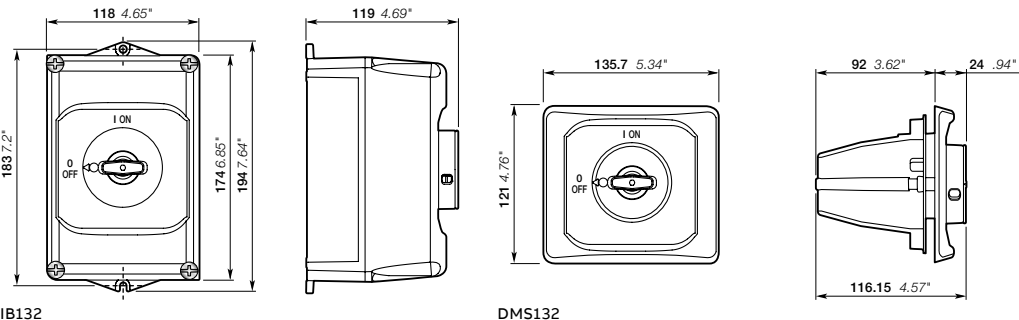
DMS132-G

IB132 are IP65 (NEMA Type 12) enclosures for single manual motor starter installation. Additional mounting of auxiliary and signaling contacts, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

DMS132 are IP65 (NEMA Type 12) door mounting kits for manual motor starter installation in any enclosure. Additional mounting of auxiliary, signaling, shunt trips and undervoltage release is possible. The handle is lockable in OFF position. For detailed specification see installation instruction.

Suitable for	Description	Color	Type	Order code	Pkg qty	Weight (1 pce) kg
IP65 enclosures (NEMA Type 12)						
MS116, MS132, MO132	Padlockable max. 3 padlocks with bail diameter 4 ... 6.5 mm	Yellow/red	IB132-Y	1SAM201911R1011	1	0.370
		Grey/black	IB132-G	1SAM201911R1010	1	0.370
IP65 door mounting kits (NEMA Type 12)						
MS116, MS132, MO132	Padlockable max. 3 padlocks with bail diameter 4 ... 6.5 mm	Yellow/red	DMS132-Y	1SAM201912R1011	1	0.170
		Grey/black	DMS132-G	1SAM201912R1010	1	0.170

Indication I-O-T and ON-OFF-T.



Main dimensions mm, inches

Accessories

MS116, MS132, MS165, MO132, MO165



MSHD-LB

2CDC241003R0011



MSHD-LY

2CDC241002S0011



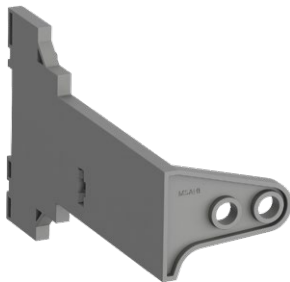
MSMN

2CDC241004F0011



MSH-AR

2CDC241001F0012



MSAH1

2CDC241017V0013

With this solution of door coupling rotary mechanisms it is possible to operate manual motor starters in the back of a switch cabinet from outside. The door coupling mechanism prevents opening of the door of a switch cabinet with the manual motor starter in ON position.

The complete mechanism includes handle, shaft, driver, shaft alignment ring and shaft supporter.

Most accessories fit for 6 mm shafts with a maximum length of 180 mm. The degree of protection for handles MSHD is IP64 (NEMA Type 1, 3R, 12).

Suitable for	Description	Shaft length mm	Color	Type	Order code	Pkg qty pce	Weight (1 pce) kg
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Shafts

MS116,	For MSHD handles. Shaft diameter	85		OXS6X85	1SCA101647R1001	1	0.020
MS132,	6 mm. Shaft extension for door	105		OXS6X105	1SCA108043R1001	1	0.020
MO132,	coupling driver.	130		OXS6X130	1SCA101655R1001	1	0.030
MS165,		180		OXS6X180	1SCA101659R1001	1	0.040
MO165							

IP64 handles (NEMA Type 1, 3R, 12)

MS116,	Padlockable max. 3 padlocks		Black	MSHD-LB (1)	1SAM201920R1001	1	0.065
MS132,	with bail diameter 5 ... 8 mm, door		Yellow	MSHD-LY (1)	1SAM201920R1002	1	0.065
MO132,	interlock in ON position		Black	MSHD-LTB (2)	1SAM201920R1011	1	0.065
MS165,	defeatable, for use with 6 mm		Yellow	MSHD-LTY (2)	1SAM201920R1012	1	0.065
MO165	OXS6...types up to 180 mm or driver shafts MSOX.						

Driver

MS116,	Coupling driver for use			MSMN (3)	1SAM101923R0002	1	0.002
MS132,	with 6 mm OXS6... types			MSMNO (4)	1SAM101923R0012	1	0.002
MO132,	up to 180 mm.						
MS165,							
MO165							

Shaft alignment ring

MS116,	The MSH-AR supports the long shafts for alignment to the handle inlet. It makes closing panel doors more easy. Use for OXS6X > 105 mm.			MSH-AR	1SAM201920R1000	1	0.010
MS132,							
MO132,							
MS165,							
MO165							

Shaft supporter

MS116,	With the MSAH1 it is possible to support the shaft in the extension of handle (MSHD). It is mandatory for the usage of shafts >130 mm.			MSAH1	1SAM201909R1021	1	0.035
MS132,							
MO132							

(1) Indication I-O and ON-OFF (recommended for MS116)

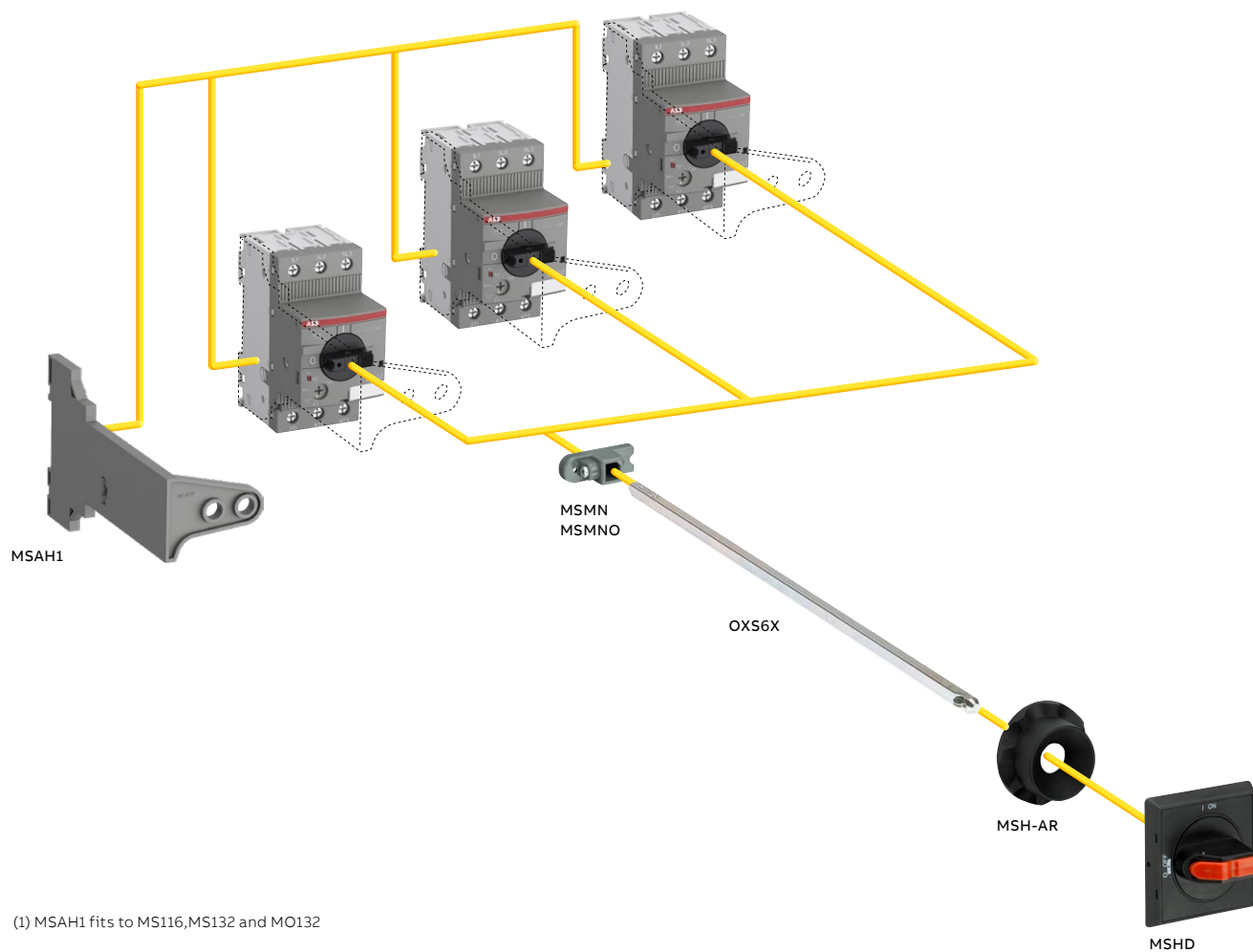
(2) Indication I-O and ON-OFF + Trip indication

(3) Coded - Positioning of ON indication dependent on mounting orientation of the MMS

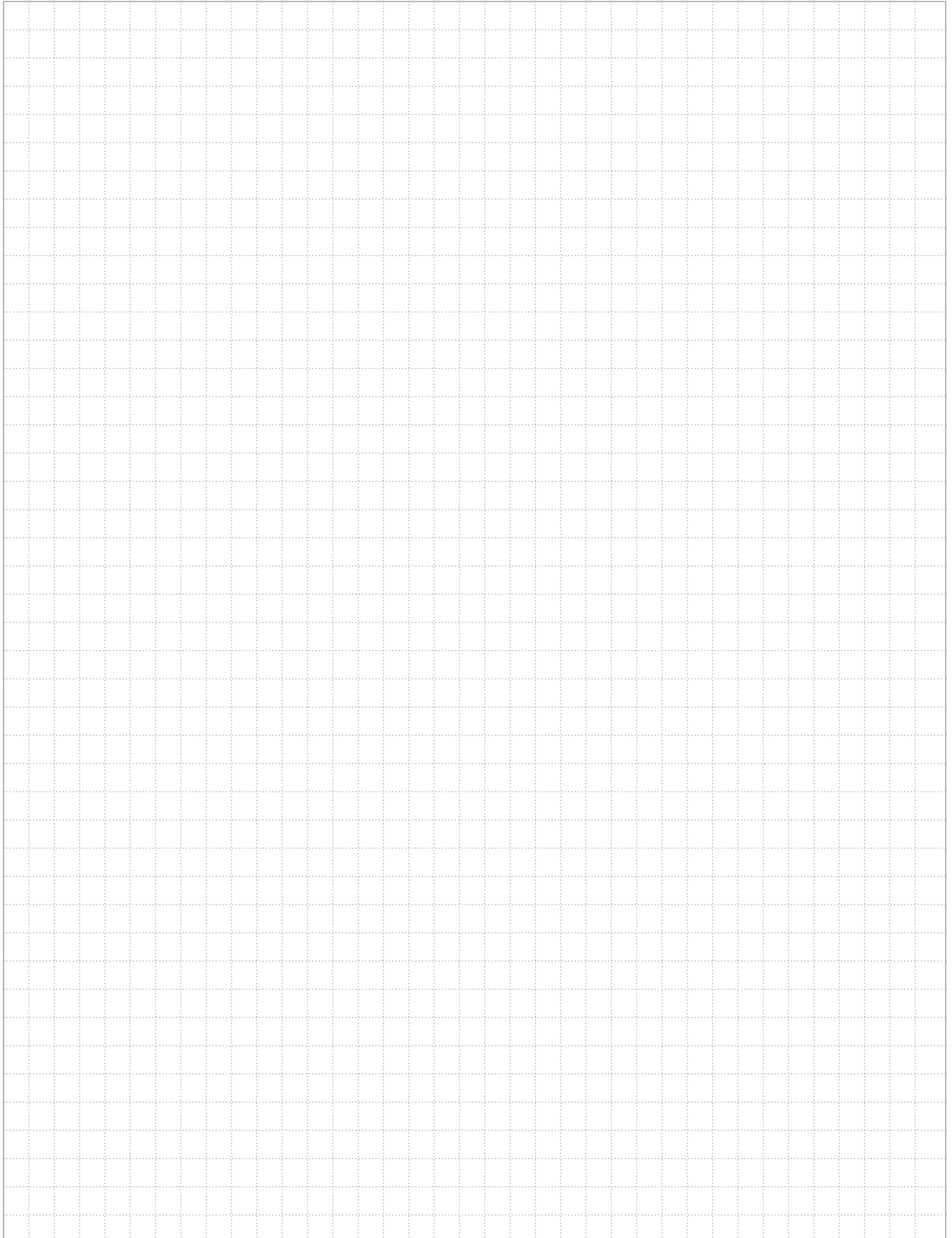
(4) Uncoded - Positioning of ON indication independent of mounting orientation of the MMS.

Accessories

MS116, MS132, MS165, MO132, MO165



Notes

A large rectangular area filled with a grid of small, evenly spaced dotted lines, intended for handwritten notes.