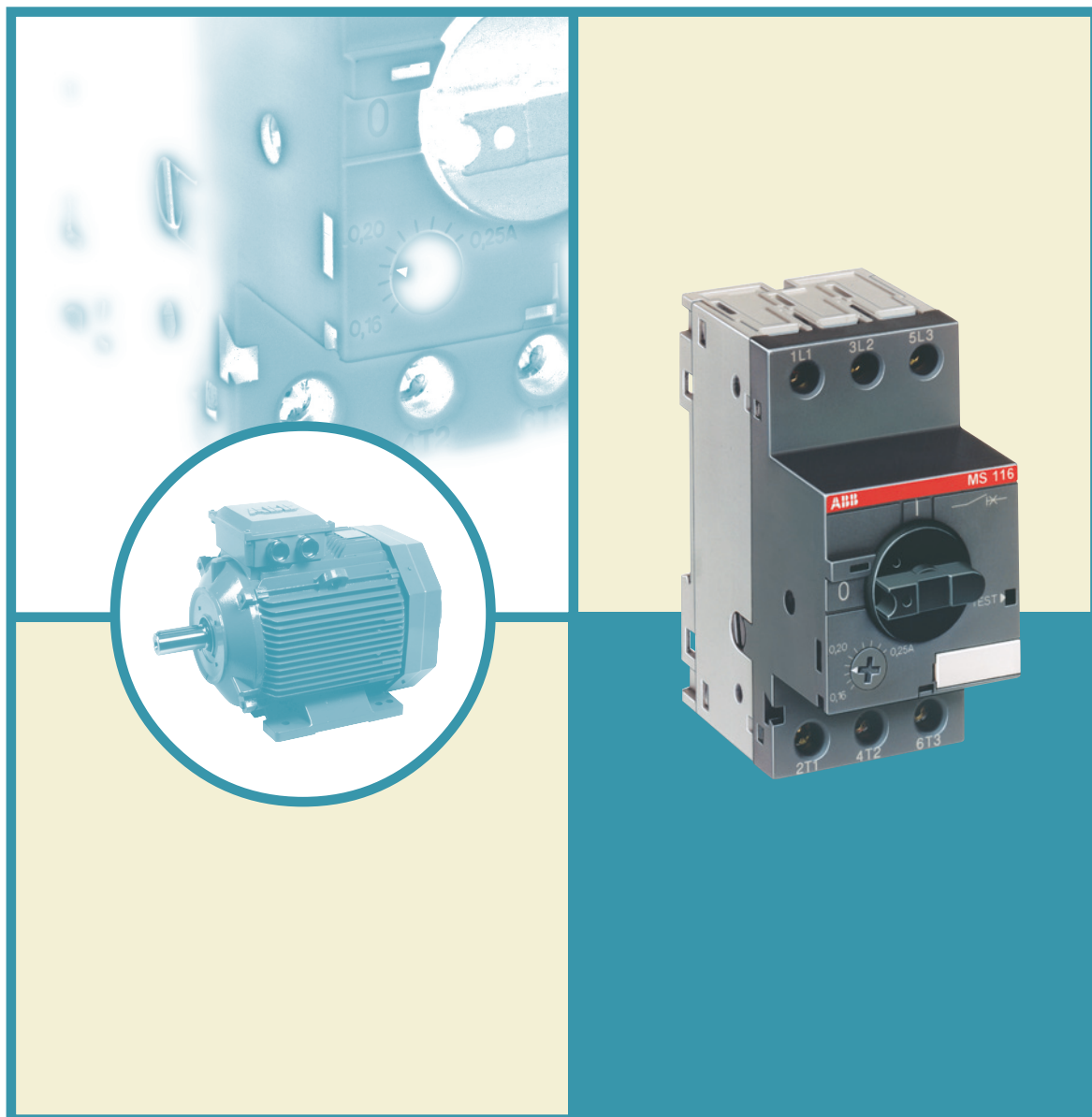


Manual Motor Starter MS 116

Technical Catalogue



ABB

The task: Economic fuseless motor protection

Know-how in safe-keeping

ABB is a renowned manufacturer of electrical motors. But apart from the hardware in form of electrical drives in machines and installations, ABB also offers circuit breakers and electrical protection devices for the safe and reliable use of these valuable production assets.

For the development of each new product-line ABB takes into account the specific wishes and requests of ABB customers. Suggestions that the developers at ABB are confronted with call for a manual motor starter that is supposed to be:

- small,
- compact,
- reliable,
- yet powerful

enough to safely switch motors with a wattage up to 7.5 kW.

This requests comes out of the need to realize a reliable motor protection even if only little space is available, for example:

- in packing machines,
- in the wood-industry,
- for saws and chopping machines,
- in agricultural machines,
- for pumps,
- in conveyor-systems,
- in air-conditionings,

or other general applications, where budget and space are limited.



The solution: new manual motor starter MS 116

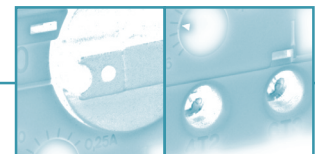
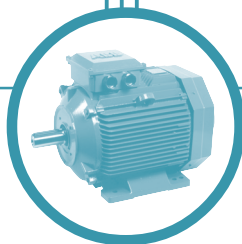
Protection of motors up to 7.5 kW

MS 116 is the latest development within the ABB manual motor starter family for motors in a wattage range up to 7.5 kW. This robust switching device protects your drives and installations against:

- Overload
- Short Circuit
- Phase Failure
- Faults in cable or wiring

The MS 116 reliably switches off your drives in cases where a fault could not only have unwanted effects on the motor itself but where your whole installation could be affected. Therefore a motor protection concept based on MS 116:

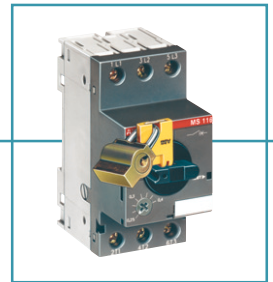
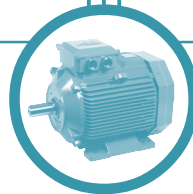
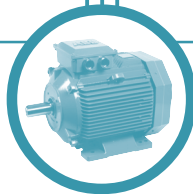
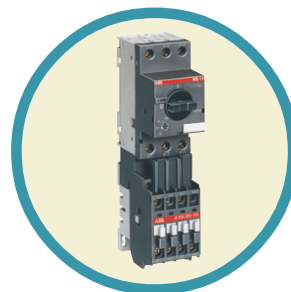
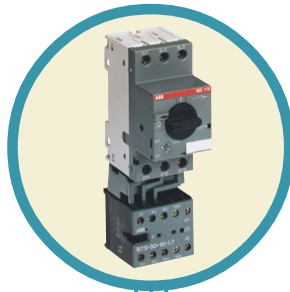
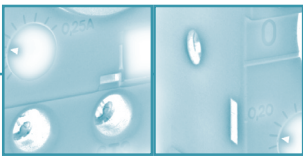
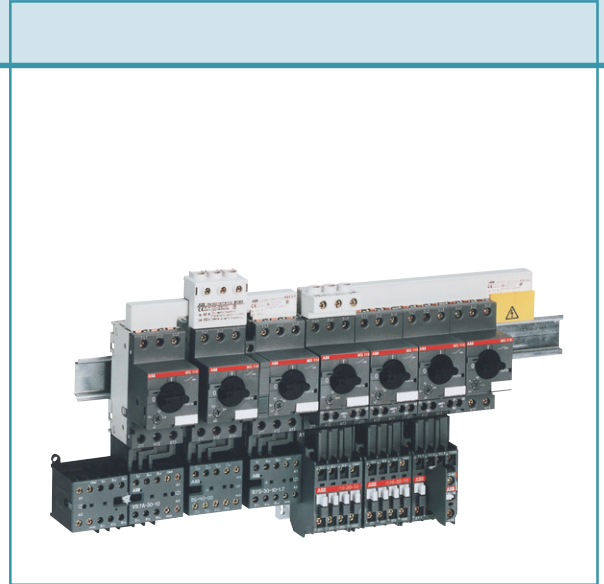
- Increases availability of facilities
- Saves money in maintenance
- Simplifies the planning of installations
- Expands the safety and reliability of your production assets
- Saves space due to the small dimensions of MS 116

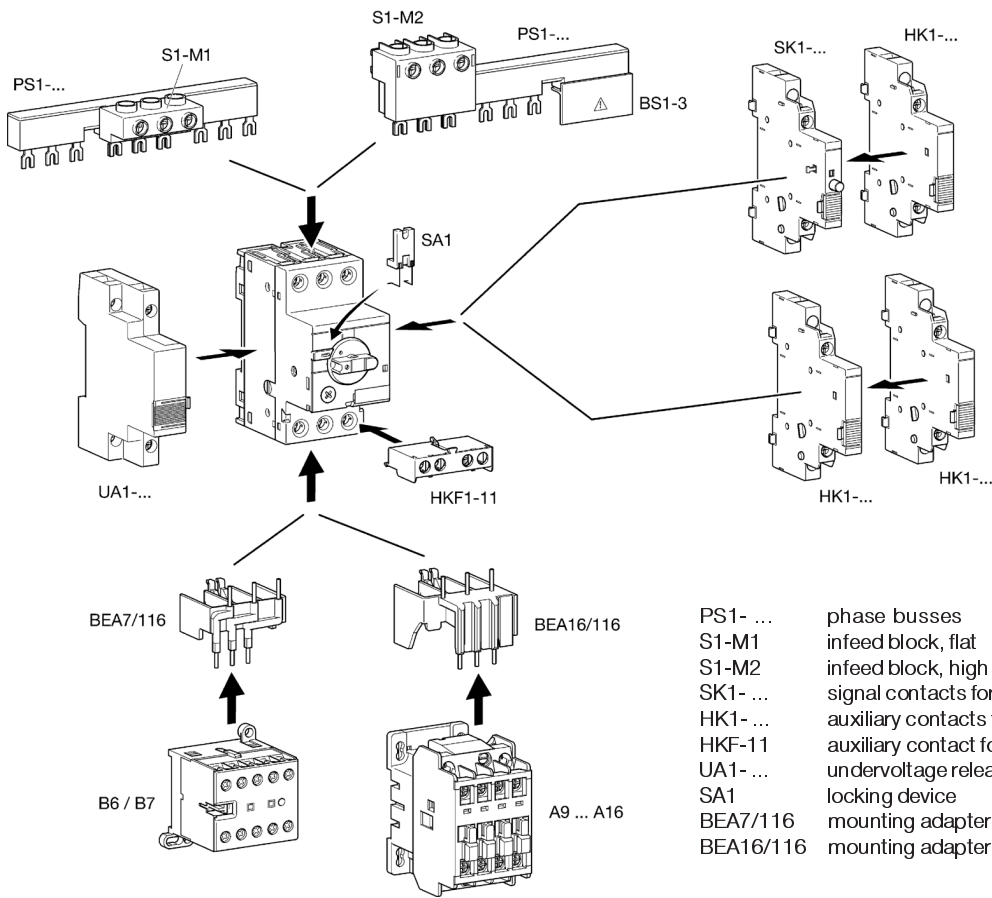


Useful accessories

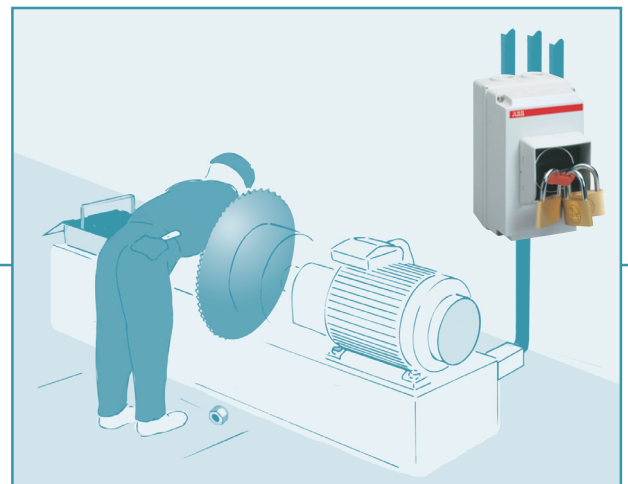
To open up further applications and in order to make the manual motor starter adjustable with other low voltage products from ABB, various accessories are available for MS 116. E. g. MS 116 can be equipped with an auxiliary contact for lateral or even front mounting. An under-voltage release is also available for this, the smallest device within the ABB motor starter range.

An adapter makes the MS 116 ready to form a motor starter combination. By using this adapter, either ABB minicontactors series B or the contactors of ABB's series A, types A9, A12 and A16 can be easily coordinated with the MS 116.

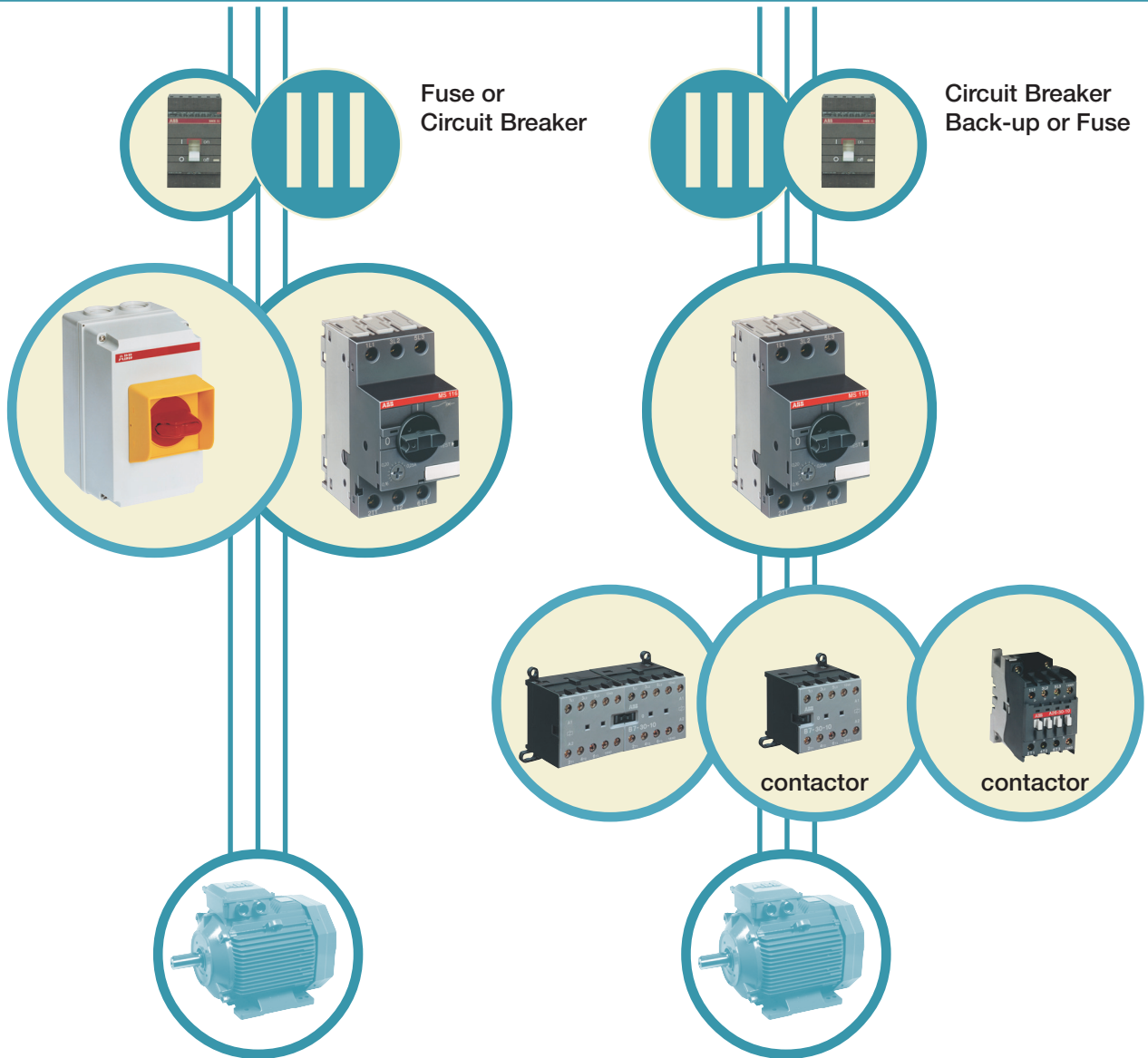




- PS1- ... phase busses
- S1-M1 infeed block, flat
- S1-M2 infeed block, high
- SK1- ... signal contacts for lateral mounting
- HK1- ... auxiliary contacts for lateral mounting
- HKF1-11 auxiliary contact for front mounting
- UA1- ... undervoltage release
- SA1 locking device
- BEA7/116 mounting adapter for mini-actuators
- BEA16/116 mounting adapter for A9-A16-actuators



Examples for Wiring Strategies



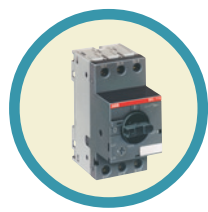
Short circuit protection – Short circuit withstand and max. fuse

Setting range	I_{cu}	I_{cs}	gL/gG	I_{cu}	I_{cs}	gL/gG	I_{cu}	I_{cs}	gL/gG	I_{cu}	I_{cs}	gL/gG	I_{cu}	I_{cs}	gL/gG
	230V			400V			440V			500V			690V		
0,1 ... 0,16A	50kA	50kA	—	50kA	50kA	—	50kA	50kA	—	30kA	30kA	—	30kA	30kA	—
0,16 ... 0,25A	50kA	50kA	—	50kA	50kA	—	50kA	50kA	—	30kA	30kA	—	30kA	30kA	—
0,25 ... 0,4A	50kA	50kA	—	50kA	50kA	—	50kA	50kA	—	30kA	30kA	—	30kA	30kA	—
0,4 ... 0,63A	50kA	50kA	—	50kA	50kA	—	50kA	50kA	—	30kA	30kA	—	30kA	30kA	—
0,63 ... 1,0A	50kA	50kA	—	50kA	50kA	—	50kA	50kA	—	30kA	30kA	—	30kA	30kA	—
1,0 ... 1,6A	50kA	50kA	—	50kA	50kA	—	50kA	50kA	—	30kA	30kA	—	30kA	30kA	—
1,6 ... 2,5A	50kA	50kA	—	50kA	50kA	—	10kA	10kA	25A	10kA	10kA	25A	5kA	5kA	25A
2,5 ... 4,0A	50kA	50kA	—	50kA	50kA	—	6kA	6kA	25A	6kA	6kA	25A	2kA	2kA	25A
4,0 ... 6,3A	50kA	50kA	—	50kA	50kA	—	6kA	6kA	63A	6kA	6kA	63A	2kA	2kA	40A
6,3 ... 10,0A	50kA	50kA	—	50kA	50kA	—	6kA	6kA	63A	6kA	6kA	63A	2kA	2kA	50A
10,0 ... 16,0A	16kA	16kA	80A	16kA	16kA	80A	4kA	4kA	63A	4kA	6kA	63A	2kA	2kA	63A



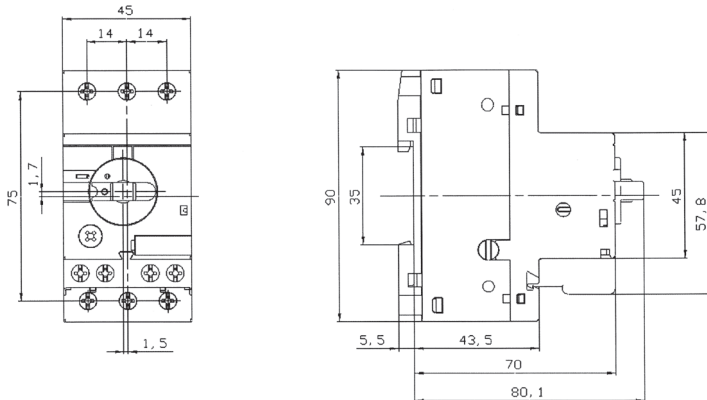
Manual Motor Starter MS 116 up to 16 A

Technical Data

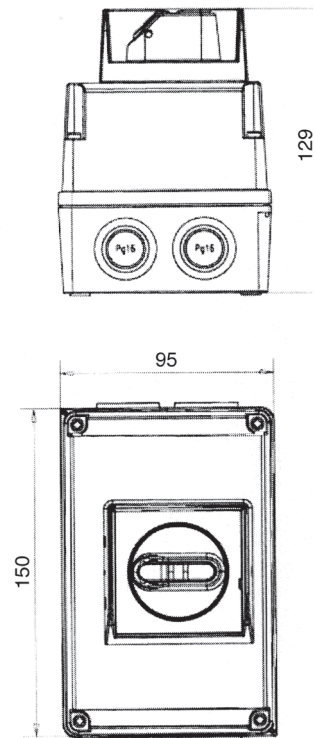


Type	MS 116	
Standards: Major International and European Standards	IEC 60 947-4-1 / IEC 60 947-2 EN 60 947-4-1 / EN 60 947-2	
Approvals, Certificates	UL, CSA	
Rated insulation voltage U_i Acc. to IEC 158-1, IEC 60 947-4-1, CSA, UL, NEMA	V	690 V AC/ 440 V DC
Impulse withstand voltage U_{imp} Acc. to IEC 60 947-4-1	kV	6
Rated operating voltage	U_e	690 V AC/ 440 V DC
Rated frequency	HZ	50/60
Short circuit capacity	kA	10/16/30/50 (see table)
Rated current range	I_n	16 A
Tripping class Tripping factor	IEC/EN 60947-4-1	10/10 A 12 x I_n
Mechanical life time in operation	switches	100.000
Permissible ambient temperature -for storage -in operation	°C °C	-40 ... + 80 -25 ... + 55 (70)
Climatic resistance acc. to	IEC 68-2-3, IEC 68-2-30	
Mounting position	Horizontal, other on request	
Disconnecting feature	IEC/EN 60947-1	yes
Phase failure sensitiveness	IEC/EN 60947-1	yes
Permissible resistance to vibrations 10 ... 100 Hz	multiple of g	5
Permissible resistance to shocks		20
Resistance to shock	Shock duration ms	20
Terminal types and connecting capacity -Screw terminals (screw size) -Connection cross section -single-core or stranded -flexible with wire and ferrule	mm² mm²	M3,5 +/- poz. 2 2x1,0x4,0 2x1,0x2,5
Protection degree to IEC/EN 60 947-1	All terminals are safe from finger-touch and touch by the back of the hand in acc. with VDE 0106, Part 100	
Switching frequency	up to 15 ops./h or 60 ops./h with 40% on load factor and the starting time not exceeding 1s see Technical data II	
Required fuses for short circuit protection (back up)	see Technical data II	
Loads for accessories Auxiliary contact for front mounting, HKF Auxiliary contact for front mounting, HKF Auxiliary and Signal Contact, HK + SK Auxiliary and Signal Contact, HK + SK	AC15 DC13 AC15 DC13	24 V, 3.0 A 230 V, 1.5 A 24 V, 1.0 A 48/60 V, 0.7 A 110 V, 0.27 A 24 V, 6 A 230 V, 4 A 400 V, 3.0 A 24 V, 2.0 A 110 V, 0.5 A 220 V, 0.25 A 440 V, 0.1 A
Electromagnet trips Response value set ex-works	9.6 ... 14.4 x I_n	
Undervoltage release Pick-up value Drop-out value Power consumption Pick-up Hold	% of U_c % of U_c VA VA	• 85 35 ... 75 on request on request

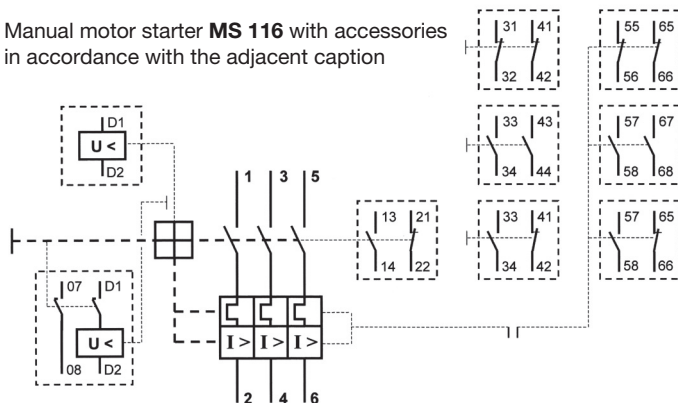
MS 116 Dimension Drawings



MS 116 with auxiliary switch HKF 1 mounted on the front

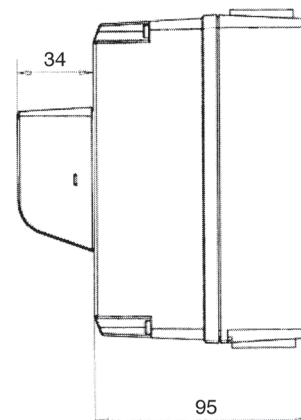
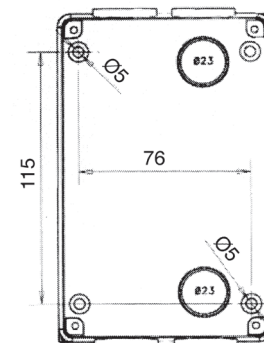


Manual motor starter MS 116 with accessories in accordance with the adjacent caption



Caption

- 1 Open circuit shunt release
- 2 Undervoltage release
- 3 Undervoltage release with pre-mating auxiliary switches 2 SV
- 4 Remote operating mechanism
- 6 Built-in auxiliary switches 1 NO + 1 NC, on MS 116 convertible from NC to NO and from NO to NC
- 7 Short-circuit pilot switch block 1 NO + 1 NC
- 8 Tripped pilot switch block (signal contact)
- 9 Auxiliary switches pluggable on front
- 10 Pilot switch for short-circuit and general tripping



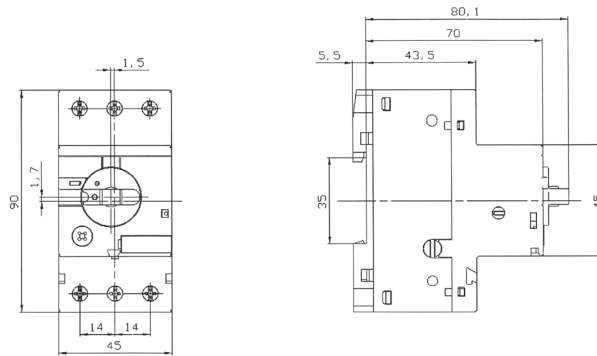
Housing IP 65 for MS 116

Manual Motor Starter MS 116

Accessories

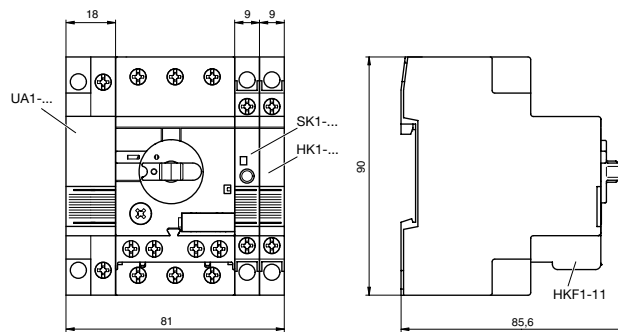
Dimension diagrams

Manual motor starter **MS 116**

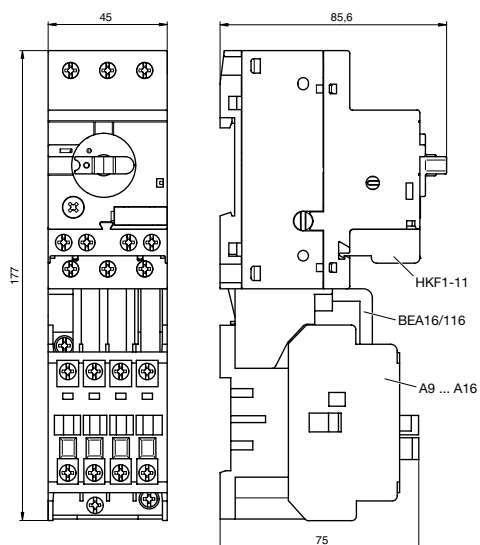


SST 008-00

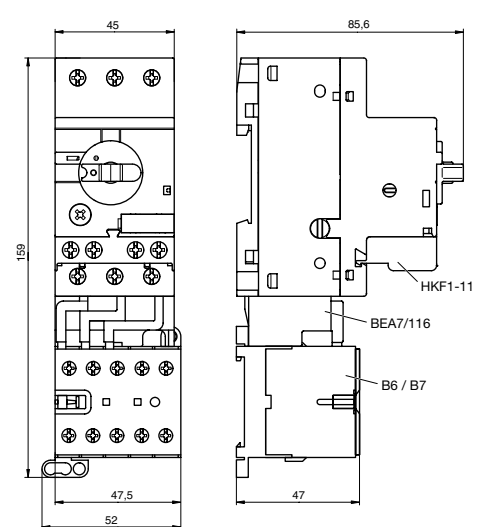
Manual motor starter **MS 116** mounted with UA1.../SK1.../HK1.../HKF1-11



Manual motor starter **MS 116** mounted with contactor **A9...A16**



Manual motor starter **MS 116** mounted with mini contactor **B6/7**



Dimensions in mm

Manual Motor Starter MS 116

Accessories

Ordering details

Open design, enclosure IP 20, resistant to changeable climates. Quick fastening on mounting rails DIN EN 50 022, 35 mm without auxiliary switch.



SST11601

MS 116



HKF 1-11



MS 116 with mini contactor B6



SST11602

MS 116 with reversing contactor



MS 116 with A-contactor

Type	Setting range	Order code	Weight/ piece kg	Packing Unit piece	Price
	A...A				
MS 116 with thermal and electromagnetic trips, short-circuit-proof up to 50 kA					
MS 116 - 0.16	0.10 ... 0.16	1SAM 250 000 R 1001	0.268	1	
MS 116 - 0.25	0.16 ... 0.25	1SAM 250 000 R 1002	0.268	1	
MS 116 - 0.4	0.25 ... 0.40	1SAM 250 000 R 1003	0.268	1	
MS 116 - 0.63	0.40 ... 0.63	1SAM 250 000 R 1004	0.268	1	
MS 116 - 1.0	0.63 ... 1.00	1SAM 250 000 R 1005	0.268	1	
MS 116 - 1.6	1.00 ... 1.60	1SAM 250 000 R 1006	0.268	1	
MS 116 - 2.5	1.60 ... 2.50	1SAM 250 000 R 1007	0.268	1	
MS 116 - 4	2.50 ... 4.00	1SAM 250 000 R 1008	0.268	1	
MS 116 - 6.3	4.00 ... 6.30	1SAM 250 000 R 1009	0.268	1	
MS 116 - 10.0	6.30 ... 10.00	1SAM 250 000 R 1010	0.268	1	
MS 116 - 16.0	10.00 ... 16.00	1SAM 250 000 R 1011	0.268	1	

Accessories

Type		Order code		Packing Unit piece	Price
Auxiliary switches, for front-panel installation)					
HKF1-11	1 NO + 1 NC	1SAM 201 901 R 1001		10	
Auxiliary switches, lateral attachment at right					
HK1-11	1 NO + 1 NC	1SAM 201 902 R 1001		10	
HK1-20	2 NO	1SAM 201 902 R 1002		10	
HK1-02	2 NC	1SAM 201 902 R 1003		10	
Signal kontakt for general "tripped" signal, lateral attachment at right					
SK1-11	1 NO + 1 NC	1SAM 201 903 R 1001		10	
SK1-20	2 NO	1SAM 201 903 R 1002		10	
SK1-02	2 NC	1SAM 201 903 R 1003		10	
Undervoltage release, lateral attachment at left					
UA1-24	24 V AC	1SAM 201 904 R 1001		10	
UA1-48	48 V AC	1SAM 201 904 R 1002		10	
UA1-60	60 V AC	1SAM 201 904 R 1003		10	
UA1-120	120 V AC	1SAM 201 904 R 1004		10	
UA1-230	230 V AC	1SAM 201 904 R 1005		10	
UA1-400	400 V AC	1SAM 201 904 R 1006		10	
UA1-415	415 V AC	1SAM 201 904 R 1007		10	
Undervoltage release with pre-mating auxiliary switch 2S, lateral attachment at left					
UA1-HK-24	24 V AC	1SAM 201 905 R 1001		10	
UA1-HK-48	48 V AC	1SAM 201 905 R 1002		10	
UA1-HK-60	60 V AC	1SAM 201 905 R 1003		10	
UA1-HK-120	120 V AC	1SAM 201 905 R 1004		10	
UA1-HK-230	230 V AC	1SAM 201 905 R 1005		10	
UA1-HK-400	400 V AC	1SAM 201 905 R 1006		10	
UA1-HK-415	415 V AC	1SAM 201 905 R 1007		10	
Locking device (see also MS 225 / MS 325, Page 9)					
SA1	lock adapter	GJF1 101 903 R 0001		10	
SA3	locking device assy.	GJF1 101 903 R 0003		1	
Direct adapter, for mounting of contactors					
BEA7/116	mini contactors B6/B7	1ISBN 080 906 R 1000		1	
BEA16/116	contactors A9/A12/A16	1ISBN 081 406 R 1000		1	
BEA26/116	contactors A26	1ISBN 082 406 R 1000		1	

) Not suitable for panel mounting

Manual Motor Starter MS 116

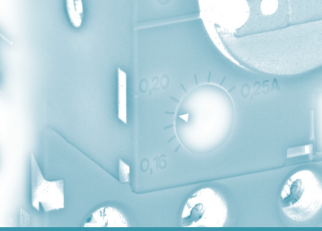
Accessories

Ordering details



Accessories

Type	Order code	Packing Unit/piece	Price
Phase buses for cross wiring MS 116, 63 A, 690 V			
PS1-2-0, for 2 devices without auxiliary switches	1SAM 201 906 R 1002	10	
PS1-3-0, for 3 devices without auxiliary switches	1SAM 201 906 R 1003	10	
PS1-4-0, for 4 devices without auxiliary switches	1SAM 201 906 R 1004	10	
PS1-5-0, for 5 devices without auxiliary switches	1SAM 201 906 R 1005	10	
PS1-2-1, for 2 devices with 1 auxiliary switch	1SAM 201 906 R 1012	10	
PS1-3-1, for 3 devices with 1 auxiliary switch	1SAM 201 906 R 1013	10	
PS1-4-1, for 4 devices with 1 auxiliary switch	1SAM 201 906 R 1014	10	
PS1-5-1, for 5 devices with 1 auxiliary switch	1SAM 201 906 R 1015	10	
PS1-2-2, for 2 devices with 2 auxiliary switches	1SAM 201 906 R 1022	10	
PS1-3-2, for 3 devices with 2 auxiliary switches	1SAM 201 906 R 1023	10	
PS1-4-2, for 4 devices with 2 auxiliary switches	1SAM 201 906 R 1024	10	
PS1-5-2, for 5 devices with 2 auxiliary switches	1SAM 201 906 R 1025	10	
Power infeed blocks, 63 A, 690 V, stranded 25 mm², flexible 16 mm²			
S1-M1, flat	1SAM 201 907 R 1001	10	
S1-M2, high	1SAM 201 907 R 1002	10	
Cover for phase busses			
BS1-3	1SAM 201 908 R 1001	50	
Insulating enclosure light grey IP 64, with rotary handle, triple lockable in Off position, with N- und PE-terminal, for Manual Motor Starter			
OTPA 116 L2 M1, grey/black shrouded handle	1SCA 022 615 R 3860	1	
OTPA 116 A2 M1, yellow/red shrouded handle	1SCA 022 615 R 3510	1	
Insulating enclosure, light grey IP 55 with cover, including DIN rail for manual motor starter or line protection devices			
QES 4/3 N, for 4 modules, 72 mm	GHL 111 2304 R 0013		
QES 6/3 N, for 6 modules, 108 mm	GHL 111 2306 R 0013		
QES 10/3 N, for 10 modules, 180 mm	GHL 111 2310 R 0013		
Set of neutral and earth terminals			
SMO 4, for QES 4/3 N	GHL 430 1910 R 0004		
SMO 6, for QES 6/3 N	GHL 430 1910 R 0006		
SMO 10, for QES 10/3 N	GHL 430 1910 R 0010		
Plastic enclosure, light grey, IP40 in panel design, including DIN rail			
PCD 4 N, for 4 modules, 72 mm	GHS 270 1921 R 0004		
PCD 6 N, for 6 modules, 108 mm	GHS 270 1921 R 0006		
PCD 8 N, for 8 modules, 144 mm	GHS 270 1921 R 0008		
Set of terminals			
KL-PCD 4/6, for 4/6 module enclosure	GHS 270 1912 R 0004		
KL-PCD 8, for 10 module enclosure	GHS 270 1912 R 0008		
Cover for empty module places, grey			
SZ-BP 2, for 1 module, 18 mm	GHL 530 1904 R 0001		
SZ-BP 1, for 12 modules,	GHS 270 1913 R 0002		
Switch cubicle mounting kit IP 65, with axial extension triple lockable in Off position, locked in On position			
OHB2AJM, Twist knob black	1SCA 022 384 R 6940	1	
OHY2AJM, Twist knob red/yellow	1SCA 022 384 R 7080	1	
OXS5X 85, axis 85 mm	1SCA 022 347 R 3570	1	
OXS5X105, axis 105 mm	1SCA 022 347 R 3650	1	
OXS5X130, axis 130 mm	1SCA 022 353 R 4540	1	
OXS5X180, axis 180 mm	1SCA 022 353 R 4620	1	
MSMN, driver)	1SAM 101 923 R 0001	1	
MSOX, driver spindle 32 mm (1SAM 101 924 R 0001	1	
)	For accommodating spindle and attachment to manual motor starter		
(Is screwed directly onto the manual motor starter		



Approvals

Ships' classification societies

Test mark

Abbreviation
Validity



CSA
Canada



USA



PTB



GL
Germany



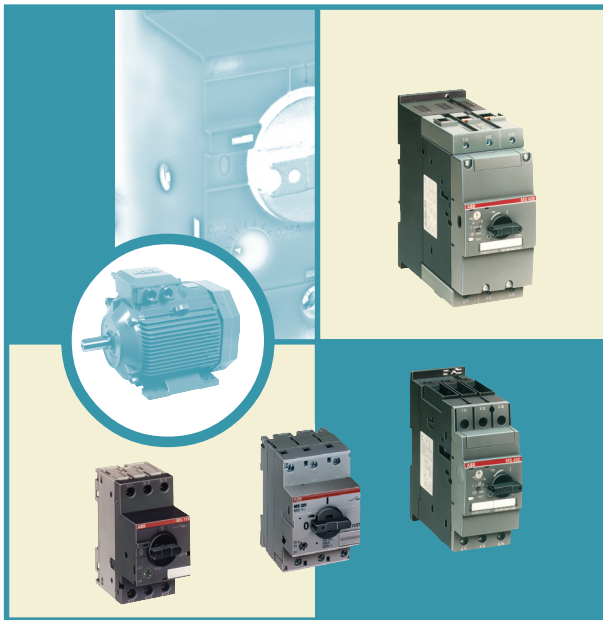
LRS
Great Britain



BV
France



DNV
Norway



On your side – products and services

The MS 116 is only the smallest within a large range of manual motor starters made by ABB. ABB's full motor starter line in the low voltage range can switch and protect motors up to 100 A. Also various other components for the increased performance of your drives and applications are available through ABB worldwide. E. g. various industrial relays like the thermostat machine protection device Custorapid can usefully enhance the safety of your motor. Your local representative will be pleased to answer all your questions on how ABB's low voltage products can help you in your special case. Talk to us.

ABB

ABB STOTZ-KONTAKT GmbH
P. O. Box 10 16 80

D-69006 Heidelberg

Telephone ++49 62 21 / 7 01-0

Telefax ++49 62 21 / 7 01-11 15

Internet: <http://www.abb.de/stotz-kontakt>

e-mail: desst.info@de.abb.com