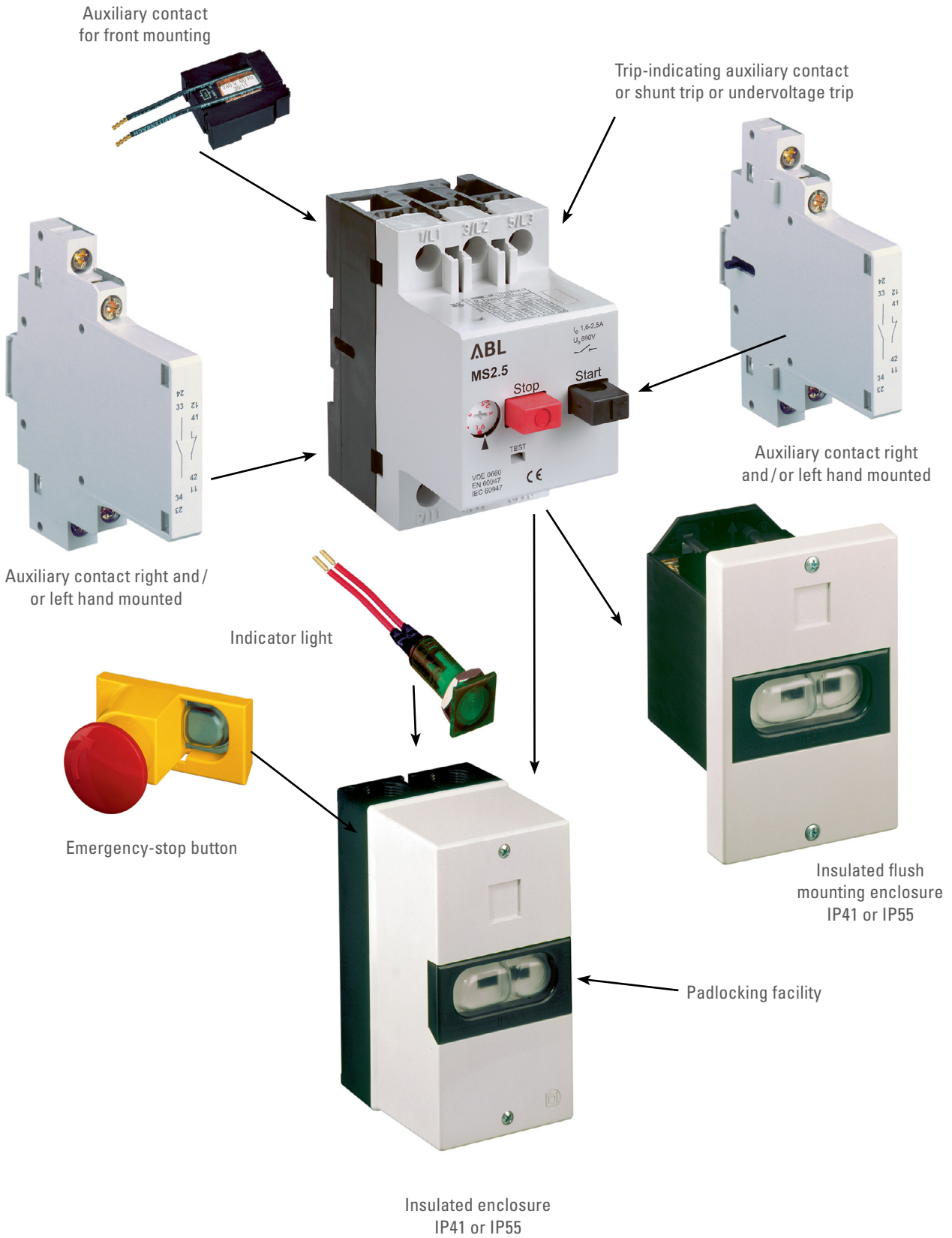


MOTOR PROTECTIVE CIRCUIT BREAKERS MS

Overview



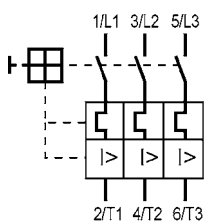
MOTOR PROTECTIVE CIRCUIT BREAKERS MS/BS

acc. to IEC 60947-4-1, UL 508

The MS motor protective circuit breakers offer optimal protection for motors and other loads up to 32 A, due to its high breaking capacity with strongly limited current.

They are equipped with phase failure sensitivity, isolating and main switch functions; 14 ranges are covering nominal rated currents from 0.1 up to 32 A.

The MPCBs are self protected up to 6.3 A at 400 V. Ranges > 6.3 A provide a short circuit withstand rating of 6 kA. The MPCBs are temperature compensated; the actuating current of the short circuit trip is $12 \times I_n$.



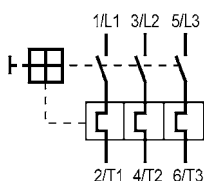
FILE E 137938



RATED CURRENT A	MAX. RATED OPERATING POWER (kW/AC 3)			OPERATING CURRENT SHORT CIRCUIT TRIP (A)	ITEM NO.	WEIGHT g/EACH	PACKING UNIT
	400/415 V	500 V	690 V				

MS with overload and short circuit tripping							
Phase failure sensitivity							
0.1 – 0.16	–	–	0.06	1.92	MS016	250	1
0.16 – 0.25	0.06	0.06	0.12	3	MS025	250	1
0.25 – 0.4	0.09	0.12	0.18	4.8	MS04	250	1
0.4 – 0.63	0.12	0.18	0.25	7.6	MS063	250	1
0.63 – 1	0.25	0.37	0.55	12	MS1	250	1
1 – 1.6	0.55	0.75	1.1	19.2	MS1.6	250	1
1.6 – 2.5	0.75	1.1	1.5	30	MS2.5	250	1
2.5 – 4	1.5	2.2	3	48	MS4	250	1
4 – 6.3	2.2	3	4	75.6	MS6.3	250	1
6.3 – 10	4	5.5	7.5	120	MS10	250	1
10 – 16	7.5	9	12.5	192	MS16	250	1
16 – 20	9	12.5	15	240	MS20	250	1
20 – 25	12.5	15	22	300	MS25	250	1
25 – 32	15	18.5	–	384	MS32	250	1

*32 A without VDE, without UL-approval



RATED CURRENT A	MAX. RATED OPERATING POWER (kW/AC 3)			OPERATING CURRENT SHORT CIRCUIT TRIP (A)	ITEM NO.	WEIGHT g/EACH	PACKING UNIT
	400/415 V	500 V	690 V				

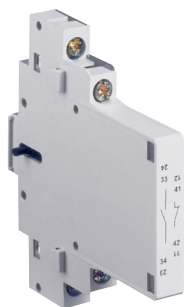
0.4 – 0.63	0.12	0.18	0.25		BS063	230	1
0.63 – 1	0.25	0.37	0.55		BS1	230	1
1 – 1.6	0.55	0.75	1.1		BS1.6	230	1
1.6 – 2.5	0.75	1.1	1.5		BS2.5	230	1
2.5 – 4	1.5	2.2	3		BS4	230	1
4 – 6.3	2.2	3	4		BS6.3	230	1
6.3 – 10	4	5.5	7.5		BS10	230	1
10 – 16	7.5	9	12.5		BS16	230	1
16 – 20	9	12.5	15		BS20	230	1
20 – 25	12.5	15	22		BS25	230	1
25 – 32	15	18,5	-		BS32	230	1

*32 A without VDE-approval

ACCESSORIES FOR MOTOR PROTECTIVE CIRCUIT BREAKERS MS



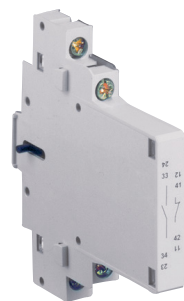
FILE E 137938



MODULES	WIRING DIAGRAM	CONTACTS	ITEM NO.	WEIGHT g/EACH	PACKING UNIT
---------	----------------	----------	----------	---------------	--------------

Auxiliary contact for side mounting

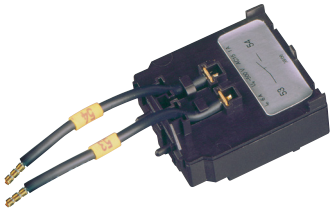
1/2 M		2 NO	HMS20	40	5
1/2 M		1 NO + 1 NC	HMS11	40	5
1/2 M		1 NO	HMS10	40	5
1/2 M		2 NC	HMS02	40	5
1/2 M		1 NC	HMS01	40	5



Early make auxiliary contact for side mounting

1/2 M		1 NO + 1 NC	VHMS11	40	5
1/2 TE		2 NO	VHMS20	40	5

ACCESSORIES FOR MOTOR PROTECTIVE CIRCUIT BREAKERS MS



	WIRING DIAGRAM	CONTACTS	ITEM NO.	WEIGHT g/EACH	PACKING UNIT
--	----------------	----------	----------	---------------	--------------

Trip-indicating auxiliary contact for inside mounting					
		1 NO	SHMS10	25	10
		1 NC	SHMS01	25	10



Auxiliary contact for front mounting					
		1 NO + 1 NC	FHMS11	13	10
		1 NO	FHMS10	11	10
		1 NC	FHMS01	11	10

Can not be used together with EHMS, SHMS, AMS and UMS.

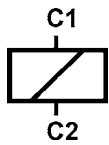
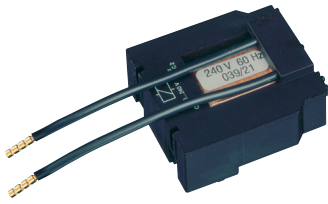
Technical Data	HMS, VHMS	FHMS	SHMS
Rated impulse withstand voltage U_{imp}	4 000 V		
Rated operating voltage U_e	500 V	250 V	500 V
Overvoltage category/Pollution level	III/3	III/3	III/3
Max. current (with free air circulation) I_{th}	6A	5A	6A
Rated operating current I_e	3.5/2 A	1 A/-	2/1 A
Can also be used for low voltage and PLC-inputs	24 V DC, 10 mA		
Cross section: 1 conductor mm ² 2 conductor mm ² only HMS, VHMS	0.75 – 2.5 r; 0.75 – 1.5 f (with ferrule) 0.75 – 2.5 r; 0.75 – 1.5 f (with ferrule)		

It is possible to equip the breakers with different auxiliary contacts. Auxiliary contacts HMS, FHMS and EHMS operate in accordance with the main contacts. They are designed for remote signaling, electrical interlocking and control applications. Early make contacts VHMS operate earlier than the main contacts. Trip-indicating auxiliary contacts SHMS operate in case of a fault.

ACCESSORIES FOR MOTOR PROTECTIVE CIRCUIT BREAKERS MS

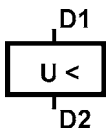
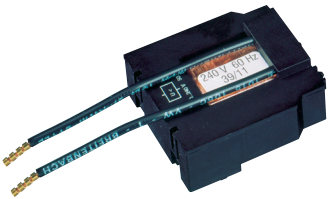


FILE E 137938



	RATED OPERATING VOLTAGE	ITEM NO.	WEIGHT g/EACH	PACKING UNIT
--	-------------------------	----------	---------------	--------------

Shunt trip for inside mounting with connecting cable (140 mm long)				
	110 V 50 Hz, 120 V 60 Hz	AMS110	75	10
	220-230V 50 Hz, 240 V 60 Hz	AMS220	75	10
	380-415 V 50 Hz, 440 V 60 Hz	AMS380	75	10
	24 V 50/60 Hz	AMS24	75	10
	500 V 50 Hz	AMS500	75	10
	24 V DC	AMSD24	75	10
Pull-in voltage $0,7 \times U_e$			Switch in duration for U_e 100% AC	



Undervoltage trip for inside mounting with connecting cable (140 mm long)				
	110 V 50 Hz, 120 V 60 Hz	UMS110	75	10
	220-230 V 50 Hz, 240 V 60 Hz	UMS220	75	10
	380-415 V 50 Hz, 440 V 60 Hz	UMS380	75	10
	24 V 50/60 Hz	UMS24	75	10
	500 V 50 Hz	UMS500	75	10
Pull-in voltage $\geq 0.85 \times U_e$		Drop out voltage $0,35 - 0,7 \times U_e$		Switch in duration for U_e
				100%

ACCESSORIES FOR MOTOR PROTECTIVE CIRCUIT BREAKERS MS



INSULATED ENCLOSURE IP41

with integrated PE(N)
terminal top and bottom each
2 metric knock-outs

	ITEM NO.	WEIGHT g/EACH	PACKING UNIT
	MS.G41	220	1



INSULATED FLUSH MOUNTING ENCLOSURE IP41

with integrated PE(N) terminal

	ITEM NO.	WEIGHT g/EACH	PACKING UNIT
	MS.F41	150	1



INSULATED ENCLOSURE IP55

WITH INTEGRATED PE(N)
terminal top and bottom each
2 metric knock-outs

	ITEM NO.	WEIGHT g/EACH	PACKING UNIT
	MS.G55	240	1



INSULATED FLUSH MOUNTING ENCLOSURE IP55

with integrated PE(N) terminal

	ITEM NO.	WEIGHT g/EACH	PACKING UNIT
	MS.F55	170	1



INSULATED ENCLOSURE WITH CEE-PLUG IP54

16 A 400 V
1 opening at the bottom

NO. OF POLES	ITEM NO.	WEIGHT g/EACH	PACKING UNIT
5-pole	MS.C51	420	1
4-pole	MS.C41	415	1
3-pole	MS.C31	410	1



INSULATED ENCLOSURE WITH CEE-PLUG IP54 AND PHASE-INVERTER

16 A 400 V
1 opening at the bottom

NO. OF POLES	ITEM NO.	WEIGHT g/EACH	PACKING UNIT
5-pol.	MS.P51	420	1



INSULATED ENCLOSURE WITH IP54 SCHUKO EARTHED PLUG

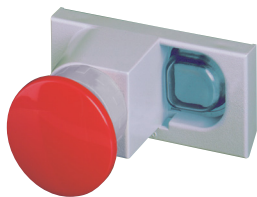
with 2 earthing systems
acc. to CEE7/VII
16 A 250 V, 2-pole + ⊕
1 opening at the bottom

NO. OF POLES	ITEM NO.	WEIGHT g/EACH	PACKING UNIT
2-pole+ ⊕	MS.C21	410	1

Max. assembly of insulated enclosures

ITEM NO.	MS/BS	HMS VHMS	AMS/UMS SHMS/FHMS	MS.PT/MS.PV MS.PS2/MS.VS	MS.BS	MS.N	MS.SL
MS.G41	1	2	1	1	1	2	1
MS.G55	1	2	1	1	-	2	1
MS.F41	1	2	1	1	1	2	1
MS.F55	1	2	1	1	-	2	1
MS.C21	1	-	1	-	-	-	-
MS.C31	1	-	1	-	-	-	-
MS.C41	1	-	1	-	-	-	-
MS.C51	1	-	1	-	-	-	-
MS.P51	1	-	1	-	-	-	-

ACCESSORIES FOR MOTOR PROTECTIVE CIRCUIT BREAKERS MS



STOP BUTTON

not latching
red, on grey surface

	ITEM NO.	WEIGHT g / EACH	PACKING UNIT
	MS.PT	55	5

	MS.PT	55	5
--	-------	----	---



PADLOCKING FACILITY

for up to three padlocks

	ITEM NO.	WEIGHT g / EACH	PACKING UNIT
	MS.VS	100	10

	MS.VS	100	10
--	-------	-----	----



EMERGENCY-STOP BUTTON

latching, turn to release
red, on yellow surface

	ITEM NO.	WEIGHT g / EACH	PACKING UNIT
	MS.PV	60	5

	MS.PV	60	5
--	-------	----	---



KIT IP55

to increase degree of protection
from IP41 to IP55

	ITEM NO.	WEIGHT g / EACH	PACKING UNIT
	MS.BS	25	10

	MS.BS	25	10
--	-------	----	----



EMERGENCY-STOP BUTTON

latching, key release (2 keys)
red, on yellow surface

	ITEM NO.	WEIGHT g / EACH	PACKING UNIT
	MS.PS2	65	5

	MS.PS2	65	5
--	--------	----	---



N-TERMINAL

connecting of fifth conductor

	ITEM NO.	WEIGHT g / EACH	PACKING UNIT
	MS.N	10	10

	MS.N	10	10
--	------	----	----



INDICATOR LIGHT

with glow bulb,
nominal rated voltage: 220-240 V

COLOUR	ITEM NO.	WEIGHT g / EACH	PACKING UNIT
green	MS.SLG2	10	5

green	MS.SLG2	10	5
-------	---------	----	---



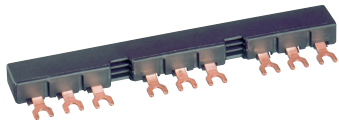
INDICATOR LIGHT

with glow bulb,
nominal rated voltage: 380-440 V

COLOUR	ITEM NO.	WEIGHT g / EACH	PACKING UNIT
green	MS.SLG3	10	5

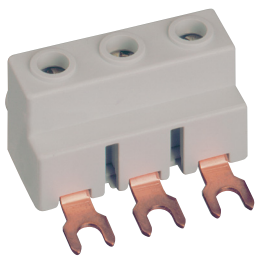
green	MS.SLG3	10	5
-------	---------	----	---

ACCESSORIES FOR MOTOR PROTECTIVE CIRCUIT BREAKERS MS



DESCRIPTION	MAX. BUSBAR CURRENT (A)	LENGTH	ITEM NO.	WEIGHT g/EACH	PACKING UNIT
-------------	-------------------------	--------	----------	---------------	--------------

Busbars					
for 2 MPCBs without auxiliary contacts	63	90 mm	SB.D02	37	10
for 3 MPCBs without auxiliary contacts	63	136 mm	SB.D03	55	10
for 4 MPCBs without auxiliary contacts	63	180 mm	SB.D04	75	10
for 2 MPCBs each with 1 auxiliary contact fitted on the right side	63	99 mm	SB.D12	40	10
for 3 MPCBs each with 1 auxiliary contact fitted on the right side	63	153 mm	SB.D13	65	10
for 4 MPCBs each with 1 auxiliary contact fitted on the right side	63	207 mm	SB.D14	90	10
for 5 MPCBs each with 1 auxiliary contact fitted on the right side	63	261 mm	SB.D15	115	10
for 2 MPCBs each with 2 auxiliary contacts	63	108 mm	SB.D22	45	10
for 4 MPCBs each with 2 auxiliary contacts	63	234 mm	SB.D24	105	10



Incoming terminal block					
	63		SB.DE1	30	10



Shroud					
			SB.DA1	5	10