

# ABL

**IE3  
READY**

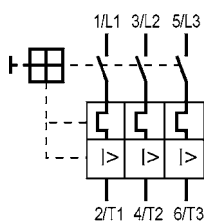


## MOTOR PROTECTIVE CIRCUIT BREAKERS

# MOTOR PROTECTIVE CIRCUIT BREAKERS MS

Nach IEC 60947-4-1, DIN EN 60947-4-1, VDE 0660-102; UL 508

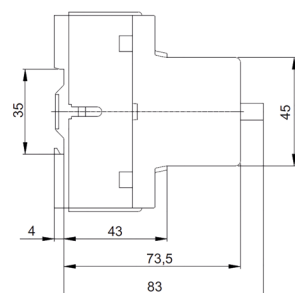
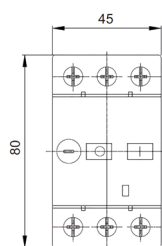
Our MS motor protective circuit breakers (MPCBs) offer optimal protection for motors and other loads up to 32 A, due to its high breaking capacity with strongly limited current. The new products of our MS series are IE3 compliant and therefore perfectly suitable for the safe operation of IE3 motors. They are equipped with main switch and disconnecting 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. The 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 15 x I<sub>n</sub>.



| ITEM NO. | RATED CURRENT<br>A | MAX. RATED OPERATING POWER<br>(kW/AC 3) |                         |       |       |                | OPERATING CURRENT<br>SHORT CIRCUIT TRIP (A) | WEIGHT<br>G / EACH | PU |
|----------|--------------------|-----------------------------------------|-------------------------|-------|-------|----------------|---------------------------------------------|--------------------|----|
|          |                    | 220 V<br>230 V<br>240 V                 | 380 V<br>400 V<br>415 V | 440 V | 500 V | 660 V<br>690 V |                                             |                    |    |

MS with overload and short circuit tripping  
Phase failure sensitivity

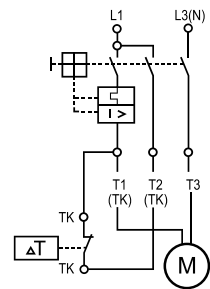
|        |             |               |               |               |              |               |      |     |   |
|--------|-------------|---------------|---------------|---------------|--------------|---------------|------|-----|---|
| MS-016 | 0,1 – 0,16  |               | 0,02          |               |              | 0,06          | 2,4  | 252 | 1 |
| MS-025 | 0,16 – 0,25 |               | 0,06          | 0,06          | 0,06         | 0,09          | 3,75 | 252 | 1 |
| MS-04  | 0,25 – 0,4  | 0,06          | 0,09          | 0,12          | 0,12         | 0,18          | 6    | 252 | 1 |
| MS-063 | 0,4 – 0,63  | 0,09          | 0,12          | 0,18          | 0,25         | 0,25          | 9,45 | 252 | 1 |
| MS-1   | 0,63 – 1    | 0,09 ... 0,12 | 0,18 ... 0,25 | 0,25          | 0,37         | 0,37 ... 0,55 | 15   | 252 | 1 |
| MS-1.6 | 1 – 1,6     | 0,18 ... 0,25 | 0,37 ... 0,55 | 0,37 ... 0,55 | 0,55 ... 0,8 | 0,75 ... 1,1  | 24   | 252 | 1 |
| MS-2.5 | 1,6 – 2,5   | 0,37          | 0,75 ... 1,1  | 0,75 ... 1,1  | 1,1          | 1,5           | 37,5 | 252 | 1 |
| MS-4   | 2,5 – 4     | 0,55 ... 0,8  | 1,1 ... 1,5   | 1,5           | 1,5 ... 2,2  | 2,2 ... 3     | 60   | 252 | 1 |
| MS-6.3 | 4 – 6,3     | 1,1 ... 1,5   | 2,2 ... 2,5   | 2,2 ... 3     | 3            | 4             | 94,5 | 252 | 1 |
| MS-10  | 6,3 – 10    | 1,5 ... 2,5   | 3 ... 4       | 4 ... 5       | 4 ... 5,5    | 5,5 ... 7,5   | 150  | 252 | 1 |
| MS-16  | 10 – 16     | 3 ... 4       | 5 ... 7,5     | 5,5 ... 9     | 7,5 ... 9    | 11            | 240  | 252 | 1 |
| MS-20  | 16 – 20     | 5,5           | 9             | 11            | 11 ... 12,5  | 15            | 300  | 252 | 1 |
| MS-25  | 20 – 25     | 5,5 ... 7,5   | 11 ... 12,5   | 12,5          | 15           | 18,5          | 375  | 252 | 1 |
| MS-32  | 25 – 32     | 9             | 15            | 15            | 18,5         |               | 480  | 252 | 1 |



| ITEM NO. | RATED ULTIMATE SHORT-CIRCUIT<br>BREAKING CAPACITY I <sub>cu</sub> |       |       |       | MAX. BACK-UP FUSE, IF I <sub>cu</sub> > I <sub>cu</sub> |       |       |       |
|----------|-------------------------------------------------------------------|-------|-------|-------|---------------------------------------------------------|-------|-------|-------|
|          | 230 V                                                             | 400 V | 500 V | 690 V | 230 V                                                   | 400 V | 500 V | 690 V |
| MS-016   | 50                                                                | 50    | 50    | 50    | No back-up fuse<br>required                             |       |       |       |
| MS-025   | 50                                                                | 50    | 50    | 50    |                                                         |       |       |       |
| MS-04    | 50                                                                | 50    | 50    | 50    |                                                         |       |       |       |
| MS-063   | 50                                                                | 50    | 50    | 50    |                                                         |       |       |       |
| MS-1     | 50                                                                | 50    | 50    | 50    |                                                         |       |       |       |
| MS-1.6   | 50                                                                | 50    | 50    | 50    |                                                         |       |       |       |
| MS-2.5   | 50                                                                | 50    | 3     | 2,5   |                                                         |       | 25    | 20    |
| MS-4     | 50                                                                | 50    | 3     | 2,5   |                                                         |       | 35    | 25    |
| MS-6.3   | 50                                                                | 50    | 3     | 2,5   |                                                         |       | 50    | 35    |
| MS-10    | 50                                                                | 6     | 3     | 2,5   |                                                         | 80    | 50    | 35    |
| MS-16    | 10                                                                | 6     | 2,5   | 2     | 80                                                      | 80    | 63    | 35    |
| MS-20    | 10                                                                | 6     | 2,5   | 2     | 80                                                      | 80    | 63    | 50    |
| MS-25    | 10                                                                | 6     | 2,5   | 2     | 80                                                      | 80    | 63    | 50    |
| MS-32    | 10                                                                | 6     | 2,5   | 2     | 80                                                      | 80    | 63    | 50    |

MOTOR PROTECTIVE DEVICES  
FOR VARIABLE SPEED FAN MOTORS

The MWC-10 is a multi-polar circuit breaker which allows a thermal contact, which is built into the motor (directly into the coil), to be analysed. For example, if the motor is hindered due to dirt, the coil will heat up more than normal and the thermal contact (NC contact) in the coil will break the circuit. The bimetal built into the circuit breaker recognizes the opening of the thermal contact in the motor coil and, with the smallest motor rated current, switches off all poles completely within max. 40 s. However, this type of full motor protection neglects wiring protection. The connection from the full motor protection to the fan is not protected. In order to protect this connection, a back-up fuse is needed which fits the conductor cross section. This back-up fuse is usually installed in front of the full motor protection.

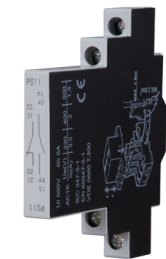


| ITEM NO. | RATED CURRENT (A) | WEIGHT G / EACH | PU |
|----------|-------------------|-----------------|----|
|----------|-------------------|-----------------|----|

Motor protective device for variable-speed fan motors

|        |        |     |   |
|--------|--------|-----|---|
| MWC-10 | 0,4-10 | 252 | 1 |
|--------|--------|-----|---|

ACCESSORIES FOR MOTOR PROTECTIVE CIRCUIT BREAKERS MS



| ITEM NO. | MODULES | WIRING DIAGRAM | CONTACTS | WEIGHT G / EACH | PU |
|----------|---------|----------------|----------|-----------------|----|
|----------|---------|----------------|----------|-----------------|----|

Auxiliary contact for side mounting

|       |     |  |             |    |   |
|-------|-----|--|-------------|----|---|
| HM-20 | ½ M |  | 2 NO        | 35 | 1 |
| HM-11 | ½ M |  | 1 NO + 1 NC | 35 | 1 |

| ITEM NO. | RATED OPERATING VOLTAGE | WEIGHT G / EACH | PU |
|----------|-------------------------|-----------------|----|
|----------|-------------------------|-----------------|----|

Shunt trip

for inside mounting with connecting cable (140 mm long)

|        |                 |    |   |
|--------|-----------------|----|---|
| AM-110 | 110 V 50 Hz     | 62 | 1 |
| AM-230 | 220-240V 50 Hz  | 62 | 1 |
| AM-400 | 380-415 V 50 Hz | 62 | 1 |

Undervoltage trip

for inside mounting with connecting cable (140 mm long)

|        |                 |    |   |
|--------|-----------------|----|---|
| UM-110 | 110 V 50 Hz     | 62 | 1 |
| UM-230 | 220-240 V 50 Hz | 62 | 1 |
| UM-400 | 380-415 V 50 Hz | 62 | 1 |

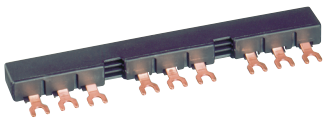
Shunt trip with

rated impulse withstand voltage  $U_{imp}$  6.000 V

| ITEM NO. | CONTACTS    | RATED OPERATING VOLTAGE $U_e$ | RATED OPERATING CURRENT $I_e$ | WEIGHT G / EACH | PU |
|----------|-------------|-------------------------------|-------------------------------|-----------------|----|
| EHM-11   | 1 NO + 1 NC | 230 / 400 / 500 V             | 3,5 / 2 / 1,5 A               | 15              | 1  |



# ACCESSORIES FOR MOTOR PROTECTIVE CIRCUIT BREAKERS MS

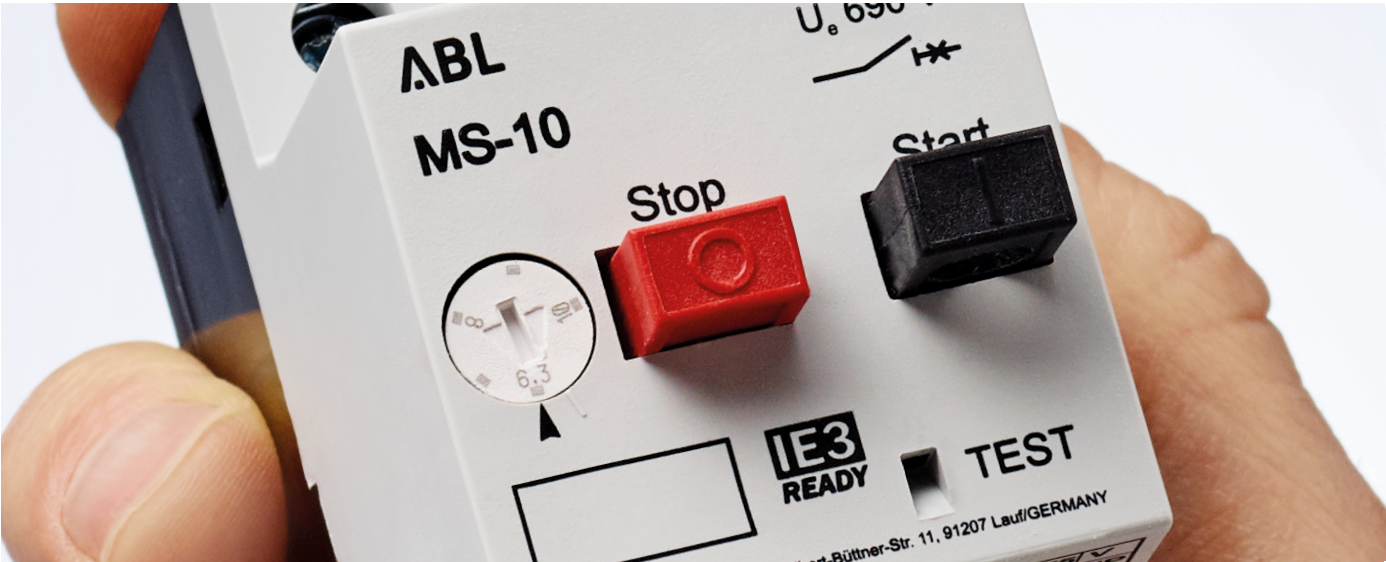


| DESCRIPTION | MAX.<br>BUSBAR<br>CURRENT (A) | LENGTH | ITEM NO. | WEIGHT<br>G / EACH | PU |
|-------------|-------------------------------|--------|----------|--------------------|----|
|-------------|-------------------------------|--------|----------|--------------------|----|

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

|                         |    |  |        |    |    |
|-------------------------|----|--|--------|----|----|
| Incoming terminal block |    |  |        |    |    |
|                         | 63 |  | SB.DE1 | 30 | 10 |

|        |  |  |        |   |    |
|--------|--|--|--------|---|----|
| Shroud |  |  |        |   |    |
|        |  |  | SB.DA1 | 5 | 10 |



# INSULATED ENCLOSURES FOR MOTOR PROTECTIVE CIRCUIT BREAKERS



## INSULATED ENCLOSURE IP55

with integrated PE(N)  
terminal top and bottom  
each 2xM25 metric knock-outs

| ITEM NO. | WEIGHT<br>G / EACH | PU |
|----------|--------------------|----|
|----------|--------------------|----|

|       |     |   |
|-------|-----|---|
| M-G55 | 222 | 1 |
|-------|-----|---|



## INSULATED FLUSH MOUNTING ENCLOSURE IP55

with integrated PE(N) terminal

| ITEM NO. | WEIGHT<br>G / EACH | PU |
|----------|--------------------|----|
|----------|--------------------|----|

|       |     |   |
|-------|-----|---|
| M-F55 | 150 | 1 |
|-------|-----|---|

## ACCESSORIES FOR INSULATED ENCLOSURES M-G55 / M-F55



### EMERGENCY-STOP BUTTON

latching, turn to release  
red, on yellow surface

| ITEM NO. | WEIGHT<br>G / EACH | PU |
|----------|--------------------|----|
|----------|--------------------|----|

|      |    |   |
|------|----|---|
| M-PV | 40 | 1 |
|------|----|---|



### PADLOCKING FACILITY

for up to three padlocks

| ITEM NO. | WEIGHT<br>G / EACH | PU |
|----------|--------------------|----|
|----------|--------------------|----|

|      |    |   |
|------|----|---|
| M-VS | 95 | 1 |
|------|----|---|



### INDICATOR LIGHT

with glow bulb,  
nominal rated voltage 250 V

| COLOUR | ITEM NO. | WEIGHT<br>G / EACH | PU |
|--------|----------|--------------------|----|
|--------|----------|--------------------|----|

|       |        |     |    |
|-------|--------|-----|----|
| green | M-SLG2 | 175 | 25 |
|-------|--------|-----|----|



### INDICATOR LIGHT

with glow bulb,  
nominal rated voltage 400 V

| COLOUR | ITEM NO. | WEIGHT<br>G / EACH | PU |
|--------|----------|--------------------|----|
|--------|----------|--------------------|----|

|       |        |     |    |
|-------|--------|-----|----|
| green | M-SLG3 | 175 | 25 |
|-------|--------|-----|----|

### Max. assembly of insulated enclosures

| ITEM NO. | MS | HMS | AM/UM/EHM | M-PV/M-VS | M-SLG |
|----------|----|-----|-----------|-----------|-------|
| M-G55    | 1  | 2   | 1         | 1         | 1     |
| M-F55    | 1  | 2   | 1         | 1         | 1     |



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