

# CIRCUIT BREAKERS (MO-MC/MCCB)

TOP-TECHNIC



MC – MOULDED CASE CIRCUIT BREAKERS

TOP-TECHNIC



MO – AIR CIRCUIT BREAKERS

TOP-TECHNIC



RESIDUAL CURRENT RELEASE RELAY WITH CONVERTER

# CIRCUIT BREAKERS (MO-MC/MCCB)

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RESIDUAL CURRENT RELEASE RELAY WITH CONVERTER

MO / MC – SYSTEM OVERVIEW

AIR CIRCUIT BREAKERS MO SERIES UP TO 6300 A

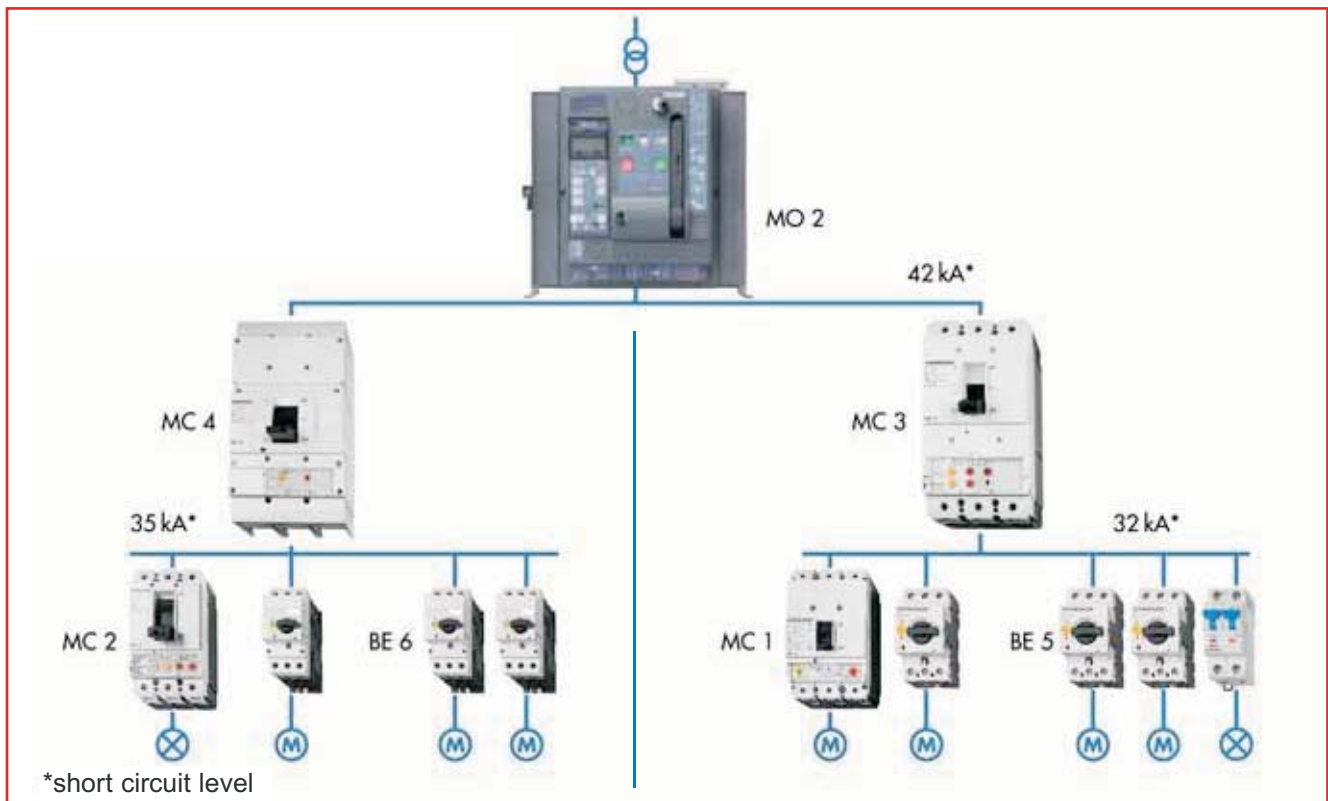
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# MO / MC – SYSTEM OVERVIEW

## CIRCUIT BREAKERS – OVERVIEW



### SELECTIVITY

Thanks to the way they are designed, MC circuit breakers have a high level of selectivity which enables you to construct a selective system.

### OPTIMUM PROTECTION RANGE BETWEEN 0,16 A AND 6300 A

With the MC and MO circuit breaker concept, SCHRACK is now able to combine trusted technology with modern features. These circuit breakers work perfectly together and can communicate with each other. MC and MO circuit breakers have modern communication functions. They provide optimum protection between 0,16 A and 6300 A. MC and MO are part of a generation of circuit breakers whose modularity allows the use in any power distribution application. These circuit breakers are cost competitive providing flexibility for engineering and can also be integrated into higher-level system solutions. MC and MO circuit breakers are manufactured to international standards. Combining intelligent open and compact devices together with communication systems giving many benefits and solutions.

### CONTINUOUS COVERAGE BETWEEN 0,16 A AND 6300 A

MC and MO cover a rated current range from 0,16 A to 6300 A. With their four classes of switching capacity up to 150 kA, they provide a safe and, at the same time, the most efficient solution – from standard applications to the most demanding of requirements.

### COMMUNICATION OPENS UP NEW POSSIBILITIES

MC and MO circuit breakers open up new possibilities for power distribution and automation with their communication capability. They record all the important data you need, indicate them locally and can pass this data on to higher level systems. In this way, system transparency is increased and reaction times to critical states such as over-current, phase imbalance or phase failure are reduced. Targeted intervention can help avoid system breakdowns and preventative maintenance can be planned. This enhances system and machine availability, avoiding costly production downtimes.

### SYSTEMS WITH CIRCUIT BREAKERS – THE BENEFITS

- Circuit breakers offer protection, contacting and disconnection capabilities.
- Contacts always use 3-pole triggering, thus preventing 2-phase motor operation.
- In the event of the circuit breaker being triggered by a fault, the circuit breaker is simply reset once the fault is removed.
- Remote on/off switching including appropriate indications is easy.
- Ageing / replace all three fuses / characteristic curve shift.

# MC – SYSTEM OVERVIEW

## A COMPACT DESIGN IN 4 FRAME SIZES FOR HIGH-PERFORMANCE APPLICATIONS



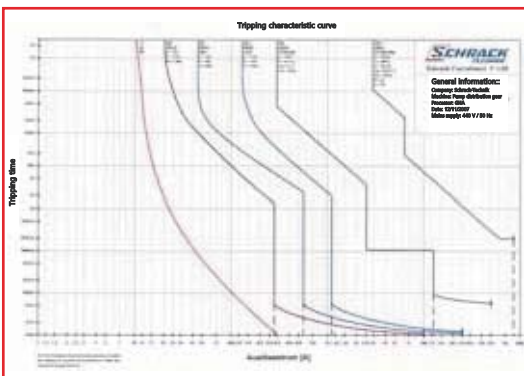
MCCBs - Enclosed compact circuit breakers from 15 to 2.000 A with only four frame sizes. These circuit breakers can be used universally – from the smallest of service distribution boards, to machine controls or motor starter combinations, up to large energy distribution systems with a maximum short-circuit breaking capacity of 150 kA. Special versions are available for smaller power ratings with phase failure sensitivity protection for motor and motor-related applications. The range of CBs is rounded off nicely with switch actuation using toggle-lever, rotary- or remote operators. Shunt-, undervoltage- and earth fault- and residualcurrent releases complete the range. The MCCBs can be used universally for DC applications thanks to their high DC-3 utilization category: ranging from photovoltaics to emergency generator batteries to sophisticated breaking and protection of DC shunt-wound motors in reverse- and jog mode. The new MC-A circuit breakers are the ideal protection devices for DC current networks with operating voltages up to 750 V and operating currents up to 500 A. Featuring thermomagnetic release systems for exact r.m.s detection of operating and fault currents. These contacts feature a double break system which enables safe breaking in high-energy networks with shortcircuit currents of up to 70.000 amps.

### UNIFORM ACCESSORIES / UNIVERSAL CONNECTION SYSTEM



Front mountable retrofitable accessories. The installation location is the same for all frame sizes. The auxiliary contacts and trip-indicating modules are contact elements part of the RMQ Titan range of control switches. They are available in screw- or tension spring technology. This reduces assembly times and cuts costs. Effective shunt- and undervoltage releases are also available in combination with early make auxiliary contacts for Emergency Stop functions or load-shedding circuits and offer elegant solutions for a broad spectrum of applications. The connection features of MCCBs enable you to respond effectively to your system's demands, whatever they may be. Whether using copper or aluminium cables or copper busbars, these MCs offer the right solution for any connection type. An add-on part gives the circuit breaker IP (finger-proof) protection.

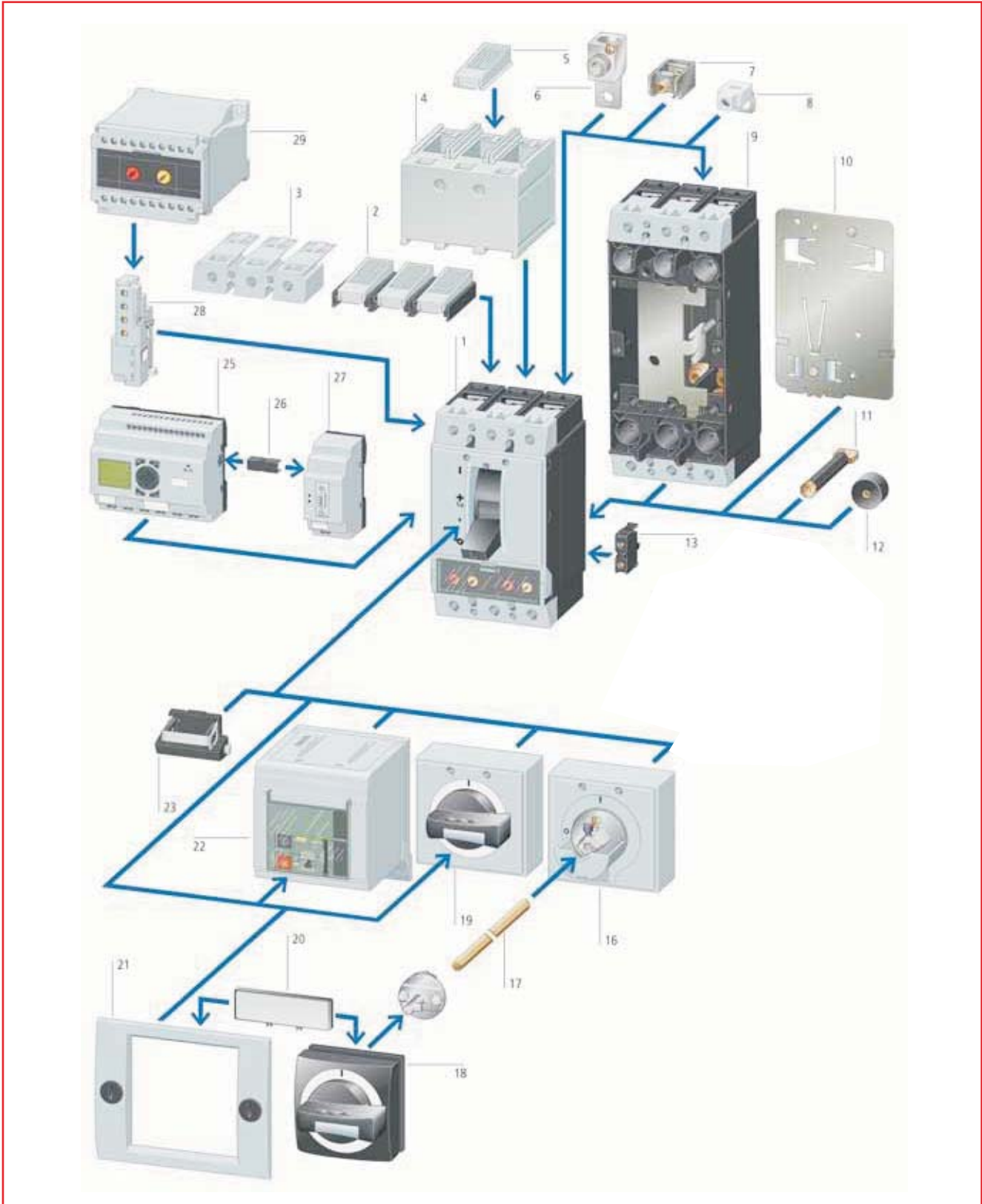
### EASIER VISUALISATION, COMPARISON AND DOCUMENTATION OF CHARACTERISTIC CURVES



This characteristic curve program - available free-of-charge - supports the documentation of circuit-breakers used in completed switchgear systems. All setting parameters are easy to set, display in graphical form and print with the tripping characteristics. For example, you can make a direct comparison between MC and MO circuit breakers and H.R.C. fuses, which enables you to assess the selectivity class for the overload- and time-delayed overcurrent range.

# MC – SYSTEM OVERVIEW

## MCCB- SYSTEM OVERVIEW



- |   |  |  |
|---|--|--|
| 1. MC circuit breaker,<br>MC.-PN, MC.-N Switch disconnector | 10. Clip plate   | 21. Insulating surround                                |
| 2. Terminal cover   | 11. Reverse-side connection  | 22. Remote operator                                    |
| 3. Terminal cover   | 12. Spacer   | 23. Toggle-lever<br>interlock device                   |
| 4. IPX2 Finger protection for cover                         | 13. Standard auxiliary contact,<br>Trip-indicating auxiliary contact | 25. Communication module (DMI)                         |
| 5. IPX2 Finger protection for cover                         | 16. Rotary operator with shaft support                               | 26. Data plug  |
| 6. Tunnel terminal for AI cable                             | 17. Extension shaft  | 27. Profibus interface                                 |
| 7. Box terminal   | 18. Door coupling rotary handle                                      | 28. Voltage release or<br>early-make auxiliary contact |
| 8. Control circuit terminal                                 | 19. Rotary handle with rotary operator                               | 29. Time-delay unit for voltage release                |
| 9. Plug-in and withdrawable unit                            | 20. Type plate   |  |



# MC – FRAME SIZE 1 / UP TO 160A

## CIRCUIT BREAKER 3 POLE UP TO 160A WITH THERMAL MAGNETIC RELEASE TYPES MC1B-A, MC1N-A, MC1H-A



MC110231

### SCHRACK INFO

- For system and line protection
- Adjustable overload release:  $0,8 - 1 \times I_n$  (factory setting  $0,8 \times I_n$ )
- Adjustable short-circuit release:  $6 - 10 \times I_n$  (factory setting  $6 \times I_n$ );  
except MC.-A40:  $8 - 10 \times I_n$
- Box terminals as standard, screw terminals as accessories
- Breaking capacity 25 / 50 / 100 kA at 415 V 50/60 Hz
- Meets IEC/EN 60947-2
- Rated uninterrupted current = Rated current

RATED CURRENT/ BREAKING CAPACITY	SETTING RANGE		TYPE	ORDER NO.
	OVERLOAD- RELEASE (A)	SHORT CIRCUIT- RELEASE (A)		
<b>3 POLE (BASIC BREAKING CAPACITY) 25 kA</b>				
20 A/25 kA	15...20	fix 350	MC1B-A20	MC120131
25 A/25 kA	20...25	fix 350	MC1B-A25	MC125131
32 A/25 kA	25...32	fix 350	MC1B-A32	MC132131
40 A/25 kA	32...40	320...400	MC1B-A40	MC140131
50 A/25 kA	40...50	300...500	MC1B-A50	MC150131
63 A/25 kA	50...63	380...630	MC1B-A63	MC163131
80 A/25 kA	63...80	480...800	MC1B-A80	MC180131
100 A/25 kA	80...100	600...1000	MC1B-A100	MC110131
125 A/25 kA	100...125	750...1250	MC1B-A125	MC112131
160 A/25 kA	125...160	fix 1280	MC1B-A160	MC116131
<b>3 POLE (NORMAL BREAKING CAPACITY) 50 kA</b>				
20 A/50 kA	15...20	fix 350	MC1N-A20	MC120231
25 A/50 kA	20...25	fix 350	MC1N-A25	MC125231
32 A/50 kA	25...32	fix 350	MC1N-A32	MC132231
40 A/50 kA	32...40	320...400	MC1N-A40	MC140231
50 A/50 kA	40...50	300...500	MC1N-A50	MC150231
63 A/50 kA	50...63	380...630	MC1N-A63	MC163231
80 A/50 kA	63...80	480...800	MC1N-A80	MC180231
100 A/50 kA	80...100	600...1000	MC1N-A100	MC110231
125 A/50 kA	100...125	750...1250	MC1N-A125	MC112231
160 A/50 kA	125...160	fix 1280	MC1N-A160	MC116231
<b>3 POLE (HIGH BREAKING CAPACITY) 100 kA</b>				
20 A/100 kA	15...20	fix 350	MC1H-A20	MC120331
25 A/100 kA	20...25	fix 350	MC1H-A25	MC125331
32 A/100 kA	25...32	fix 350	MC1H-A32	MC132331
40 A/100 kA	32...40	320...400	MC1H-A40	MC140331
50 A/100 kA	40...50	300...500	MC1H-A50	MC150331
63 A/100 kA	50...63	380...630	MC1H-A63	MC163331
80 A/100 kA	63...80	480...800	MC1H-A80	MC180331
100 A/100 kA	80...100	600...1000	MC1H-A100	MC110331
125 A/100 kA	100...125	750...1250	MC1H-A125	MC112331
160 A/100 kA	125...160	fix 1280	MC1H-A160	MC116331

# MC – FRAME SIZE 1 / UP TO 160A

## CIRCUIT BREAKER 4 POLE UP TO 160A WITH THERMAL MAGNETIC RELEASE TYPES MC1B-4-A, MC1N-4-A, MC1H-4-A



MC110231

### SCHRACK INFO

- For system and line protection
- 100% overload- and short-circuit protection
- Adjustable overload release:  $I 0,8 - 1 \times I_n$  (factory setting  $0,8 \times I_n$ )
- Adjustable short-circuit release:  $I 6 - 10 \times I_n$  (factory setting  $6 \times I_n$ );  
except MC.-A40:  $8 - 10 \times I_n$
- Box terminals as standard, screw terminals as accessories
- Breaking capacity 25 / 50 / 100 kA at 415 V 50/60 Hz
- Specifications to IEC/EN 60947-2
- Rated uninterrupted current = Rated current

RATED CURRENT/ BREAKING CAPACITY	SETTING RANGE		TYPE	ORDER NO.
	OVERLOAD- RELEASE (A)	SHORT CIRCUIT- RELEASE (A)		
<b>4 POLE (BASIC BREAKING CAPACITY) 25 kA</b>				
20 A/25 kA	15...20	fix 350	MC1B-4-A20	MC120141
25 A/25 kA	20...25	fix 350	MC1B-4-A25	MC125141
32 A/25 kA	25...32	fix 350	MC1B-4-A32	MC132141
40 A/25 kA	32...40	320...400	MC1B-4-A40	MC140141
50 A/25 kA	40...50	300...500	MC1B-4-A50	MC150141
63 A/25 kA	50...63	380...630	MC1B-4-A63	MC163141
80 A/25 kA	63...80	480...800	MC1B-4-A80	MC180141
100 A/25 kA	80...100	600...1000	MC1B-4-A100	MC110141
125 A/25 kA	100...125	750...1250	MC1B-4-A125	MC112141
160 A/25 kA	125...160	fix 1280	MC1B-4-A160	MC116141
<b>4 POLE (NORMAL BREAKING CAPACITY) 50 kA</b>				
20 A/50 kA	15...20	fix 350	MC1B-4-A20	MC120241
25 A/50 kA	20...25	fix 350	MC1N-4-A25	MC125241
32 A/50 kA	25...32	fix 350	MC1N-4-A32	MC132241
40 A/50 kA	32...40	320...400	MC1N-4-A40	MC140241
50 A/50 kA	40...50	300...500	MC1N-4-A50	MC150241
63 A/50 kA	50...63	380...630	MC1N-4-A63	MC163241
80 A/50 kA	63...80	480...800	MC1N-4-A80	MC180241
100 A/50 kA	80...100	600...1000	MC1N-4-A100	MC110241
125 A/50 kA	100...125	750...1250	MC1N-4-A125	MC112241
160 A/50 kA	125...160	fix 1280	MC1N-4-A160	MC116241
<b>4 POLE (HIGH BREAKING CAPACITY) 100 kA</b>				
20 A/100 kA	15...20	fix 350	MC1H-A20	MC120341
25 A/100 kA	20...25	fix 350	MC1H-A25	MC125341
32 A/100 kA	25...32	fix 350	MC1H-A32	MC132341
40 A/100 kA	32...40	320...400	MC1H-A40	MC140341
50 A/100 kA	40...50	300...500	MC1H-A50	MC150341
63 A/100 kA	50...63	380...630	MC1H-A63	MC163341
80 A/100 kA	63...80	480...800	MC1H-A80	MC180341
100 A/100 kA	80...100	600...1000	MC1H-A100	MC110341
125 A/100 kA	100...125	750...1250	MC1H-A125	MC112341
160 A/100 kA	125...160	fix 1280	MC1H-A160	MC116341

# MC – FRAME SIZE 1 / UP TO 160A

## SWITCH DISCONNECTOR UP TO 160A TYPES MC1-PN, MC1-PN-4, MC1-N, MC1-N-4



MC110231

### SCHRACK INFO

- Rated uninterrupted current up to 160A
- Switch disconnector type MC1-PN two switch positions, 0/I, cannot be tripped remotely
- Switch disconnector type MC1-N, with Trip setting "0"; "+"; "I", can be tripped remotely with undervoltage/shunt release, trip-indicating auxiliary contacts possible
- Box terminals as standard, screw terminals as accessories
- Main switch characteristics including positive drive according to IEC/EN 60204 & VDE 0113
- Isolating characteristics to IEC/EN 60947-3 and VDE 0660  
Protection against accidental contact to VDE 0160 Part 100
- Specifications to IEC/EN 60947-2
- Rated uninterrupted current = Rated current
- Rated short-circuit breaking capacity values:  $I_{ch}$  2,8kA
- Rated short-time withstand current:  $I_{cw}$  2kA

RATED CURRENT/ BREAKING CAPACITY	MAX. BACK-UP FUSE (gL) FOR SWITCH DISCONNECTOR (AgL)	TYPE	ORDER NO.
<b>3 POLE CANNOT BE TRIPPED REMOTELY</b>			
63 A	125 A	MC1-PN-63	MC163034
100 A	125 A	MC1-PN-100	MC110034
125 A	125 A	MC1-PN-125	MC112034
160 A	160 A	MC1-PN-160	MC116034
<b>4 POLE CANNOT BE TRIPPED REMOTELY</b>			
63 A	125 A	MC1-PN-4-63	MC163044
100 A	125 A	MC1-PN-4-100	MC110044
125 A	125 A	MC1-PN-4-125	MC112044
160 A	160 A	MC1-PN-4-160	MC116044
<b>3 POLE CAN BE TRIPPED REMOTELY</b>			
63 A	125 A	MC1-N-63	MC163035
100 A	125 A	MC1-N-100	MC110035
125 A	125 A	MC1-N-125	MC112035
160 A	160 A	MC1-N-160	MC116035
<b>4 POLE CAN BE TRIPPED REMOTELY</b>			
63 A	125 A	MC1-N-4-63	MC163045
100 A	125 A	MC1-N-4-100	MC110045
125 A	125 A	MC1-N-4-125	MC112045
160 A	160 A	MC1-N-4-160	MC116045



# MC – FRAME SIZE 1 / UP TO 160A

## RESIDUAL-CURRENT (RCD) RELEASE

### TYPES MC1-N-XFI.R, MC1-N-4-XFI.R, MC1-N-XFI.U, MC1-N-4-XFI.U







MC194608

#### SCHRACK INFO

- Suitable for use in three- and single-phase systems
- Pulse current sensitive accord. to core-balance principle
- For 3- and 4-pole circuit breaker and switch disconnectors MC1, MC1-N, not for MC1-PN
- Dependant on mains power  $U_e = 200 - 415 \text{ V } 50/60 \text{ Hz}$
- Meets IEC/EN 60947-2
- Bottom mounting up to 100 A / installed from right 125A
- Complete unit

#### TECHNICAL DATA

- At  $I_{\Delta n} = 0,03 \text{ A}$ : Time delay  $t_r$  permanently set to 10 ms.
- Alarm message  $> 30 \% I_{\Delta n}$  via yellow LED.
- Trip-indicating auxiliary contacts can be fitted by user (max. 2 auxillary contacts):  
N/O: Order No: MM216376, N/C: Order No: MM216378 (see page 13) are reset via a reset toggle lever.
- When using the trip-indicating auxiliary contacts in the FI module, the N/C contact works as an N/O contact and the N/O contact as an N/C.
- Not for use in XCS insulated enclosures.
- Type MC1-XFI...U cannot be combined with shunt or undervoltage releases and an early-make auxiliary contact.
- Rated short-circuit breaking capacity values are determined by installed MC1 or when using a switch disconnector MC1-N by the back-up fuse to be used.

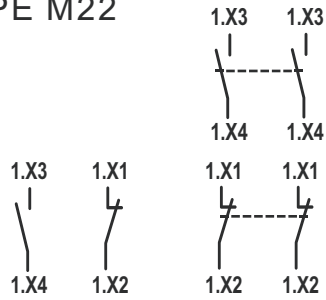
FOR TYPE	RATED FAULT CURRENT $I_{\Delta n}$	TIME-DELAY (ms)	TYPE	ORDER NO.
<b>3 POLE INSTALLED FROM RIGHT UP TO 125A</b> 				
MC1-N	0.03	10	MC1-N-XFI30R	MC194603
MC1-N	0.3	10	MC1-N-XFI300R	MC194604
MC1-N	0.03-0.1-0.3-0.5-1-3	10, 60, 150, 300, 450	MC1-N-XFIR	MC194605
<b>4 POLE INSTALLED FROM RIGHT UP TO 125A</b> 				
MC1-4 / MC1-N-4	0.03	10	MC1-N-4-XFI30R	MC194606
MC1-4 / MC1-N-4	0.3	10	MC1-N-4-XFI300R	MC194607
MC1-4 / MC1-N-4	0.03-0.1-0.3-0.5-1-3	10, 60, 150, 300, 450	MC1-N-4-XFIR	MC194608
<b>3 POLE BOTTOM MOUNTING UP TO 100A</b> 				
MC1-N	0.03	10	MC1-N-XFI30U	MC194609
MC1-N	0.3	10	MC1-N-XFI300U	MC194610
MC1-N	0.03-0.1-0.3-0.5-1-3	10, 60, 150, 300, 450	MC1-N-XFIU	MC194611
<b>4 POLE BOTTOM MOUNTING UP TO 100A</b> 				
MC1-4 / MC1-N-4	0.03	10	MC1-N-4-XFI30U	MC194612
MC1-4 / MC1-N-4	0.3	10	MC1-N-4-XFI300U	MC194613
MC1-4 / MC1-N-4	0.03-0.1-0.3-0.5-1-3	10, 60, 150, 300, 450	MC1-N-4-XFIU	MC194614

# MC – FRAME SIZE 1 / UP TO 160A

## STANDARD AUXILIARY CONTACT / TRIP-INDICATING AUXILIARY CONTACT TYPE M22



MM216378



### SCHRACK INFO

- Switches with the main contacts, used for indicating and interlocking tasks
- General trip indication “+” with trip due to voltage release, overload release or short-circuit-release

### TECHNICAL DATA

Breaking capacity: AC15: 4 A / 230 VAC  
DC13: 3 A / 24 VDC

### TIPS & TRICKS

The trip-indicating auxiliary contacts is the same contact as the standard auxiliary contact. It derives its function from its place of installation where it is installed (alarm contact on left).

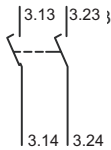
Maximum component installation with auxiliary contacts: 1 x Standard auxiliary contact (HIN) M22-K. or M22-CK..  
+ 1 x Trip-indicating contact (HIA) M22-K. or M22-CK..

DESCRIPTION	TYPE	ORDER NO.
1 NO contact with plug screw terminals	M22-K10	MM216376
1 NC contact with plug screw terminals	M22-K01	MM216378
2 NO contacts with cage clamp terminals	M22-CK20	MM107898
2 NC contacts with cage clamp terminals	M22-CK02	MM107899

## EARLY-MAKE AUXILIARY CONTACT TYPE MC1-XHIVL



MC199432



### SCHRACK INFO

For interlock- and load-shedding circuits as well as for early make of undervoltage release in main switch/Emergency stop applications.

### TECHNICAL DATA

- Early-make during switch on and off (manual switch): approx. 20 ms
- Not in connection with undervoltage release  
MC1-XU... or shunt release MC1-XA...
- Breaking capacity: AC15: 4 A / 230 VAC  
DC13: 3 A / 24 VDC

### TIPS & TRICKS

Maximum component installation with auxiliary contacts:

1 x early-make auxiliary contact

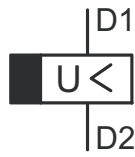
DESCRIPTION	TYPE	ORDER NO.
Early-make auxiliary contact, 2 N/O incl. 3 m cable	MC1-XHIVL	MC199432

# MC – FRAME SIZE 1 / UP TO 160A

## UNDERVOLTAGE RELEASE TYPES MC1-XUL



MC199471



### SCHRACK INFO

- Non-delayed breaking of circuit breaker MC/ switch disconnector MC-N when the control voltage drops below 35 % -70% Us.
- For use in Emergency stop devices in connection with EMERGENCY STOP button
- Installed in breaker
- Without auxiliary contact

### TIPS & TRICKS

When the undervoltage release is de-energized, accidental contact with the main contacts of the switch is safely prevented during attempts to switch on. Undervoltage release cannot be installed simultaneously with an shunt release or early-make auxiliary contact MC1-XHIV.

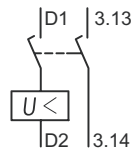
VOLTAGE	VERSION	TYPE	ORDER NO.
24 VAC	incl. 3m cable	MC1-XUL24AC	MC199462
24 VDC	incl. 3m cable	MC1-XUL24DC	MC199481
208-240 V AC	incl. 3m cable	MC1-XUL208-240AC	MC199471
380-440 V AC	incl. 3m cable	MC1-XUL380-440AC	MC199473

Other voltage variants available upon request.

## UNDERVOLTAGE RELEASE WITH TWO EARLY-MAKE AUXILIARY CONTACTS TYPES MC1-XUHIVL



MC199565



### SCHRACK INFO

- With 2 early-make auxiliary contacts
- For early-make of the undervoltage release in main switch applications and for interlock- and load-shedding circuits
- Installed in breaker
- Other voltages and connection versions available on request

### TIPS & TRICKS

When the undervoltage release is de-energized, accidental contact with the main contacts of the switch is safely prevented during attempts to switch on. Early-make of auxiliary contacts during switch on and off (20ms). Undervoltage releases cannot be installed simultaneously with shunt releases or early-make auxiliary contact, type MC1-XHIV.

VOLTAGE	VERSION	TYPE	ORDER NO.
208 - 240 VAC	incl. 3m cable	MC1-XUHIVL230V	MC199565
380 - 440 VAC	incl. 3m cable	MC1-XUHIVL400VAC	MC199567

Other voltage variants available upon request.

# MC – FRAME SIZE 1 / UP TO 160A

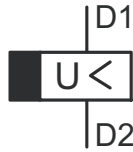
## UNDERVOLTAGE RELEASE, OFF-DELAY TYPES MC-UVU, MC-XUVL



MC199471



MC496189



### SCHRACK INFO

- Voltage drops less than 0,07–16 s do not cause MC circuit breakers or N switch disconnectors to trip.
- Suitable for voltages:  
220 – 240 VAC 50/60 Hz  
380 – 440 VAC 50/60 Hz  
480 – 550 VAC 50/60 Hz  
24 VAC/DC

### TECHNICAL DATA

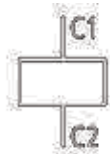
- Time-delay adjustable between 70 ms – 4 s
- With additional external capacitor:  
30.000  $\mu$ F  $\geq$  35 V to 8 s  
90.000  $\mu$ F  $\geq$  35 V to 16 s
- Special release MC1-XUVL is required.
- Cannot be installed at same time with early-make auxiliary contact MC1-XHIV... or shunt release MC1-XA....
- Time-delay device for separate mounting (Fixing: DIN rail or screws).
- For other operating voltages, please use a control transformer.

NAME	TYPE	ORDER NO.
Time-delay unit	MC-UVU	MC196154
Special undervoltage release for time-delay unit MC1	MC1-XUVL	MC191607

## SHUNT RELEASE TYPE MC1-XAL



MC199744



### SCHRACK INFO

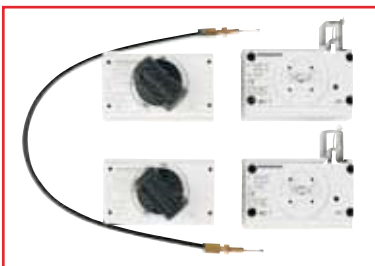
- Without auxiliary contact
- Switches are tripped by a voltage pulse or by the application of uninterrupted voltage

### TECHNICAL DATA

When the shunt release is energized, accidental contact with the main contacts of the switch is safely prevented during attempts to switch on. Shunt release cannot be installed simultaneously with undervoltage releases or early-make auxiliary contact MC1-XHIV.

VOLTAGE	VERSION	TYPE	ORDER NO.
24 VAC/DC	incl. 3m cable	MC1-XAL24AC/DC	MC199736
208 - 250 VAC/DC	incl. 3m cable	MC1-XAL230AC/DC	MC199744

## MECHANICAL INTERLOCK FOR (DOOR COUPLING-) ROTARY HANDLES FOR MC1



MC191581

### SCHRACK INFO

**Rotary handle on switch or door coupling rotary handle additionally required.**

Cannot be combined with remote operator or door frame.

At least 2 interlocking modules are required to construct a mechanical interlocking circuit. See Page 142 for possible combinations and variations of interlocking circuits. Bowden cable to be ordered separately.

DESCRIPTION	TYPE	ORDER NO.
Mechanical interlock	MC1-XMV	MC191581
Bowden cable 225 mm	MC-XBZ225	MC191585
Bowden cable 600 mm	MC-XBZ600	MC191586
Bowden cable 1000 mm	MC-XBZ1000	MC191587

# MC – FRAME SIZE 1 / UP TO 160A

## ROTARY HANDLE DIRECTLY ON SWITCH FOR MC1



MC290127

### SCHRACK INFO

- Complete with rotary drive
- Can also be combined with door frame

### TECHNICAL DATA

Available in the following versions:

#### **Type MC.-XDV**

Lockable in the "0" position (up to three padlocks), black/grey

#### **Type MC.-XDVR**

Lockable in the "0" position (up to three padlocks), Emergency stop red/yellow

#### **Type MC.-XDTV**

Lockable in the "0" position on handle, modification also available in "1" position, black/grey

#### **Type MC.-XDTV**

Lockable in "0" position, Emergency Stop red/yellow

Version comes with door interlock:

- Door frame supplied with door interlock
- Rotary handle can be rotated 90° for horizontally-mounted switches
- In the ON position, can be defeated from the outside using a 1 mm pin
- Cannot be defeated in the locked OFF and ON positions
- Door can be opened in OFF
- Can only be switched on when door closed

DESCRIPTION	TYPE	ORDER NO.
Lockable rotary handle for MC1, black/grey	MC1-XDV	MC190125
Lockable rotary handle for MC1, Emergency stop red/yellow	MC1-XDVR	MC190135
Rotary handle for MC1 with door interlock, lockable, black/grey	MC1-XDTV	MC190131
Rotary handle for MC1 with door interlock, lockable, Emergency stop red/yellow	MC1-XDTV	MC190142

# MC – FRAME SIZE 1 / UP TO 160A

## DOOR COUPLING ROTARY HANDLE FOR MC1



MC190160



MC190172



MC290127

### SCHRACK INFO

- Complete unit including rotary drive and coupling parts
- Degree of Protection IP66
- Rotary handle can be rotated 90° for horizontally-mounted switches
- Cannot be defeated in the locked OFF and ON positions
- Can be modified when in the unlocked ON position, can be defeated from the outside with a screwdriver
- Door can be opened in OFF
- External warning plate/designation plate can be clipped on

### NOTES

- Order extension shaft separately!

### TECHNICAL DATA

Available in the following versions:

#### Type MC.-XTVD

Lockable in the "0" position on handle with up to three padlocks, with door interlock, black/grey

#### Type MC.-XTVDV

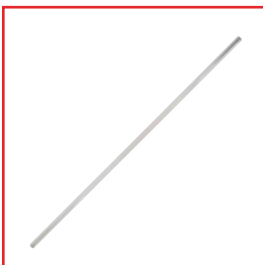
Lockable in the "0" position on handle and switch, with up to three padlocks, with door interlock, black/grey

#### Type MC.-XTVDVR

Lockable in the "0" position on handle and switch with up to three padlocks, with door interlock, Emergency stop red/yellow

DESCRIPTION	TYPE	ORDER NO.
Door coupling rotary handle for MC1 with door interlock, lockable, black/grey	MC1-XTVD	MC190166
Door coupling rotary handle for MC1 with door interlock, lockable, "0", "1", black/grey	MC1-XTVDV	MC190172
Door coupling rotary handle for MC1 with door interlock, lockable, Emergency stop red/yellow	MC1-XTVDVR	MC190178

## EXTENSION SHAFT FOR MC1



MC190191

### SCHRACK INFO

- For maximum cabinet depths of 400 or 600 mm
- Can be cut to required length

DESCRIPTION	CABINET DEPTH	TYPE	ORDER NO.
Extension shaft for MC1 max. 400 mm	max. 400 mm	MC1/2-XV4	MC191232
Extension shaft for MC1 max. 600 mm	max. 600 mm	MC1/2-XV6	MC190191

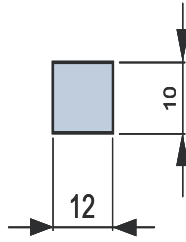


# MC – FRAME SIZE 1 / UP TO 160A

## BOX TERMINALS FOR MC1



MC292240



### SCHRACK INFO

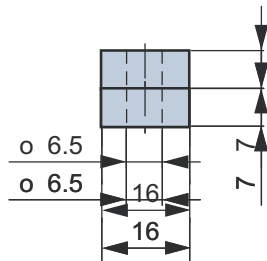
- Standard connection for all MC1, MC1-PN and MC1-N switches
- Conversion kit for switches with screw connection
- Contains parts for one switch side
- Installed inside the switch housing
- Use cover plate MC.-XSKA
- Terminal capacities  
CU conductors 1 x 10–70 mm<sup>2</sup>  
CU cables 2 x 6–25 mm<sup>2</sup>

DESCRIPTION	TYPE	ORDER NO.
Box terminal up to 160 A (contains 3 pcs.) for MC1	MC1-160-XKC	MC190015
Box terminal up to 160 A (includes 4 pcs.) for MC1-4	MC1-160-4-XKC	MC197075

## SCREW CONNECTION FOR MC1



MC190019



### SCHRACK INFO

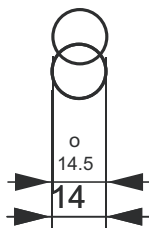
- Contains parts for one switch side located at top or bottom  
3- or 4 pole switches
- Installed outside switch housing
- Cover plate MC.-XSKA included
- Terminal capacities  
CU conductors 1 x 10–70 mm<sup>2</sup>, 2 x 6–25 mm<sup>2</sup>  
AL cable lugs 1 x 10–35 mm<sup>2</sup>, 2 x 10–35 mm<sup>2</sup>

DESCRIPTION	TYPE	ORDER NO.
Screw connection 3 pcs. for MC1	MC1-XKS	MC190019
Screw connection 4 pcs. for MC1-4	MC4-4-XKC	MC196725

## TUNNEL TERMINAL FOR MC1



MC196730



### SCHRACK INFO

- Contains parts for one switch side, top or bottom
- With terminal for control circuit for 1 x 0,75–2,5 mm<sup>2</sup>,  
2 x 0,75–1,5 mm<sup>2</sup> Cu conductor
- Installed outside switch housing
- Maximum specified cross-section can only be connected stranded and without end sleeve.
- Cover plate MC1(-4)-XKSA must be installed (supplied).
- Terminal capacities:  
Cu cable, Al cable 95 mm<sup>2</sup>

### TECHNICAL DATA

- for Cu- And Al cables
- Includes cover plate
- Stranded round conductor / stranded sector-shaped conductor
- Use with flexible and ultra-flexible conductor end sleeves

DESCRIPTION	TYPE	ORDER NO.
Tunnel terminal 95 mm <sup>2</sup> , 3 pole for MC1	MC1-XKA	MC196730
Tunnel terminal 95 mm <sup>2</sup> , 4 pole for MC1-4	MC1-4-XKA	MC196731

# MC – FRAME SIZE 1 / UP TO 160A

## REAR CONNECTION FOR MC1



MC196734

### SCHRACK INFO

- Contains parts for one switch side located at top or bottom 3- or 4 pole switches
- Terminal capacities:
  - Cu cable lug 1 x 10–70 mm<sup>2</sup>, 2 x 6–25 mm<sup>2</sup>
  - Al cable lug 1 x 10–35 mm<sup>2</sup>, 2 x 10–35 mm<sup>2</sup>

DESCRIPTION	TYPE	ORDER NO.
Rear connection, 3 pole for MC1	MC1-XKR	MC196734
Rear connection, 4 pole for MC1-4	MC1-4-XKR	MC196737

## CONTROL CIRCUIT TERMINAL FOR MC1



MC196739

### SCHRACK INFO

- Contains parts for two terminals located at top or bottom for 3/ 4 pole switches
- Included with tunnel terminal
- Terminal capacities:
  - Screw connection 1 x 0,75 – 2,5 mm<sup>2</sup>, 2 x 0,75 – 1,5 mm<sup>2</sup>

DESCRIPTION	TYPE	ORDER NO.
Control circuit terminal for box terminal MC1	MC-XSTK	MC196739
Control circuit terminal for screw connection MC1	MC1-XSTS	MC190150

## TERMINAL COVER FOR MC1



MC290038

### SCHRACK INFO

- Protection against accidental contact when using cable lugs, rails or Tunnel terminals
- Contains parts for one switch side located at top or bottom 3- or 4 pole switches
- Degree of protection IP4X front, side and rear, IP1X on the connection side when using insulated conductor material
- Cover plate included with tunnel terminals

DESCRIPTION	TYPE	ORDER NO.
Terminal cover, 3 pole for MC1	MC1-XKSA	MC190021
Terminal cover, 4 pole for MC1-4	MC1-4-XKSA	MC196741

## CONNECTION COVER, KNOCKOUT FOR BOX TERMINAL MC1



MC196781

### SCHRACK INFO

- Connection cover, knockout

DESCRIPTION	TYPE	ORDER NO.
Terminal cover, 3 pole for MC1	MC1-XKSFA	MC190780
Terminal cover, 4-pol. for MC1-4	MC1-4-XKSFA	MC196781

# MC – FRAME SIZE 1 / UP TO 160A

## IP2X FINGER PROTECTION FOR DIRECT-MOUNTED MC1 SWITCHES



MC196744



MC196748

### SCHRACK INFO

- Increases protection against accidental contact to IP2X
- Protection when reaching into the cable connection area when cables are connected
- MC1-XIPA and MC1-4-XIPA only in combination with cover plate
- Contains parts for one switch side, top or bottom

DESCRIPTION	TYPE	ORDER NO.
<b>FOR BOX TERMINAL</b>		
Finger protection, 3 pole for MC1	MC1-XIPK	MC196744
Finger protection, 4 pole for MC1	MC1-4-XIPK	MC196745
<b>FOR TERMINAL COVER</b>		
Finger protection, 3 pole for MC1	MC1-XPA	MC196748
Finger protection, 4 pole for MC1	MC1-4-XIPA	MC196749

## INSULATED ENCLOSURE XCI



MC191522

### SCHRACK INFO

- Only for switches with box terminals for direct cable connection
- With door coupling rotary handle
- Complete unit includes all necessary functional parts
- Degree of protection IP65
- MC1-XCI23 housing with flanges
- MC1-XCI43 are fitted with gland plates

### TECHNICAL DATA

Enclosure suitable for installation of circuit-breakers and switch-disconnectors for separate mounting with top and bottom cable entry.

Including fixing straps for wall mounting. Short circuit protection at 415 V 50/60 Hz to 10 kA.

Not in combination with remote operator, plug-in- or withdrawable unit.

Additional insulated terminals for 4 or 5 pole must be ordered separately.

Available in the following versions:

#### Standard, black/grey

Lockable in the "0" position at handle with up to 3 padlocks. Additionally with cover interlock.

#### For Emergency stop, red/yellow

Lockable on handle and switch lockable with up to 3 padlocks in the "0" position on handle. Additionally with cover interlock and lockable at switch in the "0" position.

DESCRIPTION	MAX. RATED UNINTERRUPTED CURRENT	TYPE	ORDER NO.
<b>STANDARD, BLACK/GREY</b>			
Insulated enclosure for MC1, 3 pole	≤ 63 A	MC1-XCI23-TVD	MC191522
Insulated enclosure for MC1-4, 3-pole or 4 pole	≤ 125 A	MC1-XCI43	MC191523
Insulated enclosure for MC1-4, 3-pole or 4 pole	≤ 160 A	MC1-XCI43/2-TVD	MC194645
<b>FOR EMERGENCY STOP, RED/YELLOW</b>			
Insulated enclosure for MC1, 3 pole	≤ 63 A	MC1-XCI23-R	MC191527
Insulated enclosure for MC1-4, 3- or 4-pole	≤ 125 A	MC1-XCI43-R	MC191528
Insulated enclosure for MC1-4, 3- or 4 pole	≤ 160 A	MC1-XCI43/2-R	MC194646

# MC – FRAME SIZE 1 / UP TO 160A

## ADDITIONAL INSULATED TERMINALS FOR MC1



MC198573



MC192336

### SCHRACK INFO

- For looping through the neutral and earth conductor
- 1 pole

DESCRIPTION	TERMINAL CAPACITY	TYPE	ORDER NO.
Additional insulated terminal 32 A	Fine-wired 1 x (1,5-6 mm <sup>2</sup> )	K10/1	MC193827
Additional insulated terminals 63 A	Fine-wired 1 x (6-16 mm <sup>2</sup> ), stranded 1 x (16-25 mm <sup>2</sup> )	K25/1	MC196200
Additional insulated terminals 100 A	Fine-wired 1 x (10-35 mm <sup>2</sup> ), stranded 1 x (16-50 mm <sup>2</sup> )	K50/1	MC198573
Additional insulated terminal 160 A	Stranded 1 x (16-95 mm <sup>2</sup> )	K95/1N/BR	MC192336

## DEVICE ADAPTERS FOR CIRCUIT-BREAKERS AND SWITCH-DISCONNECTORS FOR 60 mm BUSBAR SYSTEM, MC1



MC195700 – SIDE VIEW



MC195700 – FRONT VIEW

### SCHRACK INFO

- For mounting on flat copper rails 12 x 5 mm bis 30 x 10 mm
- Double T and triple T profile
- Snaps onto the voltage-free busbar
- Rated operational voltage  $U_n$ : 690 V

### TECHNICAL DATA

MC 1 up to 160 A:

- For switches with standard box terminal connection
- Connected to system via terminal strips above
- Can be used in connection with IP2X finger protection to increase accidental-contact protection against accidental contact on outgoing side

DESCRIPTION	TYPE	ORDER NO.
60 mm busbar adapter 160 A for MC1, 3 pole	32570	MC195700
4 pole adapter with cover plate	MC3-4XKR13	upon request

## DOOR SEALING FRAME FOR MC1



MC190195

### SCHRACK INFO

- For toggle levers, rotary handles with rotary- and remote operators
- Degree of protection IP40
- For rectangular cut-out on doors and enclosures with material thicknesses of 1,5 – 5 mm
- External warning plate/designation plate can be clipped on

DESCRIPTION	TYPE	ORDER NO.
Door sealing frame for MC1	MC1-XBR	MC190195

# MC – FRAME SIZE 1 / UP TO 160A

## TOGGLE LEVER LOCKING DEVICE FOR MC1



MC190199

### SCHRACK INFO

- Off position lockable with up to 3 padlocks (hasp thickness 4 – 8 mm)
- Cannot be combined with Insulating surround

DESCRIPTION	TYPE	ORDER NO.
Toggle lever locking device for MC1	MC1-XKAV	MC190199

## SPACER FOR MC1



MC190203

### SCHRACK INFO

- Enables fast and low-priced adjustment of various frame sizes with/without rotary handle or remote operator at identical front depth
- Grid depth 17,5 mm, thread M4
- Each set contains 4 x spacers
- Maximum component installation 4 pcs. per fastening screw
- 2 fastening screws included for each circuit breaker MC1

DESCRIPTION	TYPE	ORDER NO.
Spacer for MC1	MC1/2-XAB	MC190203

## CLIP PLATE FOR MC1



MC190213

### SCHRACK INFO

- Enables snap fit of circuit breakers / switch disconnectors to DIN rail (35 mm top-hat rail)

DESCRIPTION	TYPE	ORDER NO.
Clip plate for MC1	MC1-XC35	MC190213

# MC – FRAME SIZE 2 / UP TO 300A

## CIRCUIT BREAKER 3 POLE UP TO 300A WITH THERMAL MAGNETIC RELEASE TYPES MC2B-A, MC2C-A, MC2N-A, MC2H-A



MC216233

### SCHRACK INFO

- For system and line protection
- Adjustable overload release:  $0,8 - 1 \times I_n$  (factory setting  $0,8 \times I_n$ )
- Adjustable short-circuit release:  $6 - 10 \times I_n$  (factory setting  $6 \times I_n$ );  
except MC.-A40:  $8 - 10 \times I_n$
- Screw terminals as standard, box terminals as accessories
- Breaking capacity 25 / 36 / 50 / 150 kA at 415 V 50/60 Hz
- Meets IEC/EN 60947-2
- Rated uninterrupted current = Rated current

RATED CURRENT/ BREAKING CAPACITY	SETTING RANGE		TYPE	ORDER NO.
	OVERLOAD- RELEASE (A)	SHORT CIRCUIT- RELEASE (A)		
3 POLE (BASIC BREAKING CAPACITY) 25 kA				
160 A/25 kA	125...160	960...1600	MC2B-A160	MC216131
200 A/25 kA	160...200	1200...2000	MC2B-A200	MC220131
250 A/25 kA	200...250	1500...2500	MC2B-A250	MC225131
300 A/25 kA	240...300	2000...2500	MC2B-A300	MC230131
3 POLE (COMFORT BREAKING CAPACITY) 36 kA				
160 A/36 kA	125...160	960...1600	MC2C-A160	MC216431
200 A/36 kA	160...200	1200...2000	MC2C-A200	MC220431
250 A/36 kA	200...250	1500...2500	MC2C-A250	MC225431
300 A/36 kA	240...300	2000...2500	MC2C-A300	MC230431
3 POLE (NORMAL BREAKING CAPACITY) 50 kA				
160 A/50 kA	125...160	960...1600	MC2N-A160	MC216231
200 A/50 kA	160...200	1200...2000	MC2N-A200	MC220231
250 A/50 kA	200...250	1500...2500	MC2N-A250	MC225231
300 A/50 kA	240...300	2000...2500	MC2N-A300	MC230231
3 POLE (HIGH BREAKING CAPACITY) 150 kA				
20 A/150 kA	15...20	fix 350	MC2H-A20	MC202331
25 A/150 kA	20...25	fix 350	MC2H-A25	MC205331
32 A/150 kA	25...32	fix 350	MC2H-A32	MC232331
40 A/150 kA	32...40	320...400	MC2H-A40	MC240331
50 A/150 kA	40...50	300...500	MC2H-A50	MC250331
63 A/150 kA	50...63	380...630	MC2H-A63	MC263331
80 A/150 kA	63...80	480...800	MC2H-A80	MC280331
100 A/150 kA	80...100	600...1000	MC2H-A100	MC210331
125 A/150 kA	100...125	750...1250	MC2H-A125	MC212331
160 A/150 kA	125...160	960...1600	MC2H-A160	MC216331
200 A/150 kA	160...200	1200...2000	MC2H-A200	MC220331
250 A/150 kA	200...250	1500...2500	MC2H-A250	MC225331
300 A/150 kA	240...300	2000...2500	MC2H-A300	MC230331



# MC – FRAME SIZE 2 / UP TO 300A

## CIRCUIT BREAKER 4 POLE UP TO 300A WITH THERMAL MAGNETIC RELEASE TYPES MC2B-4-A, MC2N-4-A, MC2H-4-A



MC216141

### SCHRACK INFO

- For system and line protection
- Adjustable overload release:  $0,8 - 1 \times I_n$  (factory setting  $0,8 \times I_n$ )
- Adjustable short-circuit release:  $6 - 10 \times I_n$  (factory setting  $6 \times I_n$ );  
except MC.-A40:  $8 - 10 \times I_n$
- Screw terminals as standard, box terminals as accessories
- Breaking capacity 25 / 50 / 150 kA at 415 V 50/60 Hz
- Meets IEC/EN 60947-2
- Rated uninterrupted current = Rated current

RATED CURRENT/ BREAKING CAPACITY	SETTING RANGE		TYPE	ORDER NO.
	OVERLOAD- RELEASE (A)	SHORT CIRCUIT- RELEASE (A)		
4 POLE (BASIC BREAKING CAPACITY) 25 kA				
160 A/25 kA	125...160	960...1600	MC2B-4-A160	MC216141
200 A/25 kA	160...200	1200...2000	MC2B-4-A200	MC220141
250 A/25 kA	200...250	1500...2500	MC2B-4-A250	MC225141
300 A/25 kA	240...300	2000...2500	MC2B-4-A300	MC230141
4 POLE (NORMAL BREAKING CAPACITY) 50 kA				
160 A/50 kA	125...160	960...1600	MC2N-4-A160	MC216241
200 A/50 kA	160...200	1200...2000	MC2N-4-A200	MC220241
250 A/50 kA	200...250	1500...2500	MC2N-4-A250	MC225241
300 A/50 kA	240...300	2000...2500	MC2N-4-A300	MC230241
4 POLE (HIGH BREAKING CAPACITY) 150 kA				
20 A/150 kA	15...20	fix 350	MC2H-4-A20	MC202341
25 A/150 kA	20...25	fix 350	MC2H-4-A25	MC205341
32 A/150 kA	25...32	fix 350	MC2H-4-A32	MC232341
40 A/150 kA	32...40	320...400	MC2H-4-A40	MC240341
50 A/150 kA	40...50	300...500	MC2H-4-A50	MC250341
63 A/150 kA	50...63	380...630	MC2H-4-A63	MC263341
80 A/150 kA	63...80	480...800	MC2H-4-A80	MC280341
100 A/150 kA	80...100	600...1000	MC2H-4-A100	MC210341
125 A/150 kA	100...125	750...1250	MC2H-4-A125	MC212341
160 A/150 kA	125...160	960...1600	MC2H-4-A160	MC216341
200 A/150 kA	160...200	1200...2000	MC2H-4-A200	MC220341
250 A/150 kA	200...250	1500...2500	MC2H-4-A250	MC225341
300 A/150 kA	240...300	2000...2500	MC2H-4-A300	MC230341

# MC – FRAME SIZE 2 / UP TO 300A

## CIRCUIT BREAKER UP TO 250A 3-/4 POLE WITH DELAYED ELECTRONIC RELEASE TYPES MC2N-VE, MC2H-VE, MC2N-4-VE, MC2H-4-VE



MC216233

### SCHRACK INFO

- System and line protection
- Selective and generator protection
- 3 and 4 pole versions
- RMS value and “thermal memory”
- Adjustable overload release:  $1.0, 1.5 - 1 \times I_n$  (factory setting  $0.8 \times I_n$ )
- Adjustable time delay setting to overcome current peaks:  $2 - 20 \text{ s}$  at  $6 \times I_n$  as well as infinity (factory setting 10s)
- Adjustable delayed short-circuit releases:  $2 - 10 \times I_n$  (factory setting  $6 \times I_n$ )
- Adjustable time delay  $t_{sd}$ : Levels: 0, 20, 60, 100, 200, 300, 500, 750, 1000 ms (factory setting 0)
- Non-delayed short-circuit release:  $1$  permanent  $12 \times I_n$ )
- Screw terminals as standard, box terminals as accessories
- Meets IEC/EN 60947-2
- Rated uninterrupted current = Rated current

RATED CURRENT/ BREAKING CAPACITY	OVERLOAD- RELEASE (A)	SETTING RANGE		TYPE	ORDER NO.
		SHORT-CIRCUIT UNDELAYED (A)	RELEASE DELAYED (A)		
<b>3 POLE (NORMAL BREAKING CAPACITY) 50 kA</b>					
100 A/50 kA	50...100	1200	100...1000	MC2N-VE100	MC210233
160 A/50 kA	80...160	1920	160...1600	MC2N-VE160	MC216233
250 A/50 kA	125...250	3000	250...2500	MC2N-VE250	MC225233
<b>3 POLE (HIGH BREAKING CAPACITY) 150 kA</b>					
100 A/150 kA	50...100	1200	100...1000	MC2H-VE100	MC210333
160 A/150 kA	80...160	1920	160...1600	MC2H-VE160	MC216333
250 A/150 kA	125...250	3000	250...2500	MC2H-VE250	MC225333
<b>4 POLE (NORMAL BREAKING CAPACITY) 50 kA</b>					
100 A/50 kA	50...100	1200	100...1000	MC2N-4-VE100	MC210243
160 A/50 kA	80...160	1920	160...1600	MC2N-4-VE160	MC216243
250 A/50 kA	125...250	3000	250...2500	MC2N-4-VE250	MC225243
<b>4 POLE (HIGH BREAKING CAPACITY) 150 kA</b>					
100 A/150 kA	50...100	1200	100...1000	MC2H-4-VE100	MC210343
160 A/150 kA	80...160	1920	160...1600	MC2H-4-VE160	MC216343
250 A/150 kA	125...250	3000	250...2500	MC2H-4-VE250	MC225343

# MC – FRAME SIZE 2 / UP TO 300A

## SWITCH DISCONNECTOR UP TO 250A TYPES MC2-PN, MC2-PN-4, MC2-N, MC2-N-4



MC216233

### SCHRACK INFO

- 3- and 4-pole versions
- Rated uninterrupted current up to 250A
- Switch disconnecter, MC2-PN type, two switch positions 0/I, cannot be tripped remotely
- Switch disconnecter MC2-N, with trip setting “0”; “+”; “I”, can be tripped remotely with undervoltage/shunt release
- Screw terminals as standard, box terminals as accessories
- Remote trip MC2-N can also be combined with remote operator MC-XR
- Main switch characteristics including positive drive according to IEC/EN 60204 & VDE 0113
- Isolating characteristics according to IEC/EN 60947-3 and VDE 0660. Protection against accidental contact accord. to VDE 0160 Part 100
- Meets IEC/EN 60947-2
- Rated uninterrupted current = Rated current
- Rated short-circuit breaking capacity values:  $I_{cn}$  5,5kA
- Rated short-time withstand current:  $I_{tw}$  3,5kA

RATED UNINTERRUPTED CURRENT	MAX. BACK-UP FUSE (gL) FOR SWITCH DISCONNECTOR (AgL)	TYPE	ORDER NO.
<b>3 POLE CANNOT BE TRIPPED REMOTELY</b>			
160 A	250	MC2-PN-160	MC216034
200 A	250	MC2-PN-200	MC220034
250 A	250	MC2-PN-250	MC225034
<b>4 POLE CANNOT BE TRIPPED REMOTELY</b>			
160 A	250	MC2-PN-4-160	MC216044
200 A	250	MC2-PN-4-200	MC220044
250 A	250	MC2-PN-4-250	MC225044
<b>3 POLE CAN BE TRIPPED REMOTELY</b>			
160 A	250	MC2-N-160	MC216035
200 A	250	MC2-N-200	MC220035
250 A	250	MC2-N-250	MC225035
<b>4 POLE CAN BE TRIPPED REMOTELY</b>			
160 A	250	MC2-N-4-160	MC216045
200 A	250	MC2-N-4-200	MC220045
250 A	250	MC2-N-4-250	MC225045

# MC – FRAME SIZE 2 / UP TO 300A

## RESIDUAL CURRENT (RCD) RELEASE UP TO 250A TYPES MC2-4-XFI, MC2-4-XFIA






MC296720

### SCHRACK INFO

- Direct mounting on 4 pole MC2 circuit breaker and MC2-N switch disconnector
- Type MC2-4-XFI pulse current sensitive accord. to core-balance principle
- Specifications to IEC/EN 60947-2
- Bottom mounting up to 250 A

### TECHNICAL DATA

- Independent of mains- and auxiliary voltage,  $U = 280 \text{ V} - 690 \text{ V } 50/60 \text{ Hz}$
- Auxiliary contact: 1 N/O, 1 N/C reset via reset feature
- Type XFI(A)30: Rated fault current  $I_{\Delta n} = 0,03 \text{ A}$ , suitable for human protection to Annex B of IEC/EN 60947-2 and VDE 664 Parts 2 and 3
- Type XFI: Rated fault current  $I_{\Delta n} = 0,1-0,3-1-3 \text{ A}$ , time-delay  $t_v = 60-150-300-450 \text{ ms}$ ,  
Type XFIA: Rated fault current  $I_{\Delta n} = 0,1-0,3-1 \text{ A}$ , time-delay  $t_v = 60-150-300-450 \text{ ms}$ ,  
AC/DC current sensitivity accord. to core-balance principle (0–200 kHz)
- Internal supply voltage  $U_i = 50-400 \text{ V}$
- Note that response threshold is dependent on frequency! (See frequency response characteristic curve, Page 245).

DESCRIPTION	TYPE	ORDER NO.
4 POLE BOTTOM MOUNTING PULSE-CURRENT SENSITIVE 		
FI-human protection 30 mA $I_{\Delta n}$ for MC2-4	MC2-4-XFI30	MC296719
FI 0.1-3 A $I_{\Delta n}$ for MC2-4	MC2-4-XFI	MC296720
4 POLE BOTTOM MOUNTING AC/DC CURRENT SENSITIVE  		
FI-human protection 30 mA $I_{\Delta n}$ for MC2-4	MC2-4-XFIA30	MC292345
FI 0.1-1 A $I_{\Delta n}$ for MC2-4	MC2-4-XFIA	MC292346

# MC – FRAME SIZE 2 / UP TO 300A

## SOCKET UND PLUG-IN MODULE FOR MC2



MC294573

### SCHRACK INFO

- 3- and 4-pole versions
- FOR CIRCUIT BREAKER MC2 AND SWITCH DISCONNECTOR MC2-N
- **Plug-in module only available in combination with switch**
- Socket can be ordered separately, available pre-assembled
- Order control circuit plug unit separately

### TECHNICAL DATA

- $I_n$  max. at 40 °C:
  - 230A MC2
  - 250A MC2-E (electronic release)

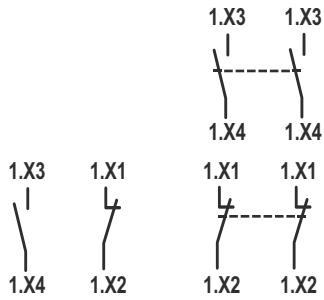
DESCRIPTION	TYPE	ORDER NO.
SOCKET		
Socket, 3 pole	MC2-XSVS	MC296699
Socket, 4 pole	MC2-4-XSVS	MC296700
PLUG-IN MODULE		
Plug-in module, 3 pole (add an S to end of switch part number if supplied with switch)	MC2-XSVE	
Plug-in module, 4 pole (add an S to end of switch part number if supplied with switch)	MC2-4-XSVE	
ACCESSORIES FOR PLUG-IN STYLE ASSEMBLY MC2/MC2-N		
Control circuit plug unit for auxiliary contact	MC2-XSVHI	MC296705
Control circuit plug unit undervoltage-/shunt release and remote operator	MC2-XSVR	MC296706

# MC – FRAME SIZE 2 / UP TO 300A

## STANDARD AUXILIARY CONTACT / TRIP-INDICATING AUXILIARY CONTACT TYPE M22



MM216378



### SCHRACK INFO

- Breaking with the main contacts, used for indicating and interlocking tasks
- General trip indication “+” with trip due to voltage release, overload release or short-circuit-release

### TECHNICAL DATA

Breaking capacity: AC15: 4 A / 230 VAC  
DC13: 3 A / 24 VDC

### TIPS & TRICKS

The trip-indicating auxiliary contact is the same contact as the standard auxiliary contact. It derives its function from where it is installed (alarm contact on left).

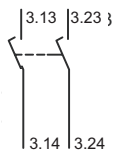
Maximum component installation with auxiliary contacts: 2 x Standard auxiliary contact (HIN) M22-K. or M22-CK...  
+ 1 x Trip-indicating contact (HIA) M22-K. or M22-CK...

DESCRIPTION	TYPE	ORDER NO.
1 NO contact with screw terminals	M22-K10	MM216376
1 NC contact with screw terminals	M22-K01	MM216378
2 NO contacts with cage clamp terminals	M22-CK20	MM107898
2 NC contacts with cage clamp terminals	M22-CK02	MM107899

## EARLY-MAKE AUXILIARY CONTACT TYPE MC2-XHIVL



MC299430



### SCHRACK INFO

For interlock- and load-shedding circuits as well as for early make of undervoltage release in main switch/Emergency stop applications.

### TECHNICAL DATA

- Early-make during switch on and off (manual switch): approx. 20 ms
- Not in connection with undervoltage release  
MC2-XU... or shunt release MC2-XA...
- Breaking capacity: AC15: 4 A / 230 VAC  
DC13: 3 A / 24 VDC

### TIPS & TRICKS

Maximum component installation with auxiliary contacts:  
1 x early-make auxiliary contact

DESCRIPTION	TYPE	ORDER NO.
Early-make auxiliary contact, 2 NO	MC2/3-XHIV	MC299430

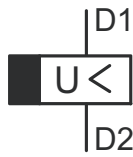


# MC – FRAME SIZE 2 / UP TO 300A

## UNDERVOLTAGE RELEASE TYPES MC2-XU



MC299499



### SCHRACK INFO

- Non-delayed breaking of circuit breaker MC/ switch disconnector MC-N when the control voltage drops below 35 % - 70% Us.
- For use in Emergency stop devices in connection with Emergency stop buttons
- Installed in breaker
- Without auxiliary contact

### TECHNICAL DATA

When the undervoltage release is de-energized, accidental contact with the main contacts of the switch is safely prevented during attempts to switch on. Undervoltage releases cannot be installed at the same time with shunt releases or early-make auxiliary contact, type MC2-XHIV.

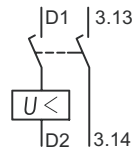
VOLTAGE		TYPE	ORDER NO.
24 VAC	Screw terminals	MC2/3-XU24AC	MC299491
24 VDC	Screw terminals	MC2/3-XU24DC	MC299509
208-240 V AC	Screw terminals	MC2/3-XU208-240AC	MC299499
380-440 V AC	Screw terminals	MC2/3-XU380-440AC	MC299501

Other voltage variants available upon request.

## UNDERVOLTAGE RELEASE WITH TWO EARLY-MAKE AUXILIARY CONTACTS TYPES MC2-XUHIV



MC299591



### SCHRACK INFO

- With 2 early-make auxiliary contacts
- For early-make of the undervoltage release in main switch applications and for interlock- and load-shedding circuits
- Installed in breaker
- Other voltages and connection versions available on request

### TECHNICAL DATA

When the undervoltage release is de-energized, accidental contact with the main contacts of the switch is safely prevented during attempts to switch on. Early-make of auxiliary contacts during switch on and off (20ms). Undervoltage releases cannot be installed simultaneously with shunt releases or early-make auxiliary contact, type MC2-XHIV.

VOLTAGE		TYPE	ORDER NO.
208 - 240 VAC	screw terminals	MC2/3-XUHIV230V	MC299591
380 - 440 VAC	screw terminals	MC2/3-XUHIV400V	MC299594

Other voltage variants available upon request.

# MC – FRAME SIZE 2 / UP TO 300A

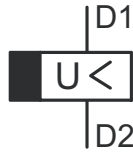
## UNDERVOLTAGE RELEASE, OFF-DELAY TYPES MC-UVU, MC-XUV



MC295927



MC299499



### SCHRACK INFO

- Voltage drops less than 0,07–16 s do not cause MC circuit breakers or N switch disconnectors to trip.
- Suitable for voltages:  
220 – 240 VAC 50/60 Hz  
380 – 440 VAC 50/60 Hz  
480 – 550 VAC 50/60 Hz  
24 VAC/DC

### TECHNICAL DATA

- Time-delay adjustable between 70 ms – 4 s
- With additional external capacitor:  
30.000  $\mu$ F  $\geq$  35 V to 8 s  
90.000  $\mu$ F  $\geq$  35 V to 16 s
- 1 x special release MC2-XUV required.
- Cannot be installed simultaneously with early-make auxiliary contact MC2-XHIV... or shunt release MC2-XA....
- Time-delay device for separate mounting (Fastening: DIN rail or screws).
- For other operating voltages, please use a control transformer.

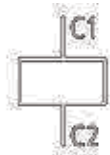
NAME	TYPE	ORDER NO.
Time-delay unit	MC-UVU	MC196154
Special undervoltage release for time-delay unit MC2	MC2/3-XUV	MC295927

Other voltage variants available upon request.

## SHUNT RELEASE TYPES MC2-XA



MC299754



### SCHRACK INFO

- Without auxiliary contact
- Switches are tripped by a voltage pulse or by the application of uninterrupted voltage

### TECHNICAL DATA

When the shunt release is energized, accidental contact with the main contacts of the switch is safely prevented during attempts to switch on. Shunt release cannot be installed simultaneously with undervoltage releases or early-make auxiliary contact MC1-XHIV.

VOLTAGE	TYPE	ORDER NO.
24 VAC/DC	MC2/3-XA24V	MC299754
208 - 250 VAC/DC	MC2/3-XA230V	MC299763

Other voltage variants available upon request.

# MC – FRAME SIZE 2 / UP TO 300A

## REMOTE OPERATOR FOR MC2



MC299832

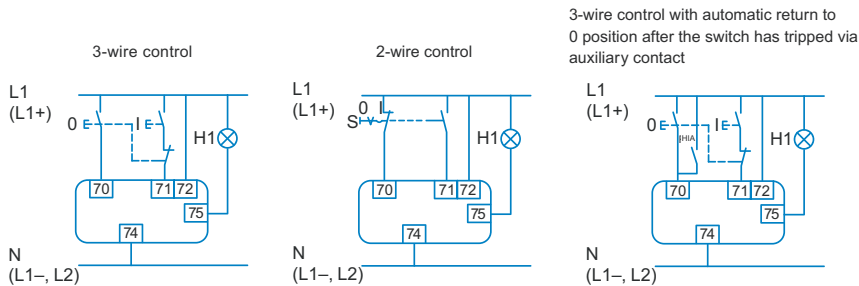
### SCHRACK INFO

- Remote operator can be combined with circuit breaker MC and switch disconnector MC-N, but not with switch disconnector MC-PN.
- Do not deactivate switch simultaneously via remote control and trip via undervoltage/shunt release.

### TECHNICAL DATA

- On/Off breaking and reset by means of 2-wire or 3-wire control.
- MC299832 can be synchronized
- Breaking time On:  $\leq 60$  ms for MC2-XR208-240AC  
 $\leq 170$  ms for MC2-XRD208-240AC
- Local manual breaking possible
- Pause between Off and On: 3 secs.  
Command is ignored
- Function of Terminal 75:  
Ready for activation signal when the cover is closed and not locked.  
AC-15: 2 A/400 V  
DC-13: 0,2 A/220 V

### CIRCUIT DIAGRAMS

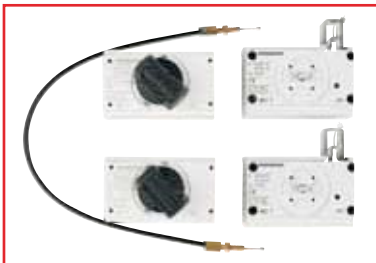


### BREAKING CYCLE



VOLTAGE	TYPE	ORDER NO.
208 - 240 V AC	MC2-XR208-240AC	MC299832
208 - 240 V AC mech. interlock not possible	MC2-XRD208-240AC	MC299833
Extra cover for 4-pole switches	MC2-XAVPR	MC296677

## MECHANICAL INTERLOCK FOR (DOOR COUPLING) ROTARY HANDLES FOR MC2



MC191581

### SCHRACK INFO

- **Rotary handle on switch or door coupling rotary handle additionally required.**
- Cannot be combined with remote operator or door frame.
- At least 2 interlocking modules are required in order to construct a mechanical interlocking circuit. See Page 142 for possible combinations and variations of interlocking circuits. Bowden cable to be ordered separately.

DESCRIPTION	TYPE	ORDER NO.
Mechanical interlock	MC2-XMV	MC291582
Bowden cable 225 mm	MC-XBZ225	MC191585
Bowden cable 600 mm	MC-XBZ600	MC191586
Bowden cable 1000 mm	MC-XBZ1000	MC191587

# MC – FRAME SIZE 2 / UP TO 300A

## MECHANICAL INTERLOCK WITH REMOTE OPERATOR FOR MC2



MC294543



MC294543

### SCHRACK INFO

- For 2 switches of the same or next frame size side by side
- Side-by-side mounting
- Mounted on top of each other, long version
- Contains parts for 2 switches
- Remote operator also required
- For maximum breaking distance
- Not for MC2-XRD208-240AC

### NOTES

Cannot be combined with rotary handles, door coupling rotary handles and early-make auxiliary contacts.

DESCRIPTION	TYPE	ORDER NO.
Mechanical interlock for MC2	MC2-XMVR	MC294543
Mechanical interlock for MC2 long version	MC2-MVRL	MC294548
Mechanical interlock for MC2/3	MC2/3-XMVR	MC294544
Mechanical interlock for MC2/3, long version	MC2/3-XMVRL	MC294549

## ROTARY HANDLES DIRECTLY ON SWITCH FOR MC2



MC290127

### SCHRACK INFO

- Complete with rotary drive
- Can also be combined with door frame

### TECHNICAL DATA

Available in the following versions:

#### Type MC.-XDV

Lockable in the "0" position (up to three padlocks), black/grey

#### Type MC.-XDVR

Lockable in the "0" position (up to three padlocks), Emergency stop red/yellow

#### Type MC.-XDTV

Lockable in the "0" position on handle, modification also available in "1" position, black/grey

#### Type MC.-XDTV

Lockable in "0" position, Emergency Stop red/yellow

Version comes with door interlock:

- Door frame supplied with door interlock
- Rotary handle can be rotated 90° for switches mounted horizontally
- In the ON position, can be defeated from the outside using a 1 mm pin
- Cannot be defeated in the locked OFF and ON positions
- Door can be opened in OFF
- Can only be switched on when door closed

DESCRIPTION	TYPE	ORDER NO.
Lockable rotary handle for MC2, black/grey	MC2-XDV	MC290127
Lockable rotary handle for MC2, Emergency stop red/yellow	MC2-XDVR	MC290137
Rotary handle for MC2 with door interlock, lockable, black/grey	MC2-XDTV	MC290133
Rotary handle for MC2 with door interlock, lockable, Emergency stop red/yellow	MC2-XDTV	MC290144

# MC – FRAME SIZE 2 / UP TO 300A

## DOOR COUPLING ROTARY HANDLE FOR MC2



MC190160



MC190160



MC190160

### SCHRACK INFO

- Complete unit includes rotary drive and coupling parts
- Degree of Protection IP66
- Rotary handle can be rotated 90° for horizontally-mounted switches
- Cannot be defeated in the locked OFF and ON positions
- Can be modified when in the unlocked ON position, can be defeated from the outside with a screwdriver
- Door can be opened in OFF
- External warning plate/designation plate can be clipped on

### NOTES

- Order extension shaft separately!

### TECHNICAL DATA

Available in the following versions:

#### Type MC.-XTVD

Lockable in the “0” position on handle with up to three padlocks, with door interlock, black/grey

#### Type MC.-XTVDV

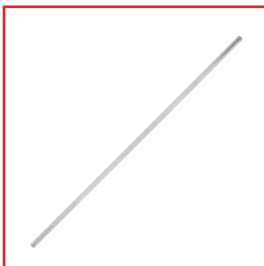
Lockable in the “0” position on handle and switch, with up to three padlocks, with door interlock, black/grey

#### Type MC.-XTVDVR

Lockable in the “0” position on handle and switch with up to three padlocks, with door interlock, Emergency stop red/yellow

DESCRIPTION	TYPE	ORDER NO.
Door coupling rotary handle for MC2 with door interlock, lockable, black/grey	MC2-XTVD	MC290168
Door coupling rotary handle for MC2 with door interlock, lockable, “0”, “1”, black/grey	MC2-XTVDV	MC290174
Door coupling rotary handle for MC2 with door interlock, lockable, Emergency stop red/yellow	MC2-XTVDVR	MC290180

## EXTENSION SHAFT FOR MC2



MC190191

### SCHRACK INFO

- for maximum cabinet depths of 400 or 600 mm
- Can be cut to required length

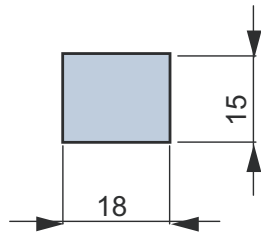
DESCRIPTION	CABINET DEPTH	TYPE	ORDER NO.
Extension shaft for MC2 max. 400 mm	max. 400 mm	MC1/2-XV4	MC191232
Extension shaft for MC2 max. 600 mm	max. 600 mm	MC1/2-XV6	MC190191

# MC – FRAME SIZE 2 / UP TO 300A

## BOX TERMINALS FOR MC2



MC292240



### SCHRACK INFO

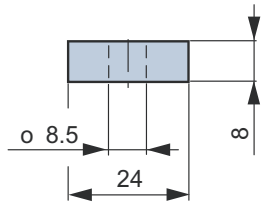
- Conversion kit for switches with screw connection
- Contains parts for one switch side
- Installed within the switch housing
- Use cover plate MC.-XSKA
- Terminal capacities:  
Copper lines 1 x 4 – 185 mm<sup>2</sup>  
Copper cables 2 x 4 – 70 mm<sup>2</sup>

DESCRIPTION	TYPE	ORDER NO.
Box terminal up to 160 A (contains 3 pcs.) for MC2	MC2-160-XKC	MC292240
Box terminal up to 250 A (contains 3 pcs.) for MC2	MC2-250-XKC	MC292244
Box terminal up to 160 A (contains 4 pcs.) for MC2-4	MC2-4-160-XKC	MC296755
Box terminal up to 250 A (contains 4 pcs.) for MC2-4	MC2-4-250-XKC	MC296756

## SCREW CONNECTION FOR MC2



MC190019



### SCHRACK INFO

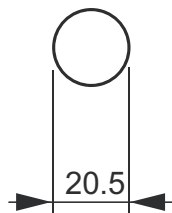
- Standard connection for all MC2, MC2-PN and MC2-N switches
- Conversion kit for switches with box terminal
- Installed inside switch housing
- Contains parts for one switch side located at top or bottom
- 3- or 4 pole switches
- Terminal capacities:  
Copper cable lug 1 x 4 – 185 mm<sup>2</sup>, 2 x 4 – 70 mm<sup>2</sup>  
Aluminium cable lug 1 x 10 – 50 mm<sup>2</sup>, 2 x 10 – 50 mm<sup>2</sup>

DESCRIPTION	TYPE	ORDER NO.
Screw connection, 3 pole for MC2	MC2-XKS	MC290030
Screw connection, 4 pole for MC2-4	MC2-4-XKS	MC296750

## TUNNEL TERMINAL FOR MC2



MC196730



### SCHRACK INFO

- Contains parts for one switch side, top or bottom
- Comes with terminal for control circuit cabling as standard for 1 x 0,75 – 2,5 mm<sup>2</sup> or 2 x 0,75 – 1,5 mm<sup>2</sup>
- Terminal capacities:  
Copper cable, Aluminium cable 1 x 16 – 185 mm<sup>2</sup>
- Installed outside switch housing

### TECHNICAL DATA

- For copper and aluminium cables, as ordered, up to 240 mm<sup>2</sup>
- Includes cover plate
- Stranded round conductor / stranded sector-shaped conductor

DESCRIPTION	TYPE	ORDER NO.
Tunnel terminal 185 mm <sup>2</sup> , 3 pcs. included, for MC2	MC2-XKA	MC291457
Tunnel terminal 185 mm <sup>2</sup> , 4 pcs. included, for MC2-4	MC2-4-XKA	MC291458

# MC – FRAME SIZE 2 / UP TO 300A

## REAR CONNECTION FOR MC2



MC296765

### SCHRACK INFO

- Contains parts for one switch side, top or bottom
- Terminal capacities:  
Copper cable lug 1 x 4 – 185 mm<sup>2</sup>, 2 x 4 – 70 mm<sup>2</sup>  
Aluminium cable lug 1 x 10 – 50 mm<sup>2</sup>, 2 x 10 – 50 mm<sup>2</sup>

DESCRIPTION	TYPE	ORDER NO.
Rear connection, 3 pole MC2	MC2-XKR	MC296765
Rear connection, 4 pole MC2-4	MC2-4-XKR	MC296768

## CONTROL CIRCUIT TERMINAL FOR MC2



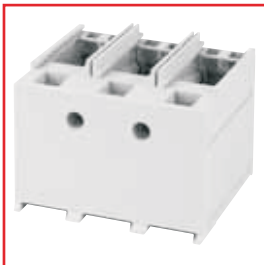
MC196739

### SCHRACK INFO

- Contains parts for two terminals located at top or bottom for 3/ 4 pole switches
- Included with tunnel terminal
- Degree of protection IP1X
- Terminal capacities:  
Screw connection 1 x 0,75 – 2,5 mm<sup>2</sup>, 2 x 0,75 – 1,5 mm<sup>2</sup>  
Box terminal 1 x 0,75 – 2,5mm<sup>2</sup>, 2 x 0,75 – 1,5 mm<sup>2</sup>

DESCRIPTION	TYPE	ORDER NO.
Control circuit terminal for box terminal MC2	MC2-XSTK	MC196739
Control circuit terminal for screw connection MC2	MC2-XSTS	MC290156

## TERMINAL COVER FOR MC2



MC290038

### SCHRACK INFO

- Protection against accidental contact when using cable lugs, rails or Tunnel terminals
- Contains parts for one switch side located at top or bottom 3- or 4 pole switches
- Degree of protection IP4X front, side and rear, IP1X on the connection side when using insulated conductor material
- Cover plate included with tunnel terminals

DESCRIPTION	TYPE	ORDER NO.
Terminal cover, 3 pole for MC2	MC2-XKSA	MC290038
Terminal cover, 4 pole for MC2-4	MC2-4-XKSA	MC296770

# MC – FRAME SIZE 2 / UP TO 300A

## CABLE LUG FOR MC2



MC299776

### SCHRACK INFO

- Special cable lug in slimline design
- Cable lugs must be insulated when using without a cover plate.

DESCRIPTION	TYPE	ORDER NO.
Cable lug 95 mm <sup>2</sup>	MC2-XKS95	MC299775
Cable lug 120 mm <sup>2</sup>	MC2-XKS120	MC299776
Cable lug 150 mm <sup>2</sup>	MC2-XKS150	MC299777
Cable lug 185 mm <sup>2</sup>	MC2-XKS185	MC290032

## CONNECTION COVER, KNOCKOUT FOR BOX TERMINAL MC2



MC294640

### SCHRACK INFO

- Contains parts for a terminal located at top or bottom for 3 or 4 pole switches
- Increases protection against accidental contact (simplified finger protection)

DESCRIPTION	TYPE	ORDER NO.
Terminal cover, knockout, 3 pole for MC2	MC2-XKSFA	MC294640
Terminal cover, knockout, 4 pole for MC2	MC2-4-XKSFA	MC294641

## IP2X FINGER PROTECTION FOR DIRECT-MOUNTED MC2 SWITCHES



MC196744



MC196748

### SCHRACK INFO

- Increases the protection against accidental contact to IP2X
- Protection when reaching into the cable connection area when cables are connected in box terminal
- For 2 conductors, minimum cross-section equals 25 mm<sup>2</sup>
- MC2-XIPA and MC2-4-XIPA only in connection with cover plate MC2(-4)-XKSA

DESCRIPTION	TYPE	ORDER NO.
<b>FOR BOX TERMINAL</b>		
Finger protection, 3 pole for MC2	MC2-XIPK	MC296743
Finger protection, 4 pole for MC2-4	MC2-4-XIPK	MC296744
<b>FOR TERMINAL COVER</b>		
Finger protection, 3 pole for MC2	MC2-XIPA	MC296777
Finger protection, 4 pole for MC2-4	MC2-4-XIPA	MC296778



# MC – FRAME SIZE 2 / UP TO 300A

## INSULATED ENCLOSURE XCI



MC291524

### SCHRACK INFO

- For switches with box terminals only, for direct cable connection
- With door coupling rotary handle
- Complete unit including all necessary functional parts
- Degree of protection IP65
- Comes with gland plates

### TECHNICAL DATA

Enclosure suitable for installation of circuit-breakers and switch-disconnectors for separate mounting with top and bottom cable entry. Includes fixing straps for wall mounting.

Short circuit protection at 415 V 50/60 Hz to 10 kA.

Not in combination with remote operator, plug-in- or withdrawable unit.

Additional insulated terminals for 4 or 5 pole must be ordered separately.

Available in the following versions:

#### Standard, black/grey

Lockable in the “0” position at handle with up to 3 padlocks. Additionally with cover interlock.

#### For Emergency stop, red/yellow

Lockable on handle and switch with up to 3 padlocks in the “0” position on handle. Additionally with cover interlock and lockable at switch in the “0” position.

DESCRIPTION	MAX. RATED UNINTERRUPTED CURRENT	TYPE	ORDER NO.
STANDARD, BLACK/GREY			
Insulated enclosure for MC2 and MC2-4	≤ 200 A	MC2-XCI43-TVD	MC291524
Insulated enclosure for MC2 and MC2-4	≤ 250 A	MC2-XCI45-TVD	MC290418
FOR EMERGENCY STOP, RED/YELLOW			
Insulated enclosure for MC2 and MC2-4	≤ 200 A	MC2-XCI43-TVDR	MC291529
Insulated enclosure for MC2 and MC2-4	≤ 250 A	MC2-XCI45-TVDR	MC299356

## ADDITIONAL INSULATED TERMINALS FOR MC2



MC198573



MC192336

### SCHRACK INFO

- For looping through the neutral and earth conductor
- 1 pole

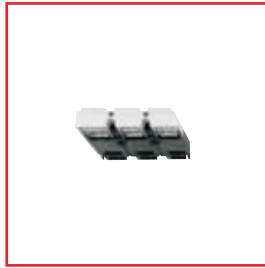
DESCRIPTION	TERMINAL CAPACITY	TYPE	ORDER NO.
Additional insulated terminal 32 A	Fine-wired 1 x (1,5-6 mm <sup>2</sup> )	K10/1	MC193827
Additional insulated terminals 63 A	Fine-wired 1 x (6-16 mm <sup>2</sup> ), stranded 1 x (16-25 mm <sup>2</sup> )	K25/1	MC196200
Additional insulated terminals 100 A	Fine-wired 1 x (10-35 mm <sup>2</sup> ), stranded 1 x (16-50 mm <sup>2</sup> )	K50/1	MC198573
Additional insulated terminal 160 A	stranded 1 x (16-95 mm <sup>2</sup> )	K95/1N/BR	MC192336
Additional insulated terminal 250 A	stranded, 1 x (35-150mm <sup>2</sup> ), 2 x (16-70mm <sup>2</sup> )	K150/1BR	MC294709

# MC – FRAME SIZE 2 / UP TO 300A

## DEVICE ADAPTERS FOR CIRCUIT-BREAKERS AND SWITCH-DISCONNECTORS FOR 60 mm BUSBAR SYSTEM MC2



MC291400



MC291666

### SCHRACK INFO

- For mounting on flat copper rails 12 x 5 mm to 30 x 10 mm
- Double T and triple T profile
- Mounted via terminal-, screw fixing
- Rated operational voltage Ue: 690 V
- Cover plate also required (MC-XKR)

### TECHNICAL DATA

MC 2 up to 250 A:

- Top or bottom connection to system as required
- Cover plate MC2-XKR4 required

DESCRIPTION	TYPE	ORDER NO.
60 mm busbar adapter 250 A, 3 pole	32140	MC291400
Cover plate for component adapter, 3 pole	MC2-XKR4	MC291666
4 pole adapter with cover plate	MC3-4XKR13	upon request

## DOOR SEALING FRAME FOR MC2



MC290197

### SCHRACK INFO

- For toggle levers, rotary handles with rotary drive and remote operator
- Degree of protection IP40
- For rectangular cut-out on doors and enclosures with material thicknesses of 1,5 – 5 mm
- External warning plate/designation plate can be clipped on

DESCRIPTION	TYPE	ORDER NO.
Door sealing frame for MC2	MC2-XBR	MC290197

## TOGGLE LEVER LOCKING DEVICE FOR MC2



MC290201

### SCHRACK INFO

- Off position lockable with up to 3 padlocks (hasp thickness 4 – 8 mm)
- Cannot be combined with Insulating surround

DESCRIPTION	TYPE	ORDER NO.
Toggle lever locking device for MC2	MC2/3-XKAV	MC290201

# MC – FRAME SIZE 2 / UP TO 300A

## SPACERS FOR MC2



MC190203

### SCHRACK INFO

- Enables fast and low-priced adjustment of various frame sizes with/without rotary handle or remote operator at same front depth
- Grid depth 17,5 mm, thread M4
- Each set contains 4 x spacers
- Maximum component installation 4 pcs. per fastening screw
- 2 fastening screws included for each circuit breaker MC2

DESCRIPTION	TYPE	ORDER NO.
Spacers for MC2	MC2-XAB	MC190203

## CLIP PLATE FOR MC2



MC290215

### SCHRACK INFO

- Enables snap fit of circuit breakers / switch disconnectors to DIN rail (75 mm top-hat rail)
- Not suitable for switches with remote operator

DESCRIPTION	TYPE	ORDER NO.
Clip plate for MC2	MC2-XC75	MC290215

# MC – FRAME SIZE 3 / UP TO 630A

## CIRCUIT BREAKER 3/4-POLE UP TO 500A WITH THERMAL MAGNETIC RELEASE, TYPES MC3C-A, MC3N-A, MC3H-A, MC3N-4-A, MC3H-4-A



MC332231

### SCHRACK INFO

- System and line protection
- 3 and 4 pole versions
- Adjustable overload release:  $0,8 - 1 \times I_n$  (factory setting  $0,8 \times I_n$ )
- Adjustable short-circuit release:  $8 - 10 \times I_n$  (factory setting  $8 \times I_n$ )
- Breaking capacity 36 / 50 / 150 kA at 415 V 50/60 Hz
- Screw terminals as standard, box terminals as accessories
- Rated uninterrupted current = Rated current

RATED CURRENT/ BREAKING CAPACITY	SETTING RANGE		TYPE	ORDER NO.
	OVERLOAD- RELEASE (A)	SHORT CIRCUIT- RELEASE (A)		
<b>3 POLE (COMFORT BREAKING CAPACITY) 36 kA</b>				
320 A/36 kA	250...320	1920...3200	MC3C-A320	MC332431
400 A/36 kA	320...400	2400...4000	MC3C-A400	MC340431
500 A/36 kA	400...500	3000...5000	MC3C-A500	MC350431
<b>3 POLE (NORMAL BREAKING CAPACITY) 50 kA</b>				
320 A/50 kA	250...320	1920...3200	MC3N-A320	MC332231
400 A/50 kA	320...400	2400...4000	MC3N-A400	MC340231
500 A/50 kA	400...500	3000...5000	MC3N-A500	MC350231
<b>3 POLE (HIGH BREAKING CAPACITY) 150 kA</b>				
320 A/150 kA	250...320	1920...3200	MC3H-A320	MC332331
400 A/150 kA	320...400	2400...4000	MC3H-A400	MC340331
500 A/150 kA	400...500	3000...5000	MC3H-A500	MC350331
<b>4 POLE (NORMAL BREAKING CAPACITY) 50 kA</b>				
320 A/50 kA	250...320	1920...3200	MC3N-4-A320	MC332241
400 A/50 kA	320...400	2400...4000	MC3N-4-A400	MC340241
500 A/50 kA	400...500	3000...5000	MC3N-4-A500	MC350241
<b>4 POLE (HIGH BREAKING CAPACITY) 150 kA</b>				
320 A/150 kA	250...320	1920...3200	MC3H-4-A320	MC332341
400 A/150 kA	320...400	2400...4000	MC3H-4-A400	MC340341
500 A/150 kA	400...500	3000...5000	MC3H-4-A500	MC350341

# MC – FRAME SIZE 3 / UP TO 630A

## CIRCUIT BREAKER 3/4-POLE UP TO 630A WITH ELECTRONIC RELEASE TYPES MC3N-AE, MC3H-AE, MC3N-4-AE, MC3H-4-AE



MC325232

### SCHRACK INFO

- System and line protection
- Selective and generator protection
- 3 and 4 pole versions
- RMS value and “thermal memory”
- Adjustable overload release:  $1,5 - 1 \times I_n$  (factory setting  $0,8 \times I_n$ )
- Adjustable short-circuit release:  $2 - 12 \times I_n$  (factory setting  $6 \times I_n$ )  
at MC3...-AE250/400:  $2 - 11 \times I_n$  (factory setting  $6 \times I_n$ )  
at MC3...-AE630:  $2 - 8 \times I_n$  (factory setting  $6 \times I_n$ )
- Breaking capacity 50 / 150 kA at 415 V 50/60 Hz
- Screw terminals as standard, box terminals as accessory
- Rated uninterrupted current = Rated current

RATED CURRENT/ BREAKING CAPACITY	SETTING RANGE		TYPE	ORDER NO.
	OVERLOAD- RELEASE (A)	SHORT CIRCUIT- RELEASE (A)		
<b>3 POLE (NORMAL BREAKING CAPACITY) 50 kA</b>				
250 A/50 kA	125...250	500...2750	MC3N-AE250	MC325232
400 A/50 kA	200...400	800...4400	MC3N-AE400	MC340232
630 A/50 kA	315...630	1260...5040	MC3N-AE630	MC363232
<b>3 POLE (HIGH BREAKING CAPACITY) 150 kA</b>				
250 A/150 kA	125...250	500...2750	MC3H-AE250	MC325332
400 A/150 kA	200...400	800...4400	MC3H-AE400	MC340332
630 A/150 kA	315...630	1260...5040	MC3H-AE630	MC363332
<b>4 POLE (NORMAL BREAKING CAPACITY) 50 kA</b>				
250 A/50 kA	125...250	500...2750	MC3N-4-AE250	MC325242
400 A/50 kA	200...400	800...4400	MC3N-4-AE400	MC340242
630 A/50 kA	315...630	1260...5040	MC3N-4-AE630	MC363242
<b>4 POLE (HIGH BREAKING CAPACITY) 150 kA</b>				
250 A/150 kA	125...250	500...2750	MC3H-4-AE250	MC325342
400 A/150 kA	200...400	800...4400	MC3H-4-AE400	MC340342
630 A/150 kA	315...630	1260...5040	MC3H-4-AE630	MC363342

# MC – FRAME SIZE 3 / UP TO 630A

## CIRCUIT BREAKER, 3/4 POLE UP TO 630A WITH DELAYED ELECTRONIC RELEASE TYPES MC3N-VE, MC3H-VE, MC3N-4-VE, MC3H-4-VE



MC325233

### SCHRACK INFO

- System and line protection
- Selective and generator protection
- 3 and 4 pole versions
- RMS value and “thermal memory”
- Adjustable overload release:  $0,5 - 1 \times I_n$  (factory setting  $0,8 \times I_n$ )
- Adjustable time delay setting to overcome current spikes:  $t_2 - 20$  s at  $6 \times I_n$  as well as infinity
- Adjustable delayed short-circuit releases:  $2 - 10 \times I_n$  (factory setting  $6 \times I_n$ )  
MC3...-4-VE630:  $2 - 7 \times I_n$  (factory setting  $6 \times I_n$ )
- Adjustable delay time  $t_{sd}$ : Levels:  
0, 20, 60, 100, 200, 300, 500, 750, 1000 ms (factory setting 0)
- Adjustable not-delayed short-circuit release:  $2 - 12 \times I_n$  (factory setting  $12 \times I_n$ )  
MC3...-VE250/400:  $2 - 11 \times I_n$  (factory setting  $6 \times I_n$ )  
MC3...-VE630:  $2 - 8 \times I_n$  (factory setting  $6 \times I_n$ )
- Switchable  $\bar{r}t$  constant function (factory setting OFF)
- Screw terminals as standard, box terminals as accessories
- Rated uninterrupted current = Rated current

RATED CURRENT/ BREAKING CAPACITY	OVERLOAD- RELEASE (A)	SETTING RANGE		TYPE	ORDER NO.
		SHORT-CIRCUIT RELEASE NOT DELAYED (A)	SHORT-CIRCUIT RELEASE DELAYED (A)		
<b>3 POLE (NORMAL BREAKING CAPACITY) 50 kA</b>					
250 A/50 kA	125...250	500...2750	250...2500	MC3N-VE250	MC325233
400 A/50 kA	200...400	800...4400	400...4000	MC3N-VE400	MC340233
630 A/50 kA	315...630	1260...5040	472...4410	MC3N-VE630	MC363233
<b>3 POLE (HIGH BREAKING CAPACITY) 150 kA</b>					
250 A/150 kA	125...250	500...2750	250...2500	MC3H-VE250	MC325333
400 A/150 kA	200...400	800...4400	400...4000	MC3H-VE400	MC340333
630 A/150 kA	315...630	1260...5040	472...4410	MC3H-VE630	MC363333
<b>4 POLE (NORMAL BREAKING CAPACITY) 50 kA</b>					
250 A/50 kA	125...250	500...2750	250...2500	MC3N-4-VE250	MC325243
400 A/50 kA	200...400	800...4400	400...4000	MC3N-4-VE400	MC340243
630 A/50 kA	315...630	1260...5040	472...4410	MC3N-4-VE630	MC363243
<b>4 POLE (HIGH BREAKING CAPACITY) 150 kA</b>					
250 A/150 kA	125...250	500...2750	250...2500	MC3N-4-VE250	MC325343
400 A/150 kA	200...400	800...4400	400...4000	MC3N-4-VE400	MC340343
630 A/150 kA	315...630	1260...5040	472...4410	MC3H-4-VE630	MC363343

# MC – FRAME SIZE 3 / UP TO 630A

## SWITCH DISCONNECTOR UP TO 630A

### TYPES MC3-PN, MC3-PN-4, MC3-N, MC3-N-4



MC340035

#### SCHRACK INFO

- 3- and 4-pole version
- Rated uninterrupted current up to 630A
- Switch disconnecter type MC3-PN, 2 switch positions 0/I, cannot be tripped remotely
- Switch disconnecter type MC3-N, with trip setting “0”; “+”; “I”, can be tripped remotely with undervoltage/shunt release, trip-indicating auxiliary contacts possible
- For type MC...-N switch disconnectors, undervoltage/shunt releases and trip-indicating auxiliary contacts can also be used.
- Type MC3-N... can also be combined with remote control MC-XR...
- Screw terminals as standard, box terminals as accessories
- Remote-trip MC3-N can also be combined with remote operator
- Properties of main switches including positive drive to IEC/EN 60204 and VDE 0113
- Isolating characteristics according to IEC/EN 60947-3 and VDE 0660. Protection against accidental contact accord. to VDE 0160 Part 100
- Rated uninterrupted current = Rated current
- Rated short-circuit breaking capacity values:  $i_{cn}$  25kA
- Rated short-time withstand current:  $I_w$  12kA

RATED UNINTERRUPTED CURRENT	MAX. BACK-UP FUSE (gL) FOR SWITCH DISCONNECTOR (AgL)	TYPE	ORDER NO.
<b>3 POLE CANNOT BE TRIPPED REMOTELY</b>			
400 A	630	MC3-PN-400	MC340034
630 A	630	MC3-PN-630	MC363034
<b>4 POLE CANNOT BE TRIPPED REMOTELY</b>			
400 A	630	MC3-PN-4-400	MC340044
630 A/630 A	630	MC3-PN-4-630	MC363044
<b>3 POLE CAN BE TRIPPED REMOTELY</b>			
400 A	630	MC3-N-400	MC340035
630 A	630	MC3-N-630	MC363035
<b>4 POLE CAN BE TRIPPED REMOTELY</b>			
400 A	630	MC3-N-4-400	MC340045
630 A	630	MC3-N-4-630	MC363045

# MC – FRAME SIZE 3 / UP TO 630A

## SOCKET BASE AND WITHDRAWABLE MODULE FOR MC3



MC396707



MC396707

### SCHRACK INFO

- 3- and 4-pole version
- For circuit breaker MC3 and switch disconnecter MC3-N

### TECHNICAL DATA

- Withdrawable unit complete with control circuit plug unit
- $I_n$  max. at 20° C – 605 A
- $I_n$  max. at 40° C – 550 A
- Mounting position: vertical, 90° left
- 3 positions: Retracted, test, extended. The 3 positions are shown mechanically.
- Auxiliary contacts can also be used for remote signaling. Either one N/C or N/O contact per position.
- All connections of auxiliary switches (HIA, HIN, HIV) and undervoltage and shunt releases to the control circuit plug units are already present.
- **Withdrawable module only available in combination with switch.**
- Add an A to switch part number (e.g.: MC340232A) – Switch will be supplied ready for use with withdrawable feature.
- Socket base can be ordered separately, available pre-assembled.

DESCRIPTION	TYPE	ORDER NO.
SOCKET BASE		
Socket base, 3 pole	MC3-XAVS	MC396711
Socket base, 4 pole	MC3-4-XAVS	MC396712

### WITHDRAWABLE MODULE

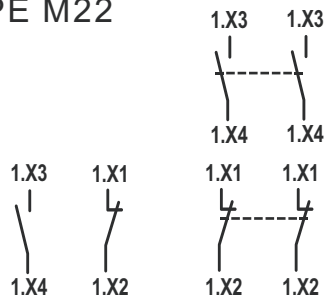
Withdrawable module, 3 pole, supplied with switch, add an A to end of switch part number

Withdrawable module, 4 pole, supplied with switch, add an A to end of switch part number

## STANDARD AUXILIARY CONTACT / TRIP-INDICATING AUXILIARY CONTACT TYPE M22



MM216378



### SCHRACK INFO

- Breaking with the main contacts, used for indicating and interlocking tasks
- General trip indication “+” with trip due to voltage release, overload release or short-circuit-release

### TECHNICAL DATA

Breaking capacity: AC15: 4 A / 230 VAC  
DC13: 3 A / 24 VDC

### TIPS & TRICKS

The trip-indicating auxiliary contacts is the same contact as the standard auxiliary contact. It derives its function from where it is installed (alarm contact on left)

Maximum component installation with auxiliary contacts: 3 x Standard auxiliary contact (HIN) M22-K. or M22-CK..  
+ 1 x Trip-indicating contact (HIA) M22-K. or MK22-CK.

DESCRIPTION	TYPE	ORDER NO.
1 NO contact with screw terminals	M22-K10	MM216376
1 NC contact with screw terminals	M22-K01	MM216378
2 NO contacts with cage clamp terminals	M22-CK20	MM107898
2 NC contacts with cage clamp terminals	M22-CK02	MM107899

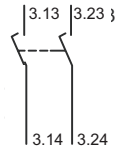


# MC – FRAME SIZE 3 / UP TO 630A

## EARLY-MAKE AUXILIARY CONTACT TYPE MC3-XHIV



MC299430



### SCHRACK INFO

For interlock- and load-shedding circuits as well as for early make of undervoltage release in main switch/Emergency stop applications.

### TECHNICAL DATA

- Not in connection with undervoltage release MC3-XU... or shunt release MC3-XA... Early-make during switch on and off (manual switch): approx. 20 ms
- Not in connection with remote operator MC-XR Undervoltage- or shunt releases
- Breaking capacity: AC15: 4 A / 230 VAC  
DC13: 3 A / 24 VDC

### TIPS & TRICKS

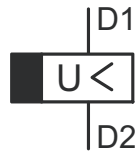
Maximum component installation with auxiliary contacts:  
1 x early-make auxiliary contact

DESCRIPTION	TYPE	ORDER NO.
Early-make auxiliary contact, 2 NO	MC2/3-XHIV	MC299430

## UNDERVOLTAGE RELEASE TYPES MC3-XU



MC299499



### SCHRACK INFO

- For use in Emergency stop devices in connection with Emergency stop buttons
- Installed in breaker
- Without auxiliary contact
- Not-delayed breaking of circuit breaker MC/ switch disconnector MC-N when the control voltage drops below 35 % - 70%  $U_s$ .

### TECHNICAL DATA

When the undervoltage release is de-energized, accidental contact with the main contacts of the switch is safely prevented during attempts to switch on. Undervoltage releases cannot be installed at the same time as operating current releases or early-make auxiliary contact MC2-XHIV.

VOLTAGE	TYPE	ORDER NO.
24 VAC 50/60 Hz	MC2/3-XU24AC	MC299491
24 VDC 50/60 Hz	MC2/3-XU24DC	MC299509
208-240 VAC 50/60 Hz	MC2/3-XU208-240AC	MC299499
380-440 VAC 50/60 Hz	MC2/3-XU380-440AC	MC299501

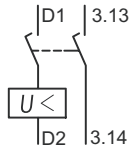
Other voltage variants available upon request.

# MC – FRAME SIZE 3 / UP TO 630A

## UNDERVOLTAGE RELEASE WITH TWO EARLY-MAKE AUXILIARY CONTACTS TYPES MC3-XUHIV



MC299591



### SCHRACK INFO

- With 2 early-make auxiliary contacts
- For early-make of the undervoltage release in main switch applications and for interlock- and load-shedding circuits
- Installed in contact
- Other voltages and connection versions available on request

### TECHNICAL DATA

When the undervoltage release is de-energized, accidental contact with the main contacts of the switch is safely prevented during attempts to switch on. Early-make of auxiliary contacts during switch on and off (20ms). Undervoltage releases cannot be installed at the same time as operating current releases or early-make auxiliary contact MC2-XHIV.

VOLTAGE	TYPE	ORDER NO.
208 - 240 VAC	MC2/3-XUHIV230V	MC299591
380 - 440 VAC	MC2/3-XUHIV400V	MC299594

Other voltage variants available upon request.

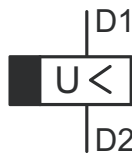
## UNDERVOLTAGE RELEASE, OFF-DELAY TYPES MC-UVU, MC-XUV



MC295927



MC299499



### SCHRACK INFO

- Voltage drops less than 0,07–16 s do not cause MC circuit breakers or N switch disconnectors to trip.
- Suitable for voltages:  
220 – 240 VAC 50/60 Hz  
380 – 440 VAC 50/60 Hz  
480 – 550 VAC 50/60 Hz  
24 VAC/DC
- Cannot be installed simultaneously with early-make auxiliary contact MC2-XHIV... or shunt release MC2-XA....
- Time-delay device for separate mounting (Fastening: DIN rail or screws).
- For other operating voltages, please use a control transformer.

### TECHNICAL DATA

- Time-delay adjustable between 70 ms – 4 s
- With additional external capacitor:  
30.000 µF ≥ 35 V to 8 s  
90.000 µF ≥ 35 V to 16 s
- 1 x special release MC2-XUV required.

- Cannot be installed simultaneously with early-make auxiliary contact MC2-XHIV... or shunt release MC2-XA....
- Time-delay device for separate mounting (Fastening: DIN rail or screws).
- For other operating voltages, please use a control transformer.

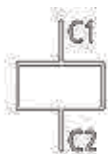
NAME	TYPE	ORDER NO.
Time-delay unit	MC-UVU	MC196154
Special undervoltage release for time-delay unit MC2	MC2/3-XUV	MC295927

Other voltage variants available upon request.

## SHUNT RELEASE TYPES MC2-XA



MC299754



### SCHRACK INFO

- Without auxiliary contact
- Switches are tripped by a voltage pulse or by the application of uninterrupted voltage

### NOTES

When the shunt release is energized, accidental contact with the main contacts of the switch during attempts to switch on is safely prevented. Shunt release cannot be installed simultaneously with undervoltage release.

VOLTAGE	TYPE	ORDER NO.
24 V AC/DC	MC2-XA24VAC/DC	MC299754
208 - 250 V AC/DC	MC2-XA230VAC/DC	MC299763

Other voltage variants available upon request.

# MC – FRAME SIZE 3 / UP TO 630A

## REMOTE OPERATOR FOR MC3



MC299832

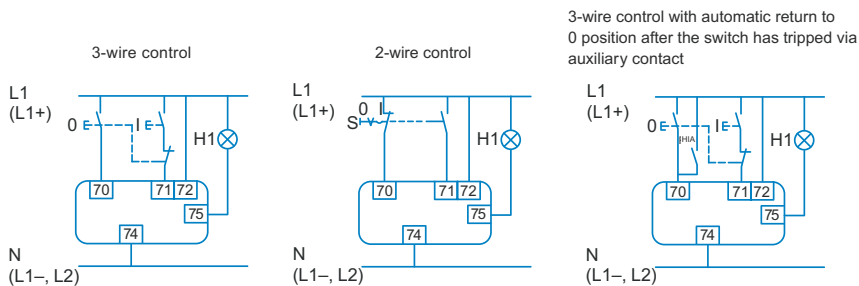
### SCHRACK INFO

- Remote operator can be combined with circuit breaker MC and switch disconnecter MC-N, but not with switch disconnecter MC-PN.
- Do not deactivate simultaneously via remote control and trip via undervoltage/operating current release.

### TECHNICAL DATA

- On/Off breaking and reset by means of 2-wire or 3-wire control.
- Can be synchronized
- Breaking time On:  $\leq 80$  ms
- Local manual breaking possible
- Pause between Off and On: 3 sec.  
On command is ignored
- Function of Terminal 75:  
Ready for operation signal, when cover is closed and not locked.  
AC-15: 2 A/400 V  
DC-13: 0,2 A/220 V

### CIRCUIT DIAGRAMS



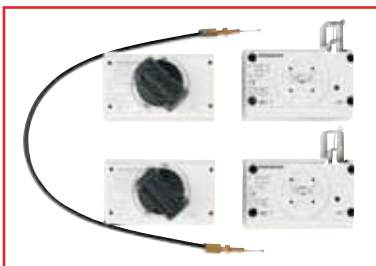
### BREAKING CYCLE



VOLTAGE	TYPE	ORDER NO.
208 - 240 V AC	MC3-XR208-240AC	MC399850
Extra cover for 4-pole switches	MC3-XAVPR	MC396678

Other voltage variants available upon request.

## MECHANICAL INTERLOCK FOR (DOOR COUPLING-) ROTARY HANDLES FOR MC3



MC191581

### SCHRACK INFO

**Rotary handle on switch or door coupling rotary handle additionally required.**

Cannot be combined with remote operator or door frame.

At least 2 interlocking modules are required to construct a mechanical interlocking circuit. See Page 142 for possible combinations and variations in interlocking circuits. Bowden cable to be ordered separately.

DESCRIPTION	TYPE	ORDER NO.
Mechanical interlock	MC3-XMV	MC391583
Bowden cable 225 mm	MC-XBZ225	MC191585
Bowden cable 600 mm	MC-XBZ600	MC191586
Bowden cable 1000 mm	MC-XBZ1000	MC191587

## MECHANICAL INTERLOCK FOR REMOTE OPERATOR FOR MC3



MC294543



MC294543

### SCHRACK INFO

- For 2 switches of same or next frame size side by side
- Side-by-side mounting
- Mounted on top of each other, long version
- Type contains parts for 2 switches
- Remote operator also required
- For maximum breaking distance, see Page 143

### NOTES

Cannot be combined with rotary handles, door coupling rotary handles and early-make auxiliary contacts.

DESCRIPTION	TYPE	ORDER NO.
Mechanical interlock for MC2/3	MC2/3-XMVR	MC294544
Mechanical interlock for MC2/3, long version	MC2/3-XMVRL	MC294549
Mechanical interlock for MC3	MC3-XMVR	MC394545
Mechanical interlock for MC3 long version	MC3-XMVRL	MC394550
Mechanical interlock for MC3/4	MC3/4-XMVR	MC394546
Mechanical interlock for MC3/4 long version	MC3/4-XMVRL	MC394551

## ROTARY HANDLE DIRECTLY ON SWITCH FOR MC3



MC390129

### SCHRACK INFO

- Complete with rotary drive
- Can also be combined with door frame

### TECHNICAL DATA

Available in the following versions:

#### Type MC.-XDV

Lockable in the "0" position (up to three padlocks), black/grey

#### Type MC.-XDVR

Lockable in the "0" position (up to three padlocks), Emergency stop red/yellow

DESCRIPTION	TYPE	ORDER NO.
Lockable rotary handle for MC3, black/grey	MC3-XDV	MC390129
Lockable rotary handle for MC3, Emergency stop red/yellow	MC3-XDVR	MC390140

# MC – FRAME SIZE 3 / UP TO 630A

## DOOR COUPLING ROTARY HANDLE FOR MC3



MC390170



MC390176



MC390182

### SCHRACK INFO

- Complete unit includes rotary drive and coupling parts
- Degree of Protection IP66
- Rotary handle can be rotated 90° for horizontally-mounted switches
- Cannot be defeated in the locked OFF and ON positions
- Can be modified when in the unlocked ON position, can be defeated from the outside with a screwdriver
- Door can be opened in OFF
- External warning plate/designation plate can be clipped on

### NOTES

- Order extension shaft separately!

### TECHNICAL DATA

Available in the following versions:

#### Type MC.-XTVD

Lockable in the "0" position on handle with up to three padlocks, with door interlock, black/grey

#### Type MC.-XTVDV

Lockable in the "0" position on handle and switch, with up to three padlocks, with door interlock, black/grey

#### Type MC.-XTVDVR

Lockable in the "0" position on handle and switch with up to three padlocks, with door interlock, Emergency stop red/yellow

DESCRIPTION	TYPE	ORDER NO.
Rotary handle for MC3 with door interlock, lockable, black/grey	MC3-XTVD	MC390170
Door coupling rotary handle for MC3 with door interlock, lockable, "0", "1", black/grey	MC3-XTVDV	MC390176
Door coupling rotary handle for MC3 with door interlock, lockable, Emergency stop red/yellow	MC3-XTVDVR	MC390182

## EXTENSION SHAFT FOR MC3



MC190191

### SCHRACK INFO

- for maximum cabinet depths of 400 or 600 mm
- Can be cut to required length

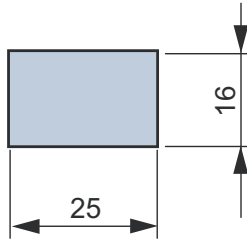
DESCRIPTION	CABINET DEPTH	TYPE	ORDER NO.
Extension shaft for MC3	max. 400 mm	MC3/4-XV4	MC391234
Extension shaft for MC3	max. 600 mm	MC3/4-XV6	MC390193

# MC – FRAME SIZE 3 / UP TO 630A

## BOX TERMINALS FOR MC3



MC390042



### SCHRACK INFO

- Installed within the switch housing
- If  $U_e > 525V$  AC, use cover plate MC3(-4)-XSKA
- Conversion kit for switches with screw connection
- Contains parts for one switch side
- Terminal capacities:

Copper lines/cables 500A: 1 x 35 – 240 mm<sup>2</sup>  
2 x 16 – 120 mm<sup>2</sup>

Copper strip 630A: 10 x 24 x 1 + 5 x 24 x 1 or (2x) 8 x 24 x 1

DESCRIPTION	TYPE	ORDER NO.
Box terminal (contains 3 pcs.) for MC3	MC3-XKC	MC390042
Box terminal (contains 4 pcs.) for MC3-4	MC3-4-XKC	MC396783

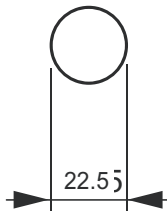
## TUNNEL TERMINAL FOR MC3



MC391461



MC391461



### SCHRACK INFO

- Contains parts for one switch side located at top or bottom for 3 or 4-pole switches
- Comes with terminal for control circuit cabling as standard for 1 x 0,75 – 2,5 mm<sup>2</sup> or 2 x 0,75 – 1,5 mm<sup>2</sup> copper conductors
- Terminal capacities:  
XKA1 max. 350A: Cu/Al cable 1 x 16 – 185 mm<sup>2</sup>  
XKA2 max. 630A: Cu/Al-cable 2 x 50 – 240 mm<sup>2</sup>  
(\* depending on cable manufacturer up to 240 mm<sup>2</sup> can be connected)
- Installed outside switch housing

### TECHNICAL DATA

- For Cu- and Al cables
- Includes cover plate
- Stranded round conductor / stranded sector-shaped conductor

DESCRIPTION	TYPE	ORDER NO.
Tunnel terminal 185 mm <sup>2</sup> , 3 pole for MC3	MC3-XKA1	MC391459
Tunnel terminal 2 x 240 mm <sup>2</sup> , 3-pole for MC3	MC3-XKA2	MC391461
Tunnel terminal 185 mm <sup>2</sup> , 4 pole for MC3-4	MC3-4-XKA1	MC391460
Tunnel terminal 2 x 240 mm <sup>2</sup> , 4-pole for MC3-4	MC3-4-XKA2	MC391462

# MC – FRAME SIZE 3 / UP TO 630A

## CABLE LUG FOR MC3



MC299776

### SCHRACK INFO

- Special cable lug in slimline design
- Cable lugs must be insulated when using without a cover plate.

DESCRIPTION	TYPE	ORDER NO.
Cable lug 185 mm <sup>2</sup> , for MC3	MC3/4-XKS185	MC390040
Cable lug 240 mm <sup>2</sup> , for MC3	MC3/4-XKS240	MC390041

## REAR CONNECTION FOR MC3



MC396792

### SCHRACK INFO

- Contains parts for one switch side located at top or bottom for 3- or 4-pole switches
- Terminal capacities: Copper cable 8 x 16 – 240 mm<sup>2</sup>

DESCRIPTION	TYPE	ORDER NO.
Rear connection, 3 pole for MC3	MC3-XKR	MC396792
Rear connection, 4 pole for MC3-4	MC3-4-XKR	MC396795

## CONNECTION WIDTH EXTENSION FOR MC3



MC390514

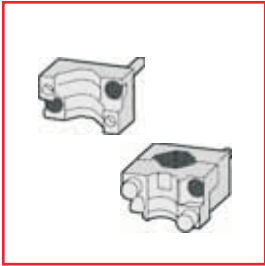
### SCHRACK INFO

- Contains parts for one switch side incl. phase separator
- Central holes, max. 2 cable lugs per phase
- Distance between pole centers 70 mm
- Terminal capacities: Copper cable lugs 2 x 300 mm<sup>2</sup>  
Copper rails (2x) 10 x 50

DESCRIPTION	TYPE	ORDER NO.
Connection width extension, 3 pole 630 A for MC3	MC3-XKV70	MC390514
Connection width extension, 4 pole 630 A for MC3	MC3-4-XKV70	MC390515

# MC – FRAME SIZE 3 / UP TO 630A

## CONNECTION TERMINALS FOR CONNECTION WIDTH EXTENSION MC3



MC390782 + MC390784

### SCHRACK INFO

- Contains parts for one switch side located at top or bottom for 3- or 4-pole switches
- Only in combination with connection width extension
- Use with flexible and highly-flexible conductor end sleeves
- Comes with terminal for control circuit cabling as standard for 1 x 0,75 – 2,5 mm<sup>2</sup> or 2 x 0,75 – 1,5 mm<sup>2</sup> Cu conductors
- Terminal capacities: Copper cable 2 x 120 – 300 mm<sup>2</sup>  
Cu strip (2x) 11 x 21 x 1 mm

DESCRIPTION	TYPE	ORDER NO.
<b>3 POLE</b>		
Connection terminals for connection width extension, 500 A for cable	MC3-XK300	MC390782
Connection terminals for connection width extension, 630 A for strip	MC3-XK22X21	MC390784
<b>4 POLE</b>		
Connection terminals for connection width extension, 500 A for cable	MC3-4-XK300	MC390783
Connection terminals for connection width extension, 630 A for strip	MC3-4-XK22X21	MC390785

## PHASE SEPERATOR PLATE FOR MC3



MC4-XKP

### SCHRACK INFO

- Contains parts for one switch side located at top or bottom for 3- or 4-pole switches
- Supplied with the connection width extension
- Insulation protection where cable lugs, busbars or flat conductor are connected.
- Cannot be combined with tunnel terminal, rear-side connection

DESCRIPTION	TYPE	ORDER NO.
Phase seperator plate for MC3	MC3-XKP	MC390512
Phase seperator plate for MC3-4	MC3-4-XKP	MC390513

## CONTROL CIRCUIT TERMINAL FOR MC3



MC196739

### SCHRACK INFO

- Contains parts for two terminals located at top or bottom for 3/ 4 pole switches
- Included with tunnel terminal
- Terminal capacities: Screw connection 1 x 0,75 – 2,5 mm<sup>2</sup> 2 x 0,75 – 1,5 mm<sup>2</sup>

DESCRIPTION	TYPE	ORDER NO.
Control circuit terminal for box terminal MC3	MC3/4-XSTK	MC196739
Control circuit terminal for screw connection MC3	MC3/4-XSTS	MC396797



# MC – FRAME SIZE 3 / UP TO 630A

## TERMINAL COVER FOR MC3



MC390045

### SCHRACK INFO

- Protection against accidental contact when using cable lugs, rails or tunnel terminals
- Contains parts for one switch side located at top or bottom for 3- or 4-pole switches
- Degree of protection IP4X front, side and rear, IP1X on the connection side when using insulated conductor material
- Cover plate included with tunnel terminals

DESCRIPTION	TYPE	ORDER NO.
Terminal cover, 3 pole for MC3	MC3-XKSA	MC390045
Terminal cover, 4 pole for MC3-4	MC3-4-XKSA	MC396801

## IP2X FINGER PROTECTION FOR DIRECT-MOUNTED MC3 SWITCHES



MC196744



MC196748

### SCHRACK INFO

- Increases the protection against accidental contact to IP2X
- Protects when reaching into the cable connection area when cables are connected in box terminal
- For 2 conductors, maximum cross-section 70 mm<sup>2</sup>
- MC3-XIPA and MC3-4-XIPA only in combination with cover plate

DESCRIPTION	TYPE	ORDER NO.
FOR BOX TERMINAL		
Finger protection, 3 pole for MC3	MC3-XIPK	MC396804
Finger protection, 4 pole for MC3-4	MC3-4-XIPK	MC396805
FOR TERMINAL COVER		
Finger protection, 3 pole for MC3	MC3-XIPA	MC396808
Finger protection, 4 pole for MC3-4	MC3-4-XIPA	MC396809

## INSULATED ENCLOSURE XCI



MC391525

### SCHRACK INFO

- Only for switches with box terminals for direct cable connection
- With door coupling rotary handle
- Complete including all necessary functional parts
- Degree of protection IP65
- Comes with gland plates

### TECHNICAL DATA

Enclosure suitable for installation of circuit-breakers and switch-disconnectors for separate mounting with top and bottom cable entry. Including fixing straps for wall mounting.

Short circuit protection at 415 V 50/60 Hz to 10 kA.

Not in combination with remote operator, plug-in- or withdrawable unit.

Additional insulated terminals for 4 or 5 pole must be ordered separately.

Available in the following versions:

#### Standard, black/grey

Lockable in the “0” position at handle with up to 3 padlocks. Additionally with cover interlock.

#### For Emergency stop, red/yellow

Lockable on handle and switch with up to 3 padlocks. Lockable in the “0” position on handle. Additionally with cover interlock and lockable at switch in the “0” position.

DESCRIPTION	MAX. RATED UNINTERRUPTED CURRENT	TYPE	ORDER NO.
STANDARD, BLACK/GREY			
Insulated enclosure for MC3(-4)	≤ 400 A	MC3-XCI48-TVD	MC391525
FOR EMERGENCY STOP, RED/YELLOW			
Insulated enclosure for MC3(-4)	≤ 400 A	MC3-XCI48-TVD	MC391530

## ADDITIONAL INSULATED TERMINALS FOR MC3



MC294709

### SCHRACK INFO

- For looping through the neutral and earth conductor
- 1 pole

DESCRIPTION	TERMINAL CAPACITY	TYPE	ORDER NO.
Additional insulated terminal 250 A	stranded, 1 x (35-150mm <sup>2</sup> ), 2 x (16-70mm <sup>2</sup> )	K150/1/BR	MC294709
Additional insulated terminals 400 A	stranded, 1 x (50-240mm <sup>2</sup> ), 2 x (25-120mm <sup>2</sup> )	K240/1/BR	MC397082
Additional insulated terminals 630 A	stranded, 1 x (240 – 300mm <sup>2</sup> ), 2 x (50 – 240mm <sup>2</sup> )	K2x240/1/BR	MC399455

# MC – FRAME SIZE 3 / UP TO 630A

## DEVICE ADAPTERS FOR CIRCUIT-BREAKERS AND SWITCH-DISCONNECTORS FOR 60 mm MC3 BUSBAR SYSTEM



MC391668

### SCHRACK INFO

- Cover plate MC-XKR necessary for frame size 2 and 3.
- For mounting on flat copper rails 12 x 5 mm bis 30 x 10 mm
- Double T and triple T profile
- Snaps onto the voltage-free busbar
- Rated operational voltage, Ue: 690 V

### TECHNICAL DATA

MC 3 up to 630 A:

- Connection to system from top
- For component adapter MC3-XKR13 with rear connection, cover plate needed

DESCRIPTION	TYPE	ORDER NO.
60 mm busbar adapter 550 A, 3 pole for MC3	32170	MC391700
Cover plate for component adapter, 3 pole	MC3-XKR13	MC391668
4 pole adapter with cover plate	MC3-4XKR13	upon request

## DOOR SEALING FRAME FOR MC3



MC394645

### SCHRACK INFO

- For toggle levers, rotary handles with rotary drive and remote operator
- Degree of protection IP40
- For rectangular cut-out on doors and enclosures with material thicknesses of 1,5 – 5 mm
- External warning plate/designation plate can be clipped on

DESCRIPTION	TYPE	ORDER NO.
Door sealing frame for MC3	MC3-XBR	MC394645

## TOGGLE LEVER LOCKING DEVICE FOR MC3



MC390201

### SCHRACK INFO

- Off position lockable with up to 3 padlocks (hasp thickness 4 – 8 mm)
- Cannot be combined with Insulating surround

DESCRIPTION	TYPE	ORDER NO.
Toggle lever locking device for MC3	MC2/3-XKAV	MC290201

# MC – FRAME SIZE 3 / UP TO 630A

## SPACERS FOR MC3



MC390211

### SCHRACK INFO

- Enables fast and low-priced adjustment of a variety frame sizes with/without rotary handle or remote operator same front depth
- Grid depth 17,5 mm, thread M5
- Each set contains 4 x spacers
- 4 fastening screws included per switch

DESCRIPTION	TYPE	ORDER NO.
Spacers for MC3	MC3/4-XAB	MC390211

# MC – FRAME SIZE 4 / UP TO 2000A

## CIRCUIT BREAKER 3/4-POLE UP TO 1600A WITH ELECTRONIC RELEASE TYPES MC4N-AE, MC4H-AE, MC4N-4-AE, MC4H-4-AE



MC463232

### SCHRACK INFO

- System and line protection
- 3 and 4 pole versions
- RMS value and “thermal memory”
- Adjustable overload release:  $1,0,5 - 1 \times I_n$  (factory setting  $0,8 \times I_n$ )
- Adjustable short-circuit release:  $2 - 12 \times I_n$  (factory setting  $6 \times I_n$ )
- Breaking capacity 50 / 85 kA at 415 V 50/60 Hz
- Screw terminals as standard
- Rated uninterrupted current = rated current

RATED CURRENT/ BREAKING CAPACITY	SETTING RANGE		TYPE	ORDER NO.
	OVERLOAD- RELEASE (A)	SHORT CIRCUIT- RELEASE (A)		
<b>3 POLE (NORMAL BREAKING CAPACITY) 50 kA</b>				
630 A/50 kA	315...630	1260...7560	MC4N-AE630	MC463232
800 A/50 kA	400...800	1600...9600	MC4N-AE800	MC480232
1000 A/50 kA	500...1000	2000...12000	MC4N-AE1000	MC410232
1250 A/50 kA	630...1250	2500...15000	MC4N-AE1250	MC412232
1600 A/50 kA	800...1600	3200...19200	MC4N-AE1600	MC416232
<b>3 POLE (HIGH BREAKING CAPACITY) 85 kA</b>				
630 A/85 kA	315...630	1260...7560	MC4H-AE630	MC463332
800 A/85 kA	400...800	1600...9600	MC4H-AE800	MC480332
1000 A/85 kA	500...1000	2000...12000	MC4H-AE1000	MC410332
1250 A/85 kA	630...1250	2500...15000	MC4H-AE1250	MC412332
1600 A/85 kA	800...1600	3200...19200	MC4H-AE1600	MC416332
<b>4 POLE (NORMAL BREAKING CAPACITY) 50 kA</b>				
630 A/50 kA	315...630	1260...7560	MC4N-4-AE630	MC463242
800 A/50 kA	400...800	1600...9600	MC4N-4-AE800	MC480242
1000 A/50 kA	500...1000	2000...12000	MC4N-4-AE1000	MC410242
1250 A/50 kA	630...1250	2500...15000	MC4N-4-AE1250	MC412242
1600 A/50 kA	800...1600	3200...19200	MC4N-4-AE1600	MC416242
<b>4 POLE (HIGH BREAKING CAPACITY) 85 kA</b>				
630 A/85 kA	315...630	1260...7560	MC4H-4-AE630	MC463342
800 A/85 kA	400...800	1600...9600	MC4H-4-AE800	MC480342
1000 A/85 kA	500...1000	2000...12000	MC4H-4-AE1000	MC410342
1250 A/85 kA	630...1250	2500...15000	MC4H-4-AE1250	MC412342
1600 A/85 kA	800...1600	3200...19200	MC4H-4-AE1600	MC416342

Higher breaking capacity available upon request

# MC – FRAME SIZE 4 / UP TO 2000A

## CIRCUIT BREAKER 3-/4 POLE UP TO 2000A WITH DELAYED ELECTRONIC RELEASE TYPES MC4N-VE, MC4H-VE, MC4N-4-VE, MC4H-4-VE



MC480233

### SCHRACK INFO

- System and line protection
- Selective and generator protection
- 3 and 4 pole versions
- Rated uninterrupted current = rated current

### TECHNICAL DATA

- RMS value and “thermal memory”
- Adjustable overload release:  $0,5 - 1 \times I_n$  (factory setting  $0,8 \times I_n$ )
- Adjustable time delay setting to overcome current peaks  $t_d$ :  $2 - 20$  s at  $6 \times I_n$  as well as infinity
- Adjustable delayed short-circuit releases:  $2 - 10 \times I_n$  (factory setting  $6 \times I_n$ )
- Adjustable time delay  $t_{sd}$ : Levels: 0, 20, 60, 100, 200, 300, 500, 750, 1000 ms (factory setting 0)
- Adjustable not-delayed short-circuit release:  $2 - 12 \times I_n$  (factory setting  $12 \times I_n$ )
- Switchable  $\bar{I}t$  constant function (factory setting: OFF)
- MC4.-VE...:  $2 - 12 \times I_n$  (factory setting  $12 \times I_n$ )
- MC4.-VE2000:  $2 - 8 \times I_n$  (factory setting  $8 \times I_n$ )
- 2000A cannot be combined with withdrawable units

RATED CURRENT/ BREAKING CAPACITY	OVERLOAD- RELEASE (A)	SETTING RANGE		TYPE	ORDER NO.
		SHORT-CIRCUIT RELEASE NOT DELAYED (A)	DELAYED (A)		
3 POLE (NORMAL BREAKING CAPACITY) 50 kA					
630 A/50 kA	315...630	1260...7560	630...6300	MC4N-VE630	MC463233
800 A/50 kA	400...800	1600...9600	800...8000	MC4N-VE800	MC480233
1000 A/50 kA	500...1000	2000...12000	1000...10000	MC4N-VE1000	MC410233
1250 A/50 kA	630...1250	2500...15000	1250...12500	MC4N-VE1250	MC412233
1600 A/50 kA	800...1600	3200...19200	1600...16000	MC4N-VE1600	MC416233
2000 A/50 kA AC1	1000...2000	4000...16000	2000...12000	MC4N-VE2000	MC420233
3 POLE (HIGH BREAKING CAPACITY) 150 kA					
630 A/150 kA	315...630	1260...7560	630...6300	MC4H-VE630	MC463333
800 A/150 kA	400...800	1600...9600	800...8000	MC4H-VE800	MC480333
1000 A/150 kA	500...1000	2000...12000	1000...10000	MC4H-VE1000	MC410333
1250 A/150 kA	630...1250	2500...15000	1250...12500	MC4H-VE1250	MC412333
1600 A/150 kA	800...1600	3200...19200	1600...16000	MC4H-VE1600	MC416333
2000 A/150 kA AC1	1000...2000	4000...16000	2000...12000	MC4H-VE2000	MC420333
4 POLE (NORMAL BREAKING CAPACITY) 50 kA					
630 A/50 kA	315...630	1260...7560	630...6300	MC4N-4-VE630	MC463243
800 A/50 kA	400...800	1600...9600	800...8000	MC4N-4-VE800	MC480243
1000 A/50 kA	500...1000	2000...12000	1000...10000	MC4N-4-VE1000	MC410243
1250 A/50 kA	630...1250	2500...15000	1250...12500	MC4N-4-VE1250	MC412243
1600 A/50 kA	800...1600	3200...19200	1600...16000	MC4N-4-VE1600	MC416243
4 POLE (HIGH BREAKING CAPACITY) 150 kA					
630 A/150 kA	315...630	1260...7560	630...6300	MC4H-4-VE630	MC463343
800 A/150 kA	400...800	1600...9600	800...8000	MC4H-4-VE800	MC480343
1000 A/150 kA	500...1000	2000...12000	1000...10000	MC4H-4-VE1000	MC410343
1250 A/150 kA	630...1250	2500...15000	1250...12500	MC4H-4-VE1250	MC412343
1600 A/150 kA	800...1600	3200...19200	1600...16000	MC4H-4-VE1600	MC416343

# MC – FRAME SIZE 4 / UP TO 2000A

## SWITCH DISCONNECTOR 3-/4 POLE UP TO 1600A, REMOTE TRIP POSSIBLE TYPES MC4-N, MC4-N-4



MC480233

### SCHRACK INFO

- 3 and 4 pole versions
- Main switch characteristics including positive drive according to IEC/EN 60204 & VDE 0113
- Isolating characteristics to IEC/EN 60947-3 and VDE 0660 Protection against accidental contact to VDE 0160 Part 100
- Rated uninterrupted current up to 1600A
- Switch disconnecter MC4-N, with trip setting “0”; “+”; “I”, can be tripped remotely with undervoltage-/shunt release, trip-indicating auxiliary contacts also possible
- Can be combined with remote operator MC-XR...
- Screw terminals as standard
- Rated uninterrupted current = Rated current
- Rated short-circuit breaking capacity values:  $i_{cn}$  53kA
- Rated short-time withstand current:  $I_{tw}$  25kA

RATED UNINTERRUPTED CURRENT	MAX. BACK-UP FUSE (gL) FOR SWITCH DISCONNECTOR (AgL)	TYPE	ORDER NO.
3 POLE CAN BE TRIPPED REMOTELY			
800 A	1600	MC4-N-800	MC480035
1000 A	1600	MC4-N-1000	MC410035
1250 A	1600	MC4-N-1250	MC412035
1600 A	1600	MC4-N-1600	MC416035
4 POLE CAN BE TRIPPED REMOTELY			
800 A	1600	MC4-N-4-800	MC480045
1000 A	1600	MC4-N-4-1000	MC410045
1250 A	1600	MC4-N-4-1250	MC412045
1600 A	1600	MC4-N-4-1600	MC416045

# MC – FRAME SIZE 4 / UP TO 2000A

## SOCKET BASE AND WITHDRAWABLE MODULE FOR MC4



MC396707



MC396707

### SCHRACK INFO

- 3- and 4 pole versions
- for MC4 circuit breakers and MC4-N switch disconnectors

### TECHNICAL DATA

- Withdrawable unit complete with control circuit plug unit
- $I_n$  max. at 20° C – 1600A
- $I_n$  max. at 40° C – 1500A
- Mounting position: vertical
- 3 positions: Retracted, test, extended. The 3 positions are indicated mechanically.
- Auxiliary contacts can also be used for remote signaling. Either one N/C or N/O contact per position.
- All connections of auxiliary switches (HIA, HIN, HIV) and undervoltage and shunt releases to the control circuit plug units come pre-fitted.
- **Withdrawable module only available in combination with switch.**
- Add A to switch part number (MC340232A), comes supplied ready for use with withdrawable units.
- Socket base can be ordered separately and supplied pre-assembled.

DESCRIPTION	TYPE	ORDER NO.
SOCKET BASE		
Socket base, 3 pole	MC4-XAVS	MC496713
Socket base, 4 pole	MC4-4-XAVS	MC496714
WITHDRAWABLE MODULE		
Withdrawable module, 3 pole, supplied with switch, add an A to end of switch part number		
Withdrawable module, 4 pole, supplied with switch, add an A to end of switch part number		

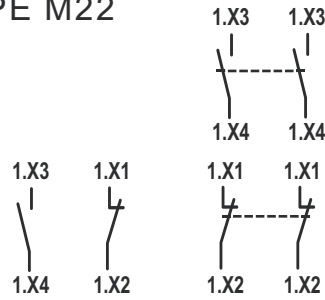


# MC – FRAME SIZE 4 / UP TO 2000A

## STANDARD AUXILIARY CONTACT / TRIP-INDICATING AUXILIARY CONTACT TYPE M22



MM216378



### SCHRACK INFO

- Switches with the main contacts, used for indicating and interlocking tasks
- General trip indication “+” with trip due to voltage release, overload release or short-circuit-release

### TECHNICAL DATA

Breaking capacity: AC15: 4 A / 230 VAC  
DC13: 3 A / 24 VDC

### TIPS & TRICKS

The trip-indicating auxiliary contacts is the same contact as the standard auxiliary contact. It derives its function from where it is installed (alarm contact on left).

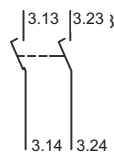
Maximum component installation with auxiliary contacts: 3 x Standard auxiliary contact (HIN) M22-K. or M22-CK..  
+ 2 x Trip-indicating contact (HIA) M22-K. or M22-CK..

DESCRIPTION	TYPE	ORDER NO.
1 NO contact with screw terminals	M22-K10	MM216376
1 NC contact with screw terminals	M22-K01	MM216378
2 NO contacts with cage clamp terminals	M22-CK20	MM107898
2 NC contacts with cage clamp terminals	M22-CK02	MM107899

## EARLY-MAKE AUXILIARY CONTACT TYPE MC4-XHIV



MC496172



### SCHRACK INFO

For interlock- and load-shedding circuits as well as for early make of undervoltage release in main switch/Emergency stop applications.

### TECHNICAL DATA

- Not in connection with undervoltage release MC4-XU... or shunt release MC4-XA... Early-make during switch on and off (manual switch): approx. 20 ms
- Not in connection with remote operator MC-XR  
Undervoltage- or shunt voltage releases
- Breaking capacity: AC15: 4 A / 230 VAC  
DC13: 3 A / 24 VDC

### TIPS & TRICKS

Maximum component installation with auxiliary contacts:

1 x early-make auxiliary contact

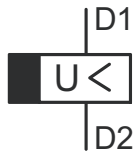
DESCRIPTION	TYPE	ORDER NO.
Early-make auxiliary contact, 2 NO	MC4-XHIV	MC496172

# MC – FRAME SIZE 4 / UP TO 2000A

## UNDERVOLTAGE RELEASE TYPES MC4-XU



MC496189



### SCHRACK INFO

- For use in Emergency stop devices in connection with Emergency stop buttons
- Installed in breaker
- Without auxiliary contact
- Non-delayed breaking of circuit breaker MC/ switch disconnector MC-N when the control voltage drops below 35 % - 70% Us.

### TECHNICAL DATA

When the undervoltage release is de-energized, accidental contact with the main contacts of the switch is safely prevented during attempts to switch on. Undervoltage releases cannot be installed at the same time with operating current releases or early-make auxiliary contact, type MC4-XHIV.

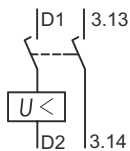
VOLTAGE	TYPE	ORDER NO.
24 V AC	MC4-XU24AC	MC496189
24 V DC	MC4-XU24DC	MC496204
208-240 V AC	MC4XU208-240AC	MC496193
380-440 V AC	MC4-XU380-440AC	MC496194

Other voltage variants available upon request.

## UNDERVOLTAGE RELEASE WITH TWO EARLY-MAKE AUXILIARY CONTACTS TYPES MC4-XHIV



MC496221



### SCHRACK INFO

- With 2 early-make auxiliary contacts
- For early-make of the undervoltage release in main switch applications and for interlock- and load-shedding circuits
- Installed in breaker
- Other voltages and connection versions available on request

### TECHNICAL DATA

When the undervoltage release is de-energized, accidental contact with the main contacts of the switch is safely prevented during attempts to switch on. Early-make of auxiliary contacts during switch on and off (20ms). Undervoltage releases cannot be installed at the same time with operating current releases or early-make auxiliary contact, type MC4-XHIV.

VOLTAGE	TYPE	ORDER NO.
208 - 240 V AC	MC4-XUHIV230VAC	MC496221
380 - 440 V AC	MC4-XUHIV400VAC	MC496222

Other voltage variants available upon request.

# MC – FRAME SIZE 4 / UP TO 2000A

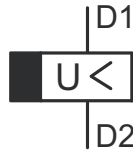
## UNDERVOLTAGE RELEASE, OFF-DELAY TYPES MC4-UVU, MC4-XUV



MC196154



MC299499



### SCHRACK INFO

- Voltage drops less than 0,07–16s do not cause MC circuit breakers or N switch disconnectors to trip.
- Suitable for voltages:  
220 – 240 VAC 50/60 Hz  
380 – 440 VAC 50/60 Hz  
480 – 550 VAC 50/60 Hz  
24 VAC/DC

### TECHNICAL DATA

- Time-delay adjustable between 70 ms – 4 s
- With additional external capacitor:  
30.000  $\mu$ F  $\geq$  35 V to 8 s  
90.000  $\mu$ F  $\geq$  35 V to 16 s
- Special release MC4-XUVL is required.
- Cannot be installed at same time with early-make auxiliary contact MC4-XHIV... or operating current trip MC4-XA....
- Time-delay device for separate assembly (fixing: Top-hat rail or screws).
- For other operating voltages, please use a control transformer.

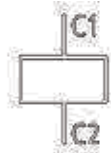
NAME	TYPE	ORDER NO.
Time-delay unit	MC4-UVU	MC196154
Special undervoltage release for time-delay unit MC4	MC4-XUV	MC496596

Other voltage variants available upon request.

## SHUNT RELEASE TYPES MC4-XA



MC496451



### SCHRACK INFO

- Without auxiliary contact
- Switches are tripped by a voltage pulse or by the application of uninterrupted voltage

### TECHNICAL DATA

When the shunt release is energized, accidental contact with the main contacts of the switch is safely prevented during attempts to switch on. Undervoltage releases cannot be installed at the same time with undervoltage release or early-make auxiliary contact, type MC4-XHIV.

VOLTAGE	TYPE	ORDER NO.
24 VAC/DC	MC4-XA24AC/DC	MC496447
208 - 250 VAC/DC	MC4-XA230AC/DC	MC496451

Other voltage variants available upon request.

# MC – FRAME SIZE 4 / UP TO 2000A

## REMOTE OPERATOR FOR MC4



MC496685

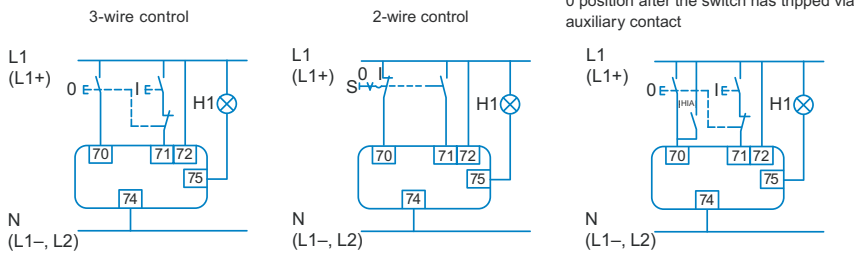
### SCHRACK INFO

- Remote operator can be combined with circuit breaker MC and switch disconnector MC-N, but not with switch disconnector MC-PN.
- Do not switch off switch simultaneously via remote control and release via undervoltage/shunt release.

### TECHNICAL DATA

- On/Off breaking and reset by means of 2-wire or 3-wire control.
- Can be synchronized
- Breaking time On:  $\leq 100$  ms
- Local manual breaking possible
- Pause between Off and On: 3 sec.  
On command is ignored
- Function of Terminal 75:  
Ready for operation signal, when cover is closed and not locked.  
AC-15: 2 A/400 V  
DC-13: 0,2 A/220 V

### CIRCUIT DIAGRAMS



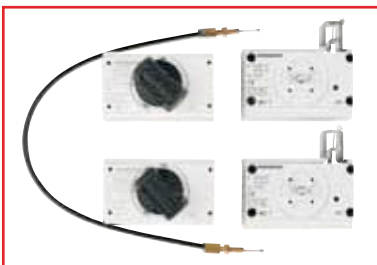
### BREAKING CYCLE



VOLTAGE	TYPE	ORDER NO.
208 - 240 V AC	MC4-XR208-240AC	MC496685

Other voltage variants available upon request.

## MECHANICAL INTERLOCK FOR (DOOR COUPLING) ROTARY HANDLES FOR MC4



MC491584

### SCHRACK INFO

**Rotary handle on switch or door coupling rotary handle additionally required.**

Cannot be combined with remote operator or insulating surround.

At least 2 interlocking modules are required in order to construct a mechanical interlocking circuit. See Page 142 for possible combinations and variations in interlocking circuits. Bowden cable to be ordered separately.

DESCRIPTION	TYPE	ORDER NO.
Mechanical interlock	MC4-XMV	MC491584
Bowden cable 225 mm	MC-XBZ225	MC191585
Bowden cable 600 mm	MC-XBZ600	MC191586
Bowden cable 1000 mm	MC-XBZ1000	MC191587

# MC – FRAME SIZE 4 / UP TO 2000A

## MECHANICAL INTERLOCK FOR REMOTE OPERATOR FOR MC4



MC294543



MC494547 - montiert

### SCHRACK INFO

- For 2 switches of the same or next frame size side by side
- Side-by-side mounting
- Mounted on top of each other, long version
- Contains parts for 2 switches
- Remote operator also required
- For maximum breaking distance, see Page 143

### NOTES

Cannot be combined with rotary handles, door coupling rotary handles and early-make auxiliary contacts.

DESCRIPTION	TYPE	ORDER NO.
Mechanical interlock for MC4	MC4-XMVR	MC494547
Mechanical interlock for MC4, long version	MC4X-MXRL	MC494552
Mechanical interlock for MC3/4	MC3/4-XMVR	MC394546
Mechanical interlock for MC3/4, long version	MC3/4-XMVRL	MC394551

## ROTARY HANDLE DIRECTLY ON SWITCH FOR MC4



MC496608

### SCHRACK INFO

- Complete with rotary drive
- Can also be combined with door frame

### TECHNICAL DATA

Available in the following versions:

#### Type MC.-XDV

Lockable in the "0" position (up to three padlocks), black/grey

#### Type MC.-XDVR

Lockable in the "0" position (up to three padlocks), Emergency stop red/yellow

#### Type MC.-XDTV

Lockable in the "0" position on handle, modification also available in "1" position, black/grey

#### Type MC.-XDTV

Lockable in "0" position, Emergency Stop red/yellow

Version comes with door interlock:

- Door frame supplier with door interlock
- Rotary handle can be rotated 90° for switches mounted horizontally
- In the ON position, can be defeated from the outside using a 1 mm pin
- Cannot be defeated in the locked OFF and ON positions
- Door can be opened in OFF
- Can only be switched on when door closed

DESCRIPTION	TYPE	ORDER NO.
Lockable rotary handle for MC4, black/grey	MC4-XDV	MC496608
Lockable rotary handle for MC4, Emergency stop red/yellow	MC4-XDVR	MC496610

# MC – FRAME SIZE 4 / UP TO 2000A

## DOOR COUPLING ROTARY HANDLE FOR MC4



MC494614



MC494614



MC494614

### SCHRACK INFO

- Complete including rotary drive and coupling parts
- Degree of Protection IP66
- Rotary handle can be rotated 90° for switches mounted horizontally
- Cannot be defeated in the locked OFF and ON positions
- Can be modified when in the unlocked ON position, can be defeated from the outside with a screwdriver
- Door can be opened in OFF
- External warning plate/designation plate can be clipped on

### NOTES

- Order extension shaft separately!

### TECHNICAL DATA

Available in the following versions:

#### Type MC.-XTVD

Lockable in the "0" position on handle with up to three padlocks, with door interlock, black/grey

#### Type MC.-XTVDV

Lockable in the "0" position on handle and switch, with up to three padlocks, with door interlock, black/grey

#### Type MC.-XTVDVR

Lockable in the "0" position on handle and switch with up to three padlocks, with door interlock, Emergency stop red/yellow

DESCRIPTION	TYPE	ORDER NO.
Door-coupling rotary handle for MC4 with door interlock, lockable, black/grey	MC4-XTVD	MC496614
Door coupling rotary handle for MC4 with door interlock, lockable, "0", "1", black/grey	MC4-XTVDV	MC496616
Door coupling rotary handle for MC4 with door interlock, lockable, Emergency stop red/yellow	MC4-XTVDVR	MC496618

# MC – FRAME SIZE 4 / UP TO 2000A

## EXTENSION SHAFT FOR MC4



MC391234

### SCHRACK INFO

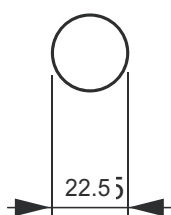
- For maximum cabinet depths of 400 or 600 mm
- Can be cut to required length

DESCRIPTION	CABINET DEPTH	TYPE	ORDER NO.
Extension shaft for MC4	max. 400 mm	MC3/4-XV4	MC391234
Extension shaft for MC4	max. 600 mm	MC3/4-XV6	MC390193

## TUNNEL TERMINAL FOR MC4



MC496836



### SCHRACK INFO

- Installed external to switch housing
- Contains parts for one switch side located at top or bottom for 3 pole switches
- Comes with terminal for control circuit cabling as standard for copper conductors, 1 x 0,75 – 2,5 mm<sup>2</sup>, or 2 x 0,75 – 1,5 mm<sup>2</sup>
- Terminal capacities:  
Cu/Al cable 1 x 50 – 240 mm<sup>2</sup>, 4 x 50 – 240 mm<sup>2</sup>

### TECHNICAL DATA

- For Cu- and Al cables, max. 1400A
- Includes cover plate
- Stranded round conductor / stranded sector-shaped conductor

DESCRIPTION	TYPE	ORDER NO.
Tunnel terminal 4 x 240 mm <sup>2</sup> , 3-pole for MC4	MC4-XKA	MC496836
Tunnel terminal 4 x 240 mm <sup>2</sup> , 4-pole for MC4	MC4-4-XKA	MC496837

# MC – FRAME SIZE 4 / UP TO 2000A

## RIBBON CABLE FOR MC4



MC496829

### SCHRACK INFO

- $I_n < 1100$  A
- When mounting switch on conductive mounting plates you must use supplied cover plate MC4(-4)-XKSA
- Use cover plate for phase separator plates
- Contains parts for one switch side, top or bottom

DESCRIPTION	TYPE	ORDER NO.
Flat conductor terminal, 3 pole for MC4/MC4-N	MC4-XKB	MC496829
Flat conductor terminal, 4 pole for MC4-4/MC4-N-4	MC4-4-XKB	MC496831

## CABLE LUG FOR MC4



MC299776

### SCHRACK INFO

- Special cable lug in slimline design
- Cable lugs must be insulated when using without a cover plate.

DESCRIPTION	TYPE	ORDER NO.
Cable lug 185 mm <sup>2</sup> , for MC4	MC3/4-XKS185	MC390040
Cable lug 240 mm <sup>2</sup> , for MC4	MC3/4-XKS240	MC390041

## REAR CONNECTION FOR MC4



MC396792

### SCHRACK INFO

- Contains parts for one switch side, top or bottom
- Can be retrofitted:  
Module plate MC4...-XKM... or connection width extension MC4-...-XKV...
- Max. terminal capacities 1250A:  
Copper cable lug 1 x 120 – 185 mm<sup>2</sup>, 2 x 95 – 185 mm<sup>2</sup>, 4 x 35 – 185 mm<sup>2</sup>  
Al cable lug 1 x 185 mm<sup>2</sup>, 2 x 70 – 185 mm<sup>2</sup>, 4 x 50 – 185 mm<sup>2</sup>

DESCRIPTION	TYPE	ORDER NO.
Rear connection, 3-pol. for MC4	MC4-XKR	MC496842



# MC – FRAME SIZE 4 / UP TO 2000A

## MODULE PLATE FOR MC4



MC496814



MC496820



MC494473

### SCHRACK INFO

- For M10 screws, can be bored for M12 screws
- Use special cable lugs in slimline design
- Can be mounted to switch with screw connection
- Contains parts for one switch side, top or bottom
- Insulated using cover plate MC4(-4)-XKSA or phase isolator MC4(-4)-XKP necessary

### TECHNICAL DATA

- Terminal capacities, 1 bore: Copper cable lug 1 x 120 – 300 mm<sup>2</sup> 2 x 95 – 300 mm<sup>2</sup>
- Terminal capacities, 2 bore: Copper cable lug 2 x 95 – 185 mm<sup>2</sup> 4 x 35 – 185 mm<sup>2</sup>
- Connection width extension: 2 x 95 – 300

DESCRIPTION	TYPE	ORDER NO.
<b>3 POLE</b>		
Module plate 1 bore for MC4/MC4-N, I <sub>n</sub> ≤ 1250 A	MC4-XKM1	MC496814
Module plate 2 bore for MC4/MC4-N, I <sub>n</sub> < 1400 A	MC4-XKM2	MC496820
Connection extension MC4 3 pole 1600 A	MC4-XKM2S-1600	MC494473
<b>4 POLE</b>		
Module plate 1 bore for MC4-4/MC4-N-4, I <sub>n</sub> ≤ 800 A	MC4-4-XKM1	MC496815
Module plate 2 bore for MC4-4/MC4-N-4, I <sub>n</sub> < 1000 A	MC4-4-XKM2	MC496821
Connection extension MC4 4 pole 1600 A	MC4-4-XKM2S-1600	MC494474

# MC – FRAME SIZE 4 / UP TO 2000A

## CONNECTION WIDTH EXTENSION FOR MC4



MC496826

### SCHRACK INFO

- Contains parts for one switch side located at top or bottom for 3 or 4 pole switches incl. phase separator
- 5x bore for up to 6 cable lugs per phase
- Can be mounted to switch with screw connection
- Phase separator supplied
- 4 mm bore holes fitted for control circuit terminal
- Terminal capacities: Copper cable lug 4 x 300 mm<sup>2</sup> 6 x 95 – 240 mm<sup>2</sup>

### TECHNICAL DATA

Distance between pole centres, MC4(-4)-XKV95:	95 mm
Installation possible for current transformer:	up to width 130 mm given rail width of 80 mm
Distance between pole centres, MC4-XKV110:	107,5 mm
Installation possible for current transformer:	up to width 135 mm given rail width of 80 mm
Distance between pole centres, MC4-4-XKV120:	122 mm
Installation possible for current transformer:	up to width 164 mm given rail width of 80 mm

DESCRIPTION	TYPE	ORDER NO.
Connection extension MC4 3 pole 1600 A	MC4-XKV95	MC496826
Connection extension MC4 4 pole 1600 A	MC4-4-XKV95	MC496827
Connection extension MC4 3 pole 1600 A long version	MC4-XKV110	MC491593
Connection extension MC4 4 pole 1600 A long version	MC4-4-XKV120	MC491594

## TERMINAL COVER FOR MC4



MC496846

### SCHRACK INFO

- Protection against accidental contact when using cable lugs, rails or Tunnel terminals
- Contains parts for one switch side located at top or bottom 3- or 4 pole switches
- Degree of protection IP4X front, side and rear, IP1X on the connection side when using insulated conductor material
- Cover plate included with tunnel terminals

DESCRIPTION	TYPE	ORDER NO.
Terminal cover, 3 pole for MC4	MC4-XKSA	MC496846
Terminal cover, 4 pole for MC4	MC4-4-XKSA	MC496847

# MC – FRAME SIZE 4 / UP TO 2000A

## ADDITIONAL INSULATED TERMINALS FOR MC4



MC397082

### SCHRACK INFO

- For looping through the neutral and earth conductor
- 1 pole

DESCRIPTION	TERMINAL CAPACITY	TYPE	ORDER NO.
Additional insulated terminals 400 A	stranded, 1 x (50-240mm <sup>2</sup> ), 2 x (25-120mm <sup>2</sup> )	K240/1/BR	MC397082
Additional insulated terminal 630 A	stranded, 1 x (240 – 300mm <sup>2</sup> ), 2 x (50 – 240mm <sup>2</sup> )	K2x240/1/BR	MC399455

## DOOR SEALING FRAME FOR MC4



MC394645

### SCHRACK INFO

- For toggle levers, rotary handles with rotary drive and remote operator
- Degree of protection IP40
- For rectangular cut-out on doors and enclosures with material thicknesses of 1,5 – 5 mm
- External warning plate/designation plate can be clipped on

DESCRIPTION	TYPE	ORDER NO.
Door sealing frame for MC4	MC4-XBR	MC494646

## SPACERS FOR MC4



MC390211

### SCHRACK INFO

- Enables fast and low-priced adjustment of a variety frame sizes with/without Rotary handle or remote operator same front depth
- Grid depth 17,5 mm, thread M5
- Each set contains 4 x spacers
- 4 fastening screws included per switch

DESCRIPTION	TYPE	ORDER NO.
Spacers for MC4	MC3/4-XAB	MC390211

# RESIDUAL CURRENT RELEASE RELAY WITH CONVERTER

## RESIDUAL CURRENT (RCD) RELEASE RELAY, FIR



MC900001



MC900002



MC900003

### SCHRACK INFO

Residual current release relay in combination with core-balance transformers. Switch-off can be achieved with undervoltage- and shunt releases or a contactor.

### TECHNICAL DATA

Version corresponds to:	IEC 947-2, IEC 755, IEC 1008, IEC 1009			
Sensitivity:	Pulse current sensitive, type A			
Rated control voltage $U_s$ (V):	230 +/- 20% (50/60 Hz)			
Rated operational voltage $P_e$ (W):	3			
Relay contacts:	1 integral C/O			
Rated voltage of the relay contacts:	250 V AC 100 V DC			
Rated current of the relay contacts:	6 A			
Rated fault currents:	FIR-003	$I_{\Delta n}$	A	0.03
	FIR-03	$I_{\Delta n}$	A	0.3
	FIR-5	$I_{\Delta n}$	A	0.03 – 0.1 – 0.3 – 0.5 – 1 – 3 – 5
Time delay:	FIR-003	$t_v$	s	0.02 (non-delayed)
	FIR-03	$t_v$	s	0.02 (non-delayed)
	FIR-5	$t_v$	s	0.02 – 0.1 – 0.3 – 0.5 – 1 – 3 – 5
Fault current warning with FIR-5 through flashing red LED:	0.5Hz: 25% – 50% $I_{\Delta n}$ 1Hz: 50% – 75% $I_{\Delta n}$ 2Hz: 75% – <100% $I_{\Delta n}$			

DESCRIPTION	TYPE	ORDER NO.
Rated fault current $I_{\Delta n} = 0.03$ A Pulse current sensitive	FIR-003	MC900001
Rated fault current $I_{\Delta n} = 0.3$ A Pulse current sensitive	FIR-03	MC900002
Rated fault current $I_{\Delta n} = 0.03...5$ A Pulse current sensitive	FIR-5	MC900003

# RESIDUAL CURRENT RELEASE RELAY WITH CONVERTER

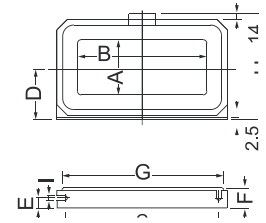
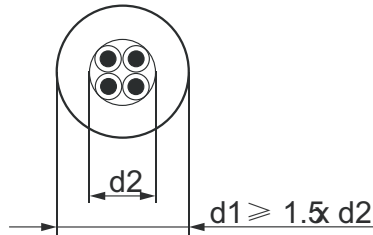
## CORE-BALANCE TRANSFORMER FRI-WS, FIR-WR



MC900070



MC910305



### SCHRACK INFO

The internal diameter of the transformer  $d1$  must be 1,5x wider than the average cross-section  $d2$  of the inserted conductors.

For load circuits with inrush current  $> 4 \times I_n$ , magnetic shielding is required (available upon request).

### TECHNICAL DATA

Rectangular core-balance transformer

Type	A	B	C	D	E	F	G	H	I
FIR-WR-175	70	175	225	85	22	46	261	176	7,5
FIR-WR-305	115	305	360	116	25	55	402	240	8
FIR-WR-350	150	350	415	140	28	55	460	285	8

Round core-balance transformer

Max. nominal current		Diameter	
Power distribution (A)	Motor/capacitor (A)	Transformer type FIR-W-... d1	Maximum conductor cross-section (mm) d2
50	50	20	13
150	100	30	20
150	100	35	23
400	200	70	47
600	250	105	70
1200	630	140	93
1800	800	210	140

DESCRIPTION	TYPE	ORDER NO.
ROUND CORE-BALANCE TRANSFORMER		
Internal diameter 20 mm	FIR-WS-20	MC900020
Internal diameter 30 mm	FIR-WS-30	MC900030
Internal diameter 35 mm	FIR-WS-35	MC900035
Internal diameter 70 mm	FIR-WS-70	MC900070
Internal diameter 105 mm	FIR-WS-105	MC900105
Internal diameter 140 mm	FIR-WS-140	MC900140
Internal diameter 210 mm	FIR-WS-210	MC900210

RECTANGULAR CORE-BALANCE TRANSFORMER

70x175 mm	FIR-WR-175	MC910175
115x305 mm	FIR-WR-305	MC910305
150x350 mm	FIR-WR-350	MC910350

## MO AIR CIRCUIT BREAKERS



NOMINAL CURRENT MAX 6300 A, 3 SWITCHING CAPACITY CLASSES, 6 ELECTRONIC RELEASES, 3- AND 4-POLE VERSIONS

MO air circuit breakers offer full coverage of the 630 - 6300A range with just three contact frame sizes. The nominal current of all contacts can be optimally adjusted to the expansion stage using rating plugs. The smallest rating plug has 250A and at that even with a setting range of 0.4 to 1x<sub>ln</sub>.

### STANDARD DIMENSIONS, EASY TO PLAN

The MO has a uniform frame height and -depth for all current ranges. Only the width of the circuit breaker varies, depending on the number of poles and the frame size. MOs for permanent installation and withdrawable models have identical widths.

### CONNECTION SYSTEM

MO circuit breakers up to 5000A come with horizontal connections as standard. The MO 6300A is fitted with vertical connections. The following connections are available as optional extras: Vertical connections, front-side connections and flange connections

### RATED CURRENT MODULE

This replaceable module allows the user to reduce the nominal current of the device for optimal system adjustment, e.g. when commissioning a sub-system. The correct rating plug to choose is one which most closely matches the system's nominal current.

### FRAME SIZE AND SHORT-CIRCUIT BREAKING CAPACITY

FRAME SIZE 1	FRAME SIZE 2	FRAME SIZE 3
250A	250A	
315A	315A	
400A	400A	
500A	500A	
630A	630A	
700A	700A	
800A	800A	
1000A	1000A	
1250A	1250A	1250A
1600A	1600A	1600A
	2000A	2000A
	2500A	2500A
	3200A	3200A
		4000A
		5000A
		6300A

#### RATED BREAKING CAPACITY

$I_{cu}$  at AC 500V (kA) /  $I_{cs}$  at DC 300V (kA):

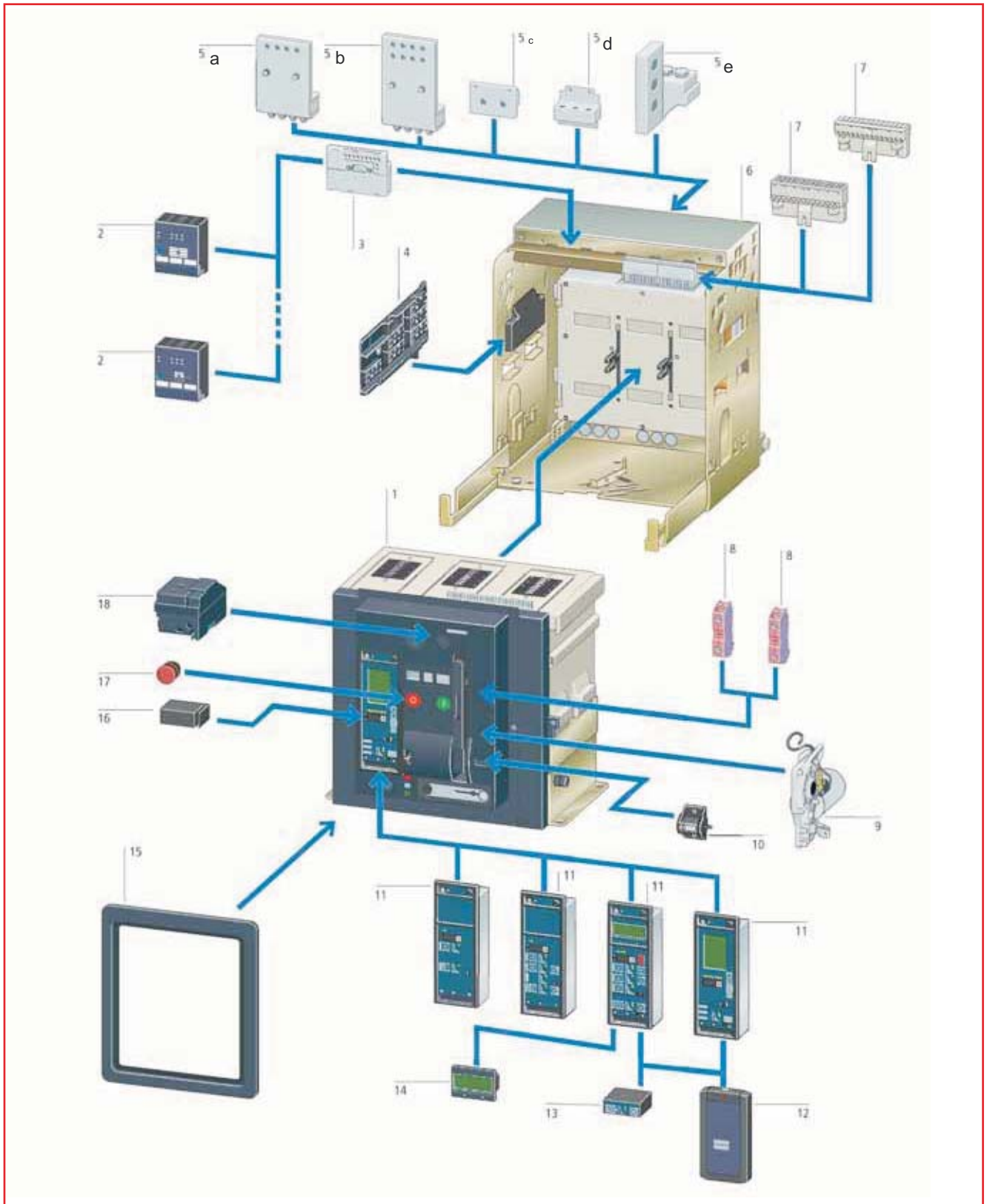
Frame Size 1: B = 55 kA, N = 66 kA

Frame Size 2: B = 66 kA, N = 80 kA

Frame Size 3: H = 100 kA

# MO – SYSTEM OVERVIEW

## MO AIR CIRCUIT BREAKERS – SYSTEM OVERVIEW

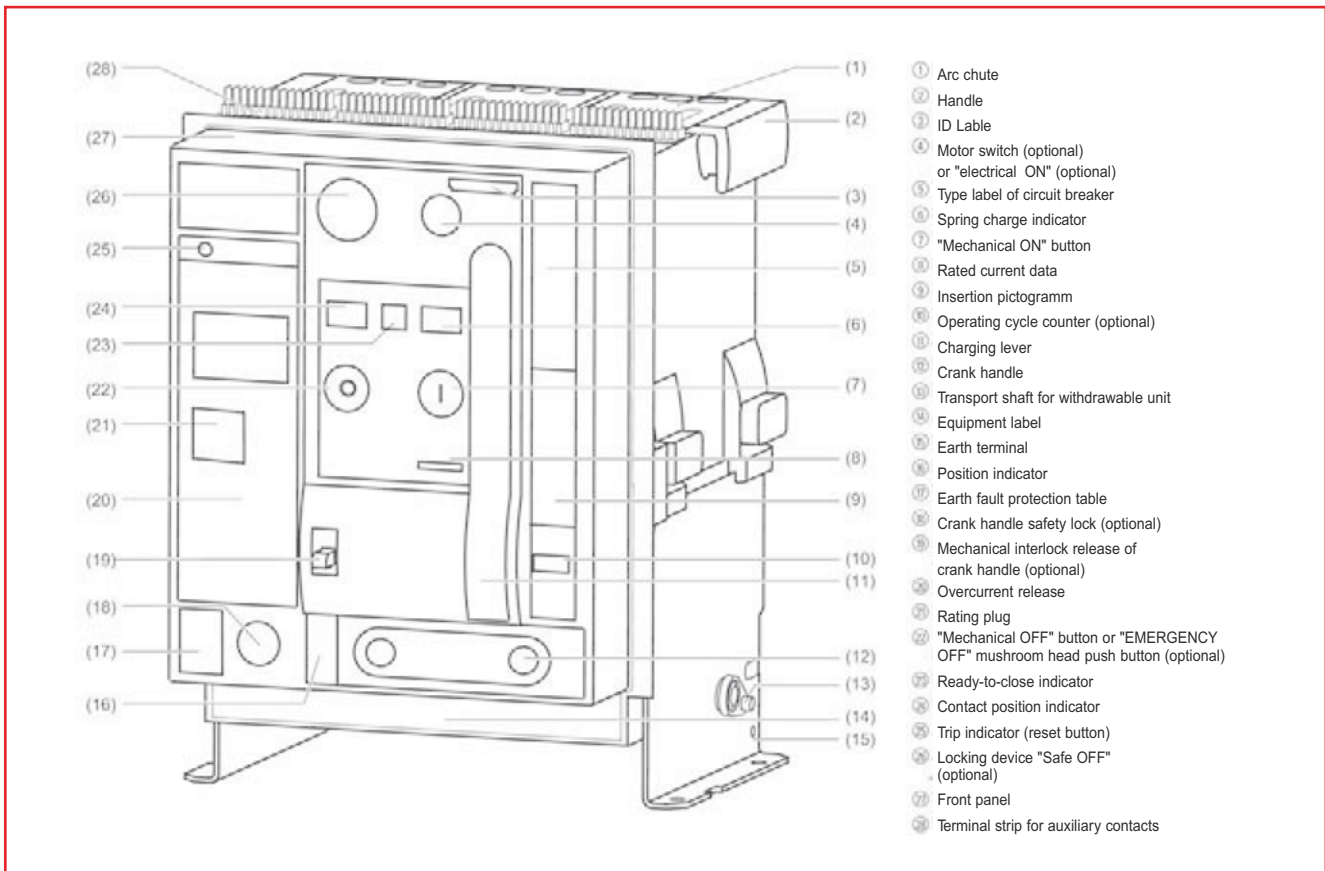


- |   |                                     |   |
|---|-------------------------------------|---|
| 1. MO circuit breaker, between 630A and 6.300 A       | c. Flange connection                | 12. Parametric device                   |
| 2. External expansion modules                         | d. Horizontal connection, rear-side | 13. Earth-fault protection module       |
| 3. Communication module for PROFIBUS                  | e. Vertical connection, rear-side   | 14. 4-line LCD display                  |
| 4. Position indicator contact: Module for guide frame | 6. Guide frame                      | 15. Door sealing frame                  |
| 5. Main connection elements:                          | 7. Auxiliary plug connector         | 16. Rating plug                         |
| a. Front connection                                   | 8. Auxiliary contact                | 17. EMERGENCY STOP mushroom push button |
| b. Front connection, double bole                      | 9. Motor operator                   | 18. Closing magnet, voltage release     |
|   | 10. Operating cycle counter         |   |
|   | 11. Electronic release              |   |

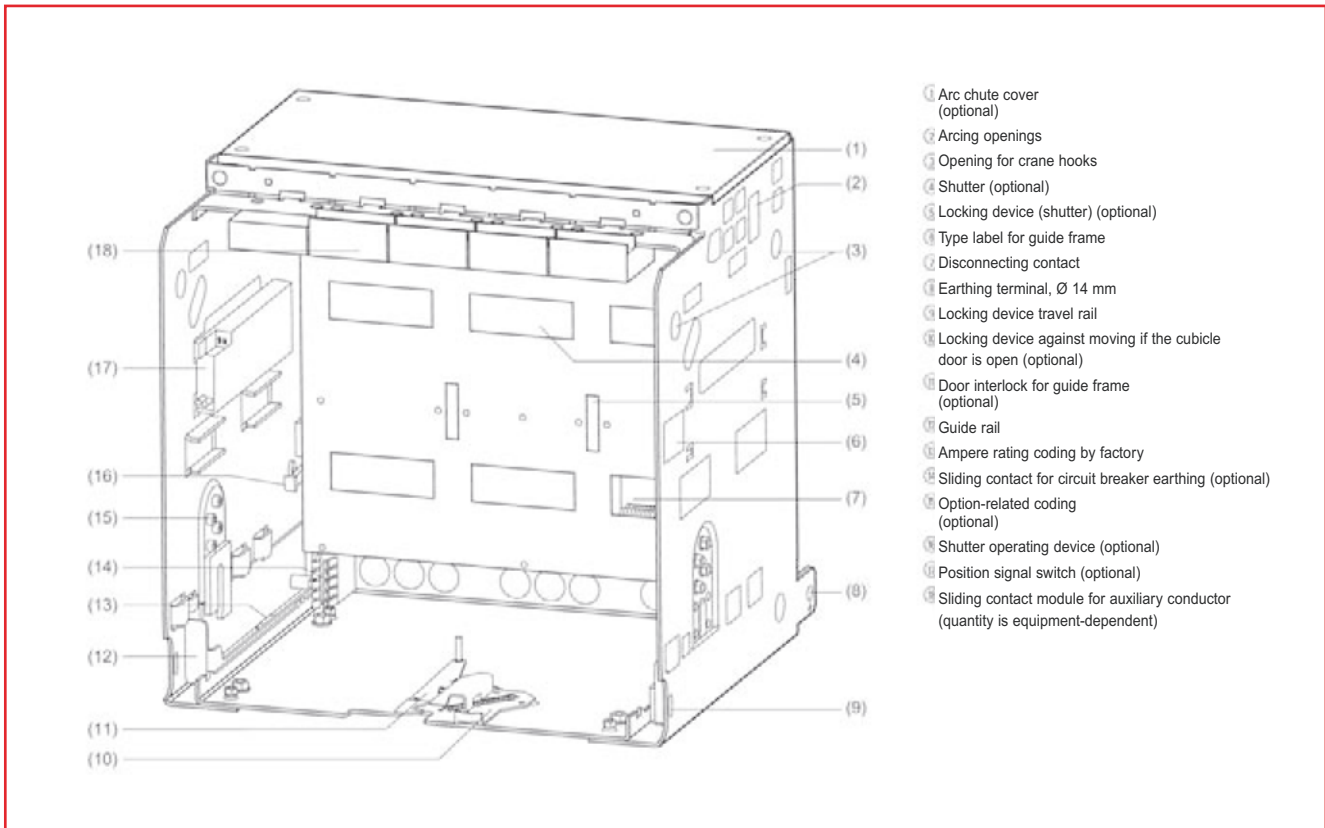


## MO AIR CIRCUIT BREAKERS – BREAKDOWN OF FUNCTIONS

### CIRCUIT BREAKERS



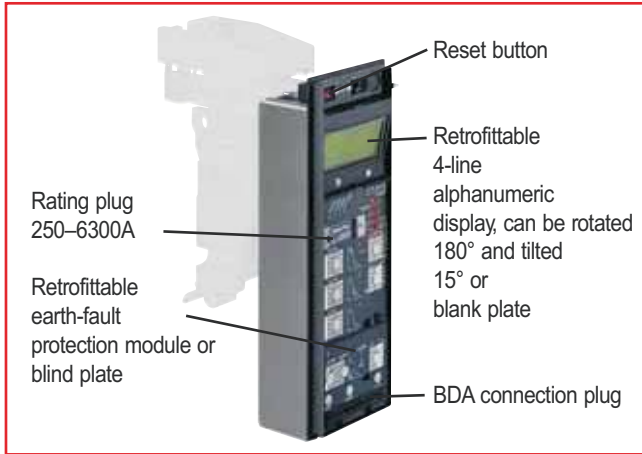
### GUIDE FRAME





# MO – SYSTEM OVERVIEW

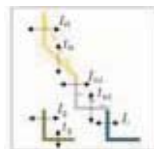
## FUNCTIONS OF THE ETU (ELECTRONIC TRIP UNITS) OVERCURRENT RELEASE



FUNCTIONS OF THE OVERCURRENT RELEASE		ETU15B	ETU25B	ETU27B
<b>BASIC PROTECTION FUNCTIONS</b>				
Overload protection	L	✓	✓	✓
Short-time delayed short-circuit protection	S	--	✓	✓
Instantaneous short-circuit protection	I	✓	✓	✓
Neutral conductor protection	N	--	--	✓
Earth-fault protection	G	--	--	✓
<b>ADDITIONAL FUNCTIONS</b>				
Neutral conductor protection can be switched off		--	--	✓
Neutral conductor protection can be adjusted		--	--	--
Short-time-delayed short-circuit protection can be switched on/off		--	--	--
Instantaneous short-circuit protection can be switched on/off		--	--	--
Thermal memory can be switched on/off		--	--	--
Load monitoring		--	--	--
Short-time-delayed short-circuit protection can be switched to $I^2t$		--	--	--
Instantaneous short-circuit protection can be adjusted		✓	--	--
Overload protection switch-selectable $I^4t$		--	--	--
Overload protection can be switched on/off		--	--	--
Switch-selectable parameter sets		--	--	--
<b>PARAMETERISATION AND DISPLAY</b>				
Parameterisation by rotary switch (10 steps)		✓	✓	✓
Parameterisation by communication (absolute values)		--	--	--
Parameterisation by menu (absolute values)		--	--	--
Parameterisation of additional protection functions		--	--	--
LCD, alphanumeric		--	--	--
LCD, graphical		--	--	--
<b>METERING FUNCTION</b>				
Metering function Plus		--	--	--
<b>COMMUNICATION</b>				
CubicleBUS		--	--	--
Communication via PROFIBUS-DP		--	--	--
Communication via Ethernet		--	--	--

✓ Standard    -- not available    □ optional

# MO – SYSTEM OVERVIEW



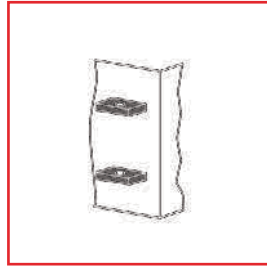
ETU45B	ETU55B	ETU76B
✓		✓
✓✓✓		
✓✓✓		
✓✓✓		
☐	☐	☐
✓		✓
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☐	☐	☐
☐	--	--
--	--	✓
☐	☐	☐
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☐☐☐		
✓	✓	✓
☐	☐	☐
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# MO – FRAME SIZE 1 / FIXED-MOUNTED INSTALLATION

## FRAME SIZE 1 TO 1600A – REAR-SIDE CONNECTION, HORIZONTAL



MO116232



### SCHRACK INFO

Basic unit without release, factory assembled with selected components and delivered as complete device.

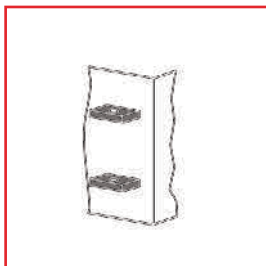
DESCRIPTION	WEIGHT (kg)	I <sub>CU</sub>	TYPE	ORDER NO.
<b>3-POLE 55 kA</b>				
800 A	43	55 kA	MO1B-800	MO108232
1000 A	43	55 kA	MO1B-1000	MO110232
1250 A	43	55kA	MO1B-1250	MO112232
1600 A	43	55 kA	MO1B-1600	MO116232
<b>3-POLE 66 kA</b>				
800 A	43	66 kA	MO1N-800	MO108332
1000 A	43	66 kA	MO1N-1000	MO110332
1250 A	43	66 kA	MO1N-1250	MO112332
1600 A	43	66 kA	MO1N-1600	MO116332
<b>4-POLE 55 kA</b>				
800 A	50	55 kA	MO1B-4-800	MO108242
1000 A	50	55 kA	MO1B-4-1000	MO110242
1250 A	50	55 kA	MO1B-4-1250	MO112242
1600 A	50	55 kA	MO1B-4-1600	MO116242
<b>4 POLE 66 kA</b>				
800 A	50	66 kA	MO1N-4-800	MO108342
1000 A	50	66 kA	MO1N-4-1000	MO110342
1250 A	50	66 kA	MO1N-4-1250	MO112342
1600 A	50	66 kA	MO1N-4-1600	MO116342

# MO – FRAME SIZE 2 / FIXED-MOUNTED INSTALLATION

## FRAME SIZE 2 TO 3200A – REAR-SIDE CONNECTION, HORIZONTAL



MO225232



Connection, rear view

### SCHRACK INFO

Basic unit without release, factory assembled with selected components and delivered as complete device.

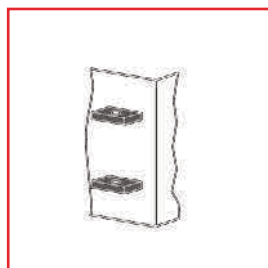
DESCRIPTION	WEIGHT (kg)	I <sub>CU</sub>	TYPE	ORDER NO.
<b>3-POLE 55 kA</b>				
2000 A	56	66 kA	MO2B-2000	MO220232
2500 A	59	66 kA	MO2B-2500	MO225232
<b>3-POLE 80 kA</b>				
800 A	56	80 kA	MO2N-800	MO208332
1000 A	56	80 kA	MO2N-1000	MO210332
1250 A	56	80 kA	MO2N-1250	MO212332
1600 A	56	80 kA	MO2N-1600	MO216332
2000 A	56	80 kA	MO2N-2000	MO220332
2500 A	59	80 kA	MO2N-2500	MO225332
3200 A	64	80 kA	MO2N-3200	MO232332
<b>4-POLE 55 kA</b>				
2000 A	67	66 kA	MO2B-4-2000	MO220242
2500 A	71	66 kA	MO2B-4-2500	MO225242
<b>4-POLE 80 kA</b>				
800 A	67	80 kA	MO2N-4-800	MO208342
1000 A	67	80 kA	MO2N-4-1000	MO210342
1250 A	67	80 kA	MO2N-4-1250	MO212342
1600 A	67	80 kA	MO2N-4-1600	MO216342
2000 A	67	80 kA	MO2N-4-2000	MO220342
2500 A	71	80 kA	MO2N-4-2500	MO225342
3200 A	77	80 kA	MO2N-4-3200	MO232342

# MO – FRAME SIZE 3 / FIXED-MOUNTED INSTALLATION

## FRAME SIZE 3 TO 6300A – REAR-SIDE CONNECTION, HORIZONTAL



MO340432



Connection, rear view

### SCHRACK INFO

Basic unit without release, factory assembled with selected components and delivered as complete device.

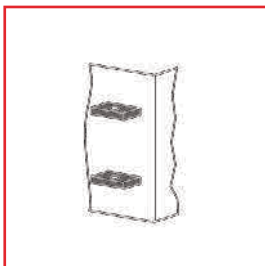
DESCRIPTION	WEIGHT (kg)	I <sub>CU</sub>	TYPE	ORDER NO.
3-POLE 100 kA				
4000 A	82	100 kA	MO3H-4000	MO340432
5000 A	82	100 kA	MO3H-5000	MO350432
6300 A	90	100 kA	MO3H-6300	MO363432
4-POLE 100 kA				
4000 A	99	100 kA	MO3H-4-4000	MO340442
5000 A	99	100 kA	MO3H-4-5000	MO350442
6300 A	100	100 kA	MO3H-4-6300	MO363442

# MO – FRAME SIZE 1 / WITHDRAWABLE MODELS

## FRAME SIZE 1 TO 1600A – WITH GUIDE FRAME, REAR-SIDE CONNECTION, HORIZONTAL



MO116236



Connection, rear view

### SCHRACK INFO

Basic unit without release, factory assembled with selected components and delivered as complete device.

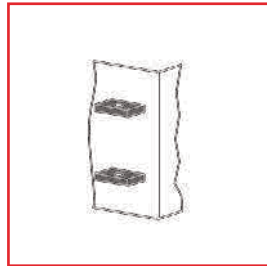
DESCRIPTION	WEIGHT (kg)	I <sub>CU</sub>	TYPE	ORDER NO.
<b>3-POLE 55 kA</b>				
800 A	70	55 kA	MO1B-800	MO108236
1000 A	70	55 kA	MO1B-1000	MO110236
1250 A	70	55kA	MO1B-1250	MO112236
1600 A	70	55 kA	MO1B-1600	MO116236
<b>3-POLE 66 kA</b>				
800 A	70	66 kA	MO1N-800	MO108336
1000 A	70	66 kA	MO1N-1000	MO110336
1250 A	70	66 kA	MO1N-1250	MO112336
1600 A	70	66 kA	MO1N-1600	MO116336
<b>4-POLE 55 kA</b>				
800 A	84	55 kA	MO1B-4-800	MO108246
1000 A	84	55 kA	MO1B-4-1000	MO110246
1250 A	84	55 kA	MO1B-4-1250	MO112246
1600 A	84	55 kA	MO1B-4-1600	MO116246
<b>4-POLE 66 kA</b>				
800 A	84	66 kA	MO1N-4-800	MO108346
1000 A	84	66 kA	MO1N-4-1000	MO110346
1250 A	84	66 kA	MO1N-4-1250	MO112346
1600 A	84	66 kA	MO1N-4-1600	MO116346

# MO – FRAME SIZE 2 / WITHDRAWABLE MODELS

## FRAME SIZE 2 TO 3200A – WITH GUIDE FRAME, REAR-SIDE CONNECTION, HORIZONTAL



MO220236



Connection, rear view

### SCHRACK INFO

Basic unit without release, factory assembled with selected components and delivered as complete device.

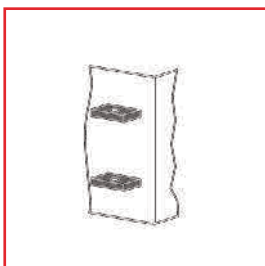
DESCRIPTION	WEIGHT (kg)	$I_{CU}$	TYPE	ORDER NO.
<b>3-POLE 55 kA</b>				
2000 A	91	66 kA	MO2B-2000	MO220236
2500 A	102	66 kA	MO2B-2500	MO225236
<b>3-POLE 80 kA</b>				
800 A	91	80 kA	MO2N-800	MO208336
1000 A	91	80 kA	MO2N-1000	MO210336
1250 A	91	80 kA	MO2N-1250	MO212336
1600 A	91	80 kA	MO2N-1600	MO216336
2000 A	91	80 kA	MO2N-2000	MO220336
2500 A	102	80 kA	MO2N-2500	MO225336
3200 A	113	80 kA	MO2N-3200	MO232336
<b>4-POLE 55 kA</b>				
2000 A	109	66 kA	MO2B-4-2000	MO220246
2500 A	123	66 kA	MO2B-4-2500	MO225246
<b>4-POLE 80 kA</b>				
800 A	109	80 kA	MO2N-4-800	MO208346
1000 A	109	80 kA	MO2N-4-1000	MO210346
1250 A	109	80 kA	MO2N-4-1250	MO212346
1600 A	109	80 kA	MO2N-4-1600	MO216346
2000 A	109	80 kA	MO2N-4-2000	MO220346
2500 A	123	80 kA	MO2N-4-2500	MO225346
3200 A	136	80 kA	MO2N-4-3200	MO232346

# MO – FRAME SIZE 3 / WITHDRAWABLE MODELS

## FRAME SIZE 3 TO 6300A – WITH GUIDE FRAME, REAR-SIDE CONNECTION, HORIZONTAL



MO340436



Connection, rear view

### SCHRACK INFO

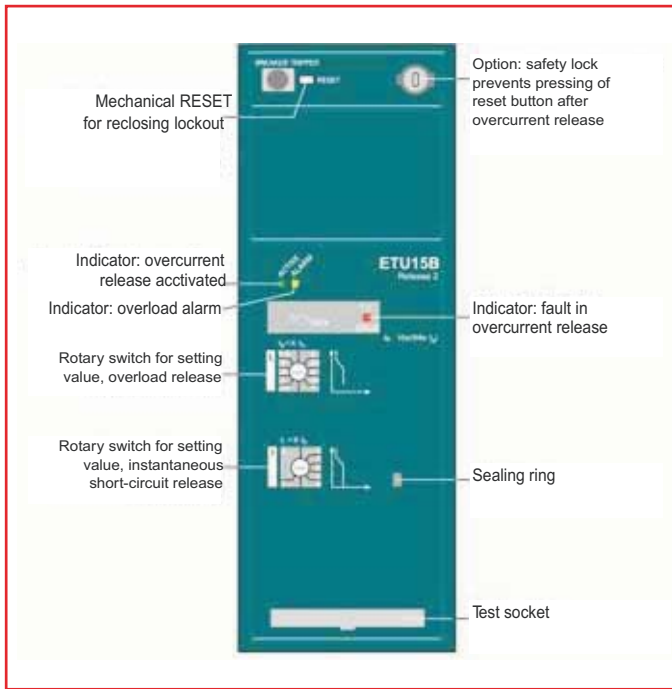
Basic unit without release, factory assembled with selected components and delivered as complete device.

DESCRIPTION	WEIGHT (kg)	$I_{CU}$	TYPE	ORDER NO.
3-POLE 100 kA				
4000 A	148	100 kA	MO3H-4000	MO340436
5000 A	148	100 kA	MO3H-5000	MO350436
6300 A	160	100 kA	MO3H-6300	MO363436
4-POLE 100 kA				
4000 A	190	100 kA	MO3H-4-4000	MO340446
5000 A	190	100 kA	MO3H-4-5000	MO350446
6300 A	227	100 kA	MO3H-4-6300	MO363446



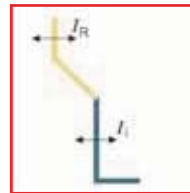
# ACCESSORIES FOR MO

## ELECTRONIC RELEASE ETU15B



### SCHRACK INFO

Basic protection for installations and systems without time-selective grading up to 3200A.

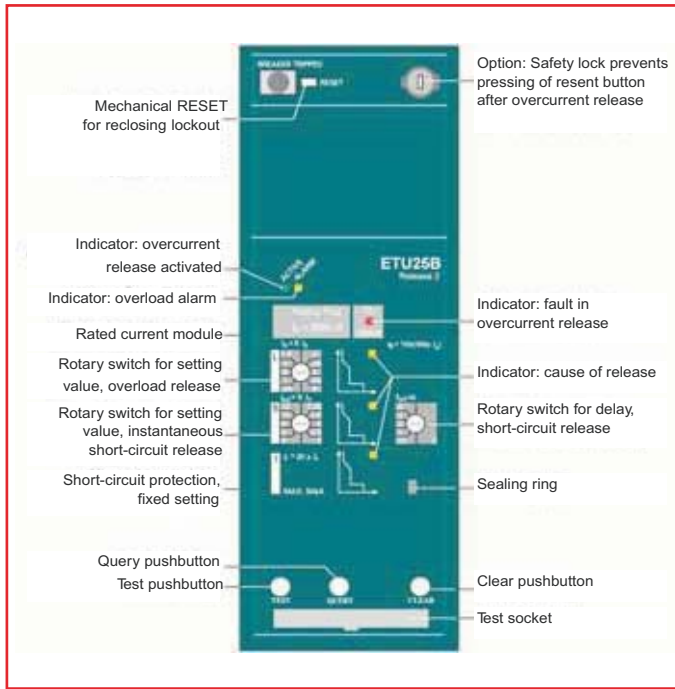


### TECHNICAL DATA

- Adjustable overload release with  $I^2t$  characteristic with fixed time delay  $t_R = 10$  seconds at  $6 \times I_R$
- Instantaneous short-circuit protection, adjustable between  $2...8 \times I_n$
- Overload indicator
- Setting of protective functions by means of rotary switch

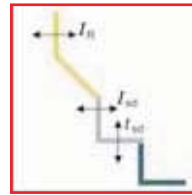
DESCRIPTION	TYPE	ORDER NO. FACTORY INSTALLED
ELECTRONIC RELEASE ETU15B		
With protection function LI	ETU15B	MO890150

## ELECTRONIC RELEASE ETU25B



### SCHRACK INFO

Classic protection for installations, motors and systems using time-selective grading up to 6300A.



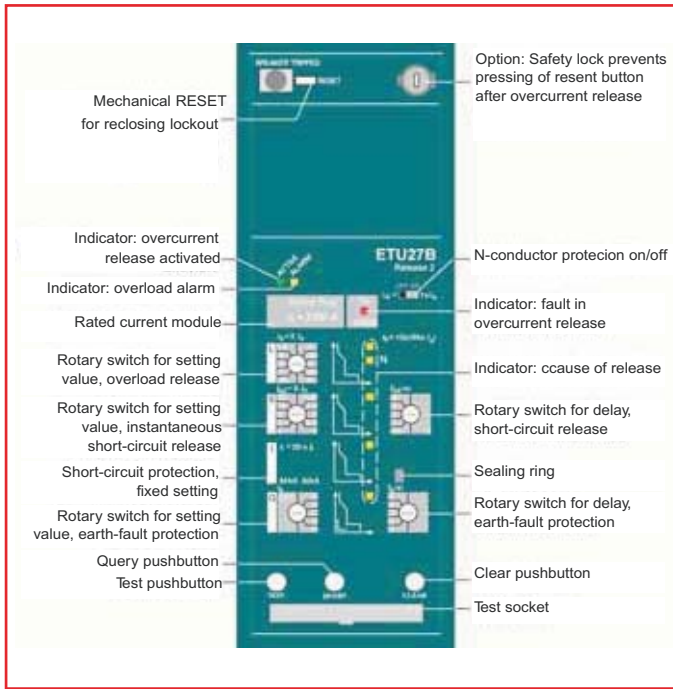
### TECHNICAL DATA

- Adjustable overload release with  $I^2t$  characteristic with fixed time delay  $t_r = 10$  seconds at  $6 \times I_n$
- Short time-delay short-circuit protection, adjustable between  $1,25 \dots 12 \times I_n$  and
- Instantaneous short-circuit protection, fixed to  $20 \times I_n$ , max. 55kA
- Replaceable rating plug allows instant adaptability to the required system currents, thus ensuring overload protection of 100 A to 6300 A
- Overload indicator
- Display of cause of release through LED
- Option for testing the release
- Setting of protective functions by means of rotary switch

DESCRIPTION	TYPE	ORDER NO.
ELECTRONIC RELEASE ETU25B		FACTORY INSTALLED
With protection function LSI	ETU25B	MO890250

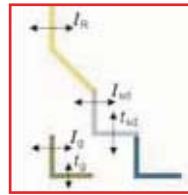
# ACCESSORIES FOR MO

## ELECTRONIC RELEASE ETU27B



### SCHRACK INFO

Classic protection for installations, motors and systems using time-selective grading up to 6300A.

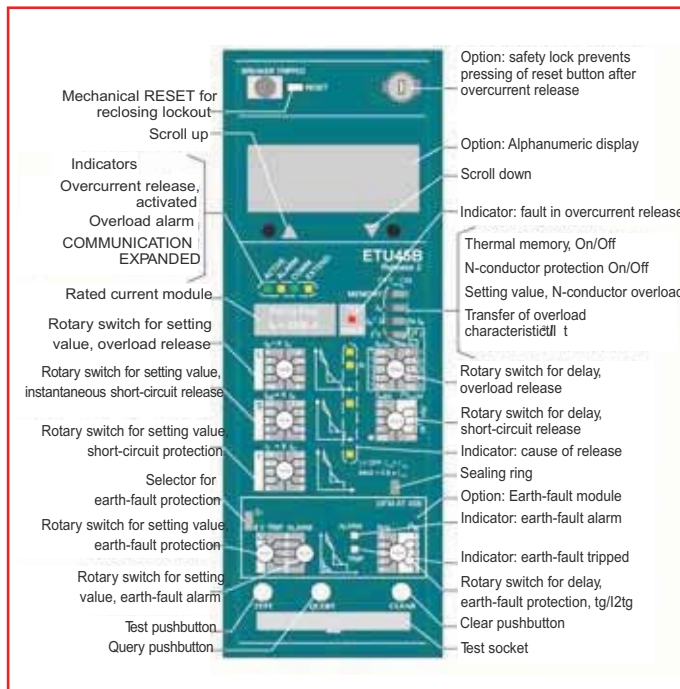


### TECHNICAL DATA

- Adjustable overload release with  $I^2t$  characteristic with fixed time delay  $t_r = 10$  seconds at  $6 \times I_n$
- Short time-delay short-circuit protection, adjustable between  $1,25 \dots 12 \times I_n$  and
- Instantaneous short-circuit protection, fixed to  $20 \times I_n$ , max. 55kA
- Replaceable rating plug allows instant adaptability to the required system currents, thus ensuring overload protection of 100 A to 6300 A
- Overload indicator
- Display of cause of release through LED
- Option for testing the release
- Connectable neutral conductor protection
- Permanently integrated earth-fault protection for the calculation of the earth-fault current through vectorial current summation
- Current transformer for N conductor has to be ordered separately
- Setting of protective functions by means of rotary switch

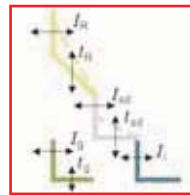
DESCRIPTION	TYPE	ORDER NO. FACTORY INSTALLED
ELECTRONIC RELEASE ETU27B		
With protection function LSING	ETU27B	MO890270

## ELECTRONIC RELEASE ETU45B



### SCHRACK INFO

An inexpensive allrounder for intelligent installations and all sorts of industrial applications – “Internal Cubicle BUS”.



### TECHNICAL DATA

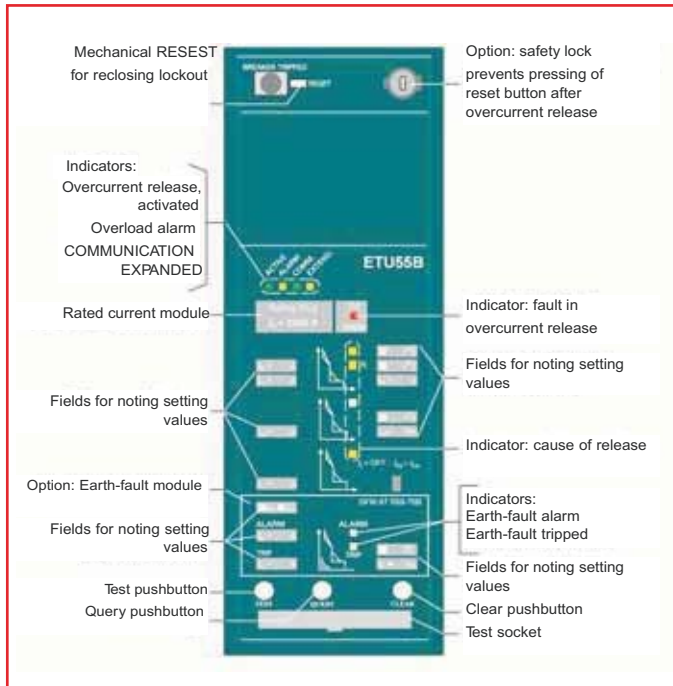
- Adjustable overload release with  $I^2t$  characteristic with fixed time delay  $t_R = 10$  seconds at  $6 \times I_n$
- Short time-delay short-circuit protection, adjustable between  $1,25 \dots 12 \times I_n$  and
- Instantaneous short-circuit protection, fixed to  $20 \times I_n$ , max. 55kA
- Replaceable rating plug allows instant adaptability to the required system currents, thus ensuring overload protection of 100 A to 6300 A
- Overload indicator
- Display of cause of release through LED
- Option for testing the release
- Adjustable time-lag class for overload protection
- Switch-selectable characteristic of the overload and short-time delay short-circuit range (current discriminate) for finer selective conditioning to downstream fuses or protective devices
- Thermal memory as restart protection in the case of tripped motor circuits
- Connectable and adjustable neutral conductor protection
- Modular earth-fault protection, with separately adjustable alarm and trip function
- Communication interface, metering function (Plus), connection of external modules as option or retrofit option
- Optional high-contrast display with viewing angle adjustment
- Setting of protective functions by means of rotary switch or slide switch

DESCRIPTION	TYPE	ORDER NO.
FACTORY INSTALLED		
ELECTRONIC RELEASE ETU45B		
With LSIN protective function, excl. display	ETU45B	MO890450
With LSING protective function incl.earth-fault protection unit, excldisplay	ETU45B	MO89045G
With LSIN protective function, incl. display	ETU45B	MO89D450
With LSING protective function incl.earth-fault protection unit, incl. display	ETU45B	MO89D45G

Order current converter for N conductor protection, and current converter for sensing ground fault current in earthed neutral conductor of transformer separately. The internal transformers for neutral conductors can be ordered by adding a “Z” and short order code “F23”.

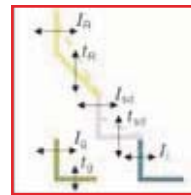
# ACCESSORIES FOR MO

## ELECTRONIC RELEASE ETU55B



### SCHRACK INFO

The release for special safety requirements when it comes to adjustability with an exclusive external parameterisation input for generator- and motor protection, industrial applications – “internal Cubicle BUS”.



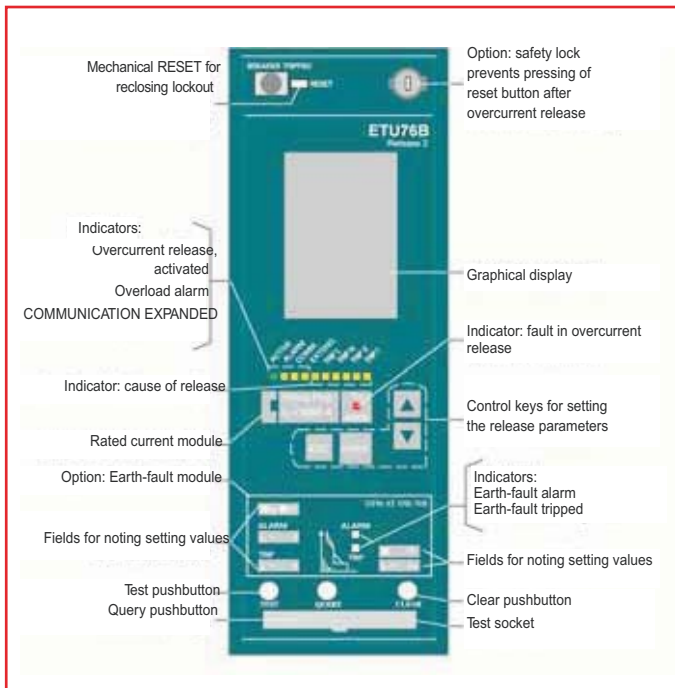
### TECHNICAL DATA

- Adjustable overload release with  $I^2t$  characteristic with fixed time delay  $t_R = 10$  seconds at  $6 \times I_R$
- Short time-delay short-circuit protection, adjustable between  $1,25 \dots 12 \times I_n$
- Instantaneous short-circuit protection, fixed to  $20 \times I_n$ , max. 50kA
- Replaceable rating plug allows instant adaptability to the required system currents, thus ensuring overload protection of 100 A to 6300 A
- Overload indicator
- Display of cause of release through LED
- Option for testing the release
- Adjustable time-lag class for overload protection
- Switch-selectable characteristic of the overload and short-time delay short-circuit range (current discriminate) for finer selective conditioning to downstream fuses or protective devices
- Thermal memory as restart protection in the case of tripped motor circuits
- Connectable and adjustable neutral conductor protection
- Modular earth-fault protection, with separately adjustable alarm and trip function
- Communication interface, metering function (Plus), connection of external modules as option or retrofit option
- Optional high-contrast display with viewing angle adjustment
- Two protective parameter sets that can be stored separately in the release (switch selectable through external signal)
- Overload protection that can be switched off for use with modern operating mechanism technology
- Adjustable lag of the delayed short-circuit protection up to 4000 ms
- Neutral conductor protection adjustable to  $I_N = 2 \times I_n$
- Setting of protective functions by means of Breaker Data Adapter or through communication interface

DESCRIPTION	TYPE	ORDER NO.
		FACTORY INSTALLED
ELECTRONIC RELEASE ETU45B		
With protection function LSIN	ETU55B	MO890455
With LSING protective function incl. earth-fault protection unit	ETU5 5B	MO89055G

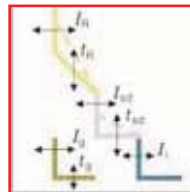
Order current converter for N conductor protection, and current converter for sensing ground fault current in earthed neutral conductor of transformer separately. The internal transformers for neutral conductors can be ordered by adding a "Z" and short order code "F23".

## ELECTRONIC RELEASE ETU76B



### SCHRACK INFO

The multitasking system with graphical display for network analysis – “integrated Cubicle BUS”.



### TECHNICAL DATA

- Adjustable overload release with  $I^2t$  characteristic with fixed time delay  $t_r = 10$  seconds at  $6 \times I_n$
- Short time-delay short-circuit protection, adjustable between  $1,25 \dots 12 \times I_n$
- Instantaneous short-circuit protection, fixed to  $20 \times I_n$ , max. 50kA
- Replaceable rating plug allows instant adaptability to the required system currents, thus ensuring overload protection of 100 A to 6300 A
- Overload indicator
- Display of cause of release through LED
- Option for testing the release
- Adjustable time-lag class for overload protection
- Switch-selectable characteristic of the overload and short-time delay short-circuit range (current discriminate) for finer selective conditioning to downstream fuses or protective devices
- Thermal memory as restart protection in the case of tripped motor circuits
- Connectable and adjustable neutral conductor protection
- Modular earth-fault protection, with separately adjustable alarm and trip function
- Communication interface, metering function (Plus), connection of external modules as option or retrofit option
- Two protective parameter sets that can be stored separately in the release (switch selectable through external signal)
- Overload protection that can be switched off for use with modern operating mechanism technology
- Adjustable lag of the delayed short-circuit protection up to 4000 ms
- Neutral conductor protection adjustable to  $I_N = 2 \times I_n$
- Setting of protective functions by means of Breaker Data Adapter or through communication interface
- Graphical display of all parameters and event/curve characteristics
- Storage of event and causes of release for specific error analysis
- High contrast, background-lit graphical display with sleep mode

DESCRIPTION	TYPE	ORDER NO. FACTORY INSTALLED
<b>ELECTRONIC RELEASE ETU76B</b>		
With protection function LSIN	ETU76B	MO890760
With LSING protective function incl. earth-fault protection unit	ETU76B	MO89076G

Order current converter for N conductor protection, and current converter for sensing ground fault current in earthed neutral conductor of transformer separately. The internal transformers for neutral conductors can be ordered by adding a “Z” and short order code “F23”.

# ACCESSORIES FOR MO

## TRANSFORMER FOR N CONDUCTOR

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Internal transformers for Neutral conductor – includes wiring kit		
Frame size 1	MO90AA11	MO810F23
Frame size 2	MO90AA12	MO820F23
Frame size 3	MO90AA13	MO830F23
External transformer for N conductor		
Frame size 1	MO90AA21	–
Frame size 2	MO90AA22	–
Frame size 3	MO90AA23	–
External transformer for N conductor with connection pieces		
Frame size 1	MO90AA31	–
Frame size 2	MO90AA32	–
Frame size 3	MO90AA33	–

## AUTOMATIC RESET OF THE RECLOSING LOCKOUT

### SCHRACK INFO

If the ETU is released the circuit-breaker cannot be reclosed until the release has been either electrically or manually reset. With the option “automatic reset of the reclosing lockout”, the circuit-breaker is ready-to-close immediately after a release. The reset of the manual trip indicator is not contained in this option.

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Lead sealable cover plate for ETU15B to ETU55B	MO90AT45	–
Lead-sealable cover plate for ETU76	MO90AT46	–
Automatic reset of the reclosing lock out	MO90AK21	MO800K01
Remote reset magnet– for mechanical trip display DC 24 V	MO90AK03	MO800K10
Remote reset magnet– for mechanical trip display AC 208-240 V/DC 220–250 V	MO900AK06	MO800K13
Retrofittable internal Cubicle BUS wiring for connection to Terminal X8 – (male connectors not included) for ETU45B to ETU76B	MO90AK30	–
Retrofittable internal wiring for connecting external N- and G transformers to Terminal X8 (male connectors not included)	MO90AK31	–



## LOCKING DEVICES

### SCHRACK INFO

#### “Safe OFF“ switch-independent interlock device to prevent unauthorised closing

This special feature available for draw-out circuit breakers prevents closing independently of the switch, thus satisfying main switch conditions to EN 60204 (VDE 0113) - Mains disconnecting equipment. Unauthorised closing is not possible after replacement of the circuit breaker. The circuit breaker must be switched off to activate the interlock. The interlock device is blocked when the circuit breaker is switched on. The blocking is only effective when the key has been removed. The safety key can only be removed in the “OFF” position.

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Locking device against unauthorised closing, in operator panel Mains equipment meets EN 60204 (VDE 0113) regulations for main switches.		
Installation kit FORTRESS or CASTELL	MO900BA31	–
Made by Ronis	MO90BA33	MO800S08
Made by KIRK-Key	MO90BA34	–
Made by Profalux	MO90BA35	MO800S09
Made by CES	MO90BA36	MO800S01
Made by IKON	MO90BA38	MO800S03
Installation kit for padlocks	MO90BA41	MO800S07

Locking device against unauthorised closing, for draw-out circuit breaker

Mains equipment meets EN 60204 (VDE 0113) regulations for main switches, comprising lock in cabinet door, effective in operating position, the function remains the same when replacing the switch.

Made by CES	MO90BA51	MO800R61
Made by IKON	MO90BA53	–
Made by KIRK key	MO90BA57	–
Made by Ronis	MO90BA58	MO800R68
Made by Profalux	MO90BA50	MO800R60

Locking device for operator lever using padlock

Locking device for operating lever (padlock not included)	MO90BA71	MO800S33
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Lock device to prevent movement of withdrawable circuit breaker – Safety lock for mounting on switch

Made by CES	MO90BA73	MO800S71
Made by IKON	MO90BA75	–
Made by Profalux	MO90BA76	MO800S75
Made by Ronis	MO90BA77	MO800S76

## SEALING CAP FOR MECHANICAL ON/OFF

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Protective covers for mechanical ON/OFF each comprising 2 transparent covers for sealing or attachment of padlocks, Cover with 6,35 mm bore (for tool actuation), lock mount for safety lock for key operation		
Lock not included	MO90BA21	–
Made by CES	MO90BA22	–
Made by IKON	MO90BA24	–



# ACCESSORIES FOR MO

## LOCKING MECHANISMS

### SCHRACK INFO

#### Locking device against moving if the cubicle door is open for withdrawable circuit-breakers

The crank handle is blocked if the cubicle door is open and cannot be withdrawn. It is not possible to move withdrawable circuit-breakers. The blocking is only effective if the crank handle is inserted.

#### Interlocking of cubicle door

The cubicle door cannot be opened if the

- fixed-mounted circuit-breaker is closed (transmission of the locking signal by means of Bowden wire) or
- if the withdrawable circuit-breaker is in connected position

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Prevents movement of draw-out circuit breaker in disconnect position comprising Bowden cable and lock in cabinet door		
Made by CES	MO90BA81	MO800R81
Made by IKON	MO90BA83	–
Made by Profalux	MO90BA85	MO800R85
Made by Ronis	MO90BA86	MO800R86
Installation kit for padlocks	MO90BA87	–
Prevents opening of cabinet door in ON position (defeatable)		
For permanent installation	MO90BB12	MO800R30
Prevents opening of cabinet door in ON position (defeatable)		
For guide frame	MO90BB13	MO800S30
Prevents movement while cabinet door open		
For guide frame	MO90BB15	MO800R50

## MECHANICAL INTERLOCK

### SCHRACK INFO

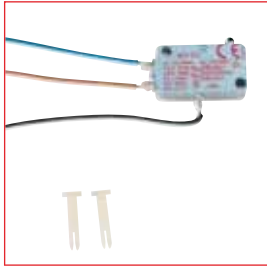
#### Mutual mechanical circuit-breaker interlocking

The module for mutual mechanical interlocking can be implemented for two or three circuit-breakers and is simple to adapt to the respective version. Fixed-mounted and withdrawable circuit-breakers are compatible and can be implemented together in a single system.

The circuit-breakers can be installed either next to one another or on top of one another, whereby the distance between circuit-breakers is determined only by the length of the Bowden wire.

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Mutual mechanical interlock, with Bowden cable 2000 mm (one required per circuit breaker)		
Module for fixed-mounted circuit breakers	MO90BB21	MO800S55
Module for draw-out circuit breaker with frame. To be ordered separately.	MO90BB24	MO800R55
Module for guide frame. To be ordered separately.	MO90BB22	MO800R56
Module for draw-out circuit breaker. To be ordered separately.	MO90BB23	MO800R57
Bowden cable		
2000 mm	MO90BB45	–
3000 mm	MO90BB46	–
4500 mm	MO90BB47	–

## SIGNALISATION AND CONTROL



MO90AH01

### SCHRACK INFO

#### Ready-to-close signalling switch

MO circuit breaker come with a visual ready-to-close signal indicator as standard. The option is also available to indicate ready-to-close using a signalling switch. This signalling switch is included as standard for switches operated via a communications interface.

#### Signalling switch for auxiliary release

One signalling contact is available per auxiliary release for polling switch status of the auxiliary releases.

#### Tripped signal switch

In the event that the circuit breaker tripped due to an overload, short-circuit, earth-fault or extended protection function, this can be indicated with a tripped signal switch. This indicator switch is available as an option. This signalling switch is included as standard for circuit breakers operated via a communications interface.

#### Operating cycle counter

A 5-digit operating cycle counter is available in connection with the motor operator. The counter increments by "1" once the storage spring is fully charged.

#### "Electrical ON" button

Used for the electrical switch-on of the circuit breaker via a local, electrical "ON" or remote operation.

#### Sealable cap covers "Electrical ON" button

The "Electrical ON button" comes with a sealable cap as standard.

#### Motor cut off switch

Rotary switch for switching off (automatic charging) of motor operator.

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Ready-to-close signalling switch	MO90AH01	MO800C22
Signalling switch, 1st auxiliary release	MO90AH02	MO800C26
Signalling switch, 2nd auxiliary release	MO90AH03	MO800C27
Tripped signal switch	MO90AH04	MO800K07
Mechanical operating cycle counter	MO90AH07	MO800C01
Stored energy status signalling switch	MO90AH08	MO800C20
Position indicator switch for guide frame, 1st block (3rd microswitch)	MO90AH11	MO800R15
Position indicator switch for guide frame, 2nd block (6th microswitch)	MO90AH12	MO800R16
Electical ON button (button+wiring) with sealable cap	MO90AJ02	MO800C11
Electical ON button (button+wiring) with CES installation kit	MO90AJ03	MO800C12
Motor cut-off switch, assembly on operator panel	MO90AJ06	MO800S25
EMERGENCY OFF button, mushroom button instead of mechanical OFF button	MO90BA72	MO800S24

# ACCESSORIES FOR MO

## 1ST AUXILIARY RELEASE AFTER ETU



MO90AD01

### SCHRACK INFO

Up to two auxiliary release switches can be installed at the same time. The 1st release must always be a shunt release. 2nd auxiliary release see below

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Shunt release		
DC 24 V – 100 % ED	MO90AD01	MO890B00
DC 30 V	MO90AD02	MO890C00
DC 48 V	MO90AD03	MO890D00
DC 60 V	MO90AD04	MO890E00
DC 110 V/AC 110 V	MO90AD05	MO890F00
DC 220 V/AC 230 V	MO90AD06	MO890G00

## 2ND AUXILIARY RELEASE AFTER ETU



MO90AD01

### SCHRACK INFO

#### Possible combinations:

1 shunt release or 1 undervoltage release  
 or 2 shunt releases  
 or 1 shunt release + 1 undervoltage release.

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Shunt release		
DC 24 V – 100 % ED	MO90AD01	MO8900B0
DC 30 V	MO90AD02	MO8900C0
DC 48 V	MO90AD03	MO8900D0
DC 60 V	MO90AD04	MO8900E0
DC 110 V/AC 110 V	MO90AD05	MO8900F0
DC 220 V/AC 230 V	MO90AD06	MO8900G0

Undervoltage release – undelayed ( $\geq 80\text{ms}$ ), short time-delayed ( $\leq 200\text{ms}$ )

DC 24 V	MO90AE01	MO8900J0
DC 30 V	MO90AE02	MO8900K0
DC 48 V	MO90AE03	MO8900L0
DC 60 V	MO90AE07	MO8900U0
DC 110-125 V/AC 110-127 V	MO90AE04	MO8900M0
DC 220-250 V/AC 208-240 V	MO90AE05	MO8900N0
AC 380-415 V	MO90AE06	MO8900P0

Undervoltage release – time-delayable 0,2 s to 3,2 sec

DC 48 V	MO90AE11	MO8900Q0
DC 110-125 V/AC 110-127 V	MO90AE12	MO8900R0
DC 220-250 V/AC 208-240 V	MO90AE13	MO8900S0
AC 380-415 V	MO90AE14	MO8900T0

## MOTOR OPERATOR



MO90AF04

### SCHRACK INFO

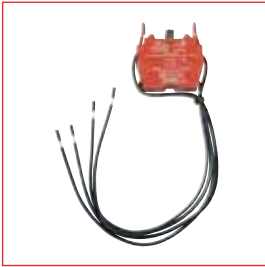
For automatic charging of the stored energy mechanism.

Is switched on when the stored energy mechanism is released and the control voltage is available.

Automatically switches off after charging. Manual actuation of the storage can function independently

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Motor operator DC 220-250 V/AC 208-240 V	MO90AF04	MO894000
Motor operator DC 110-125 V/AC 110-127 V	MO90AF03	MO895000
Motor operator DC 24-30 V	MO90AF01	MO896000
Closing solenoid 110 V AC/DC	MO90AD05	MO892000
Closing solenoid 220 V AC/DC	MO90AD06	MO893000

## AUXILIARY CONTACTS



MO90A401

### SCHRACK INFO

- Always includes 2 N/O + 2 N/C

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
2 N/O + 2 N/C additionally	MO90AG01	MO890004
4 N/O additionally	–	MO890007
3 N/O + 1 N/C additionally	–	MO890008
2 N/O additionally	MO90AG02	–
1 N/O + 1 N/C additionally	MO90AG03	–

## DOOR SEALING FRAME, COVER



MO800T40

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Door sealing frame	MO90AP01	MO80T400
Safety cover IP55 is not for use in combination with door sealing frame, removable cover is opened from both sides	MO90AP02	–

# ACCESSORIES FOR MO

## SHUTTER

### SCHRACK INFO

The cover strips of the shutter lock the laminated contacts of the guide frame if the withdrawable circuit-breaker is withdrawn so that they fulfil the function of a touch guard.

The cover strips can be manually opened with the strip lifter.

The cover strips can be fixed in different positions with padlocks and protected from unauthorized manipulation.

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Shutter 3 pole		
Frame size 1	MO90AP04	MO810R21
Frame size 2	MO90AP06	MO820R21
Frame size 3	MO90AP07	MO830R21
Shutter 4 pole		
Frame size 1	MO90AP08	MO814R21
Frame size 2	MO90AP11	MO824R21
Frame size 3	MO90AP12	MO834R21

## ARC CHUTE COVER/SHUTTER

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Arc chute cover Parts set for guide frame, 3 pole		
Frame size 1	MO90AS32	MO810R10
Frame size 2	MO90AS36	MO820R10
Frame size 3	MO90AS38	MO830R10
Arc chute cover Parts set for guide frame, 4 pole		
Frame size 1	MO90AS42	MO814R10
Frame size 2	MO90AS44	MO824R10
Frame size 3	MO90AS46	MO834R10

## SUPPORT BRACKET

### SCHRACK INFO

For mounting fixed-installed circuit breakers vertically, for frame sizes 1 and 2 only (1 set = 2 pcs.).

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Support bracket, frame size 1/2	MO90BB50	–

## CUBICLE BUS MODULES

DESCRIPTION	ORDER NO.	ORDER NUMBER
	AS SPARE PART	FACTORY INSTALLED
Digital output module with rotary coding switch, relay outputs	MO90AT26	–
Digital output module, configurable, relay outputs	MO90AT20	–
Digital input module	MO90AT27	–
Analogue output module	MO90AT23	–
ZSS module	MO90AT21	–

## PARAMETERISATION SYSTEMS, COMMUNICATION

DESCRIPTION	ORDER NO.
Breaker Data Adapter (BDA)	
Parameterisation, operation, monitoring and diagnosis of SENTRON circuit breakers via the local interface: Breaker Data Adapter, connecting cable to SENTRON 3WL circuit breakers and to programming device (e.g. laptop); runs on Internet Explorer with JAVA2 VM 1.4.0-01	MO90AT28
BDA Plus	
Same as BDA, also with Ethernet interface for connection to Ethernet/Intranet/Internet	MO90AT33
Connecting cable for BDA Plus	
Conencting cable for connection of BDA Plus to Terminal X8 on SENTRON 3WL circuit breaker. Required when a COM 15 or other external CUBICLE BUS modules are not present, 2 m in length.	MO90BC21
Switch ES Power parameterisation software	
Parameterisation, operation, monitoring and diagnosis of SENTRON circuit breakers via the PROFIBUS DB; Runs on Windows95, Windows98, WindowsNT, Windows2000 and Windows XP Professional also requires additional PROFIBUS card, e.g. CP5613	MO90CC10

## ACCESSORIES FOR COMMUNICATION

DESCRIPTION	ORDER NO.
Pre-assembled cables for Cubicle BUS modules	
0,2 m long, for connection to SENTRON 3WL with COM15	MO90BC04
1 m long, for connection to SENTRON 3WL with COM15	MO90BC02
2 m long, for connection to SENTRON 3WL with COM15	MO90BC03
2 m long, for connection to SENTRON 3WL without COM15	MO90BC05
Voltage transformer, 3-pole for SENTRON 3WL with Plus measurment function	
230 V/100 V, Class 0,5	MO90BB70
380-630 V/100 V, Class 0,5	MO90BB68

## RETROFFITING AND REPLACEMENT PARTS

DESCRIPTION	ORDER NO.
PROFIBUS retrofit kit	
Retrofit kit for PROFIBUS communication includes COM15, BSS and cable kit for all MO circuit breakers of 3WL type with ETU45B, ETU55B and ETU76B releases	MO90AT12
COM15 PROFIBUS Module	MO90AT15
Breaker Status Sensor (BSS)	MO90AT16
Plus measurement function (requires voltage transformer)	MO90AT03