## Merz ML Series Non-Fusible Disconnect Switches



## Compact Switches

UL 508/UL 60947 manual motor controllers have been additionally rated for use as motor disconnects. They are also known as compact switches in Europe.
The term "compact switch" is a common one in the industry and describes a particular approach to the design of disconnect switches - specifically, ON/OFF switches arranged for switchboard installation.

In the majority of cases the switches are designed for snapon DIN rail mounting, base mounting or front mounting in a door. The terminal screws are all accessible from one side. ML1 Compact Switches are available for applications from 16A to 40A. For more demanding applications loads, the ML2 to ML3 series accommodates loads from 63A up to 125A.
Technical details for units in these series are covered in the following pages.

## Typical Control Panel

UL 98 or UL 489
Non-fusible disconnect switches
or
Fusible disconnect switches

UL 508
Non-Fusible Switches
, (14) ${ }^{\text {us }}$
C

## Agency Approvals

UL Listed File, E195426
Standards: UL 508, UL 60947-1 and UL 60947-4-1
Cam Switches CSA only file 025483_0_000
CE: 2014/35/EU LVD
2014/30/EU EMC
2011/65/EU RoHs

## Merz UL 508 Non-Fusible Disconnect Switches DIN Rail Mount

To assemble a switch, please select:


Switch Body


Switch Body


External Handle


Shaft


External Handle

Merz UL 508 Non-Fusible Manual Motor Controller Switches - DIN Rail Mount

| Part Number | Price | Description | Switch Body Rating (A) | Poles | Drawing Link |
| :---: | :---: | :---: | :---: | :---: | :---: |
| ML1-016-V-A01 |  | Non-fusible UL 508 / UL 60947 600VAC manual motor controller | 16 | 3 | PDF |
| ML1-025-V-A01 |  |  | 25 |  | PDF |
| ML1-032-V-A01 |  |  | 32 |  | PDF |
| ML1-040-V-A01 |  |  | 40 |  | PDF |
| ML2-063-V-A02 |  |  | 63 |  | PDF |
| ML2-080-V-A02 |  |  | 80 |  | PDF |
| ML3-125-V-A02 |  |  | 125 |  | PDF |

# Merz UL 508 Non-Fusible Disconnect Switches DIN Rail Mount - Accessories 

| Lockable Handles |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Part Number | Price | Description | Type | Color | Mounting | NEMA/UL Type | Use With | Drawing Link |
| H05R |  | Two-position, lockable in OFF only | Round | Red/yellow | External front mount | NEMA 4/4X | Merz ML1 switch bodies in DIN rail applications with hinged doors. | PDF |
| H05B |  | Two-position, lockable in OFF only | Round | Black/gray | External front mount | NEMA 4/4X | Merz ML1 switch bodies in DIN rail applications with hinged doors. | PDF |
| H06R |  | Two-position, lockable in OFF only | Round | Red/yellow | External front mount | NEMA 4/4X | Merz ML2 and ML3 switch bodies in DIN rail applications with hinged doors. | PDF |
| H06B |  | Two-position, lockable in OFF only | Round | Black/gray | External front mount | NEMA 4/4X | Merz ML2 and ML3 switch bodies in DIN rail applications with hinged doors. | PDF |
| H01R |  | Two-position, lockable in OFF only | Round | Red/yellow | External front mount | NEMA 4/4X | Merz ML1 switch bodies in DIN rail applications with non-hinged doors. | PDF |
| H01B |  | Two-position, lockable in OFF only | Round | Black/gray | External front mount | NEMA 4/4X | Merz ML1 switch bodies in DIN rail applications with non-hinged doors. | PDF |
| H02R |  | Two-position, lockable in OFF only | Round | Red/yellow | External front mount | NEMA 4/4X | Merz ML2 and ML3 switch bodies in DIN rail applications with non-hinged doors. | PDF |
| H02B |  | Two-position, lockable in OFF only | Round | Black/gray | External front mount | NEMA 4/4X | Merz ML2 and ML3 switch bodies in DIN rail applications with non-hinged doors. | PDF |
| H10B |  | Two-position, lockable in OFF only | Pistol | Black/gray | Direct mount | NEMA 1 | Merz ML1 switch bodies in DIN rail applications. On-off faceplate included. | PDF |
| H10R |  | Two-position, lockable in OFF only | Pistol | Red/yellow | Direct mount | NEMA 1 | Merz ML1 switch bodies in DIN rail applications. On-off faceplate included. | PDF |
| H11B |  | Two-position, lockable in OFF only | Pistol | Black/gray | Direct mount | NEMA 1 | Merz ML2 switch bodies in DIN rail applications. On-off faceplate included. | PDF |
| H11R |  | Two-position, lockable in OFF only | Pistol | Red/yellow | Direct mount | NEMA 1 | Merz ML2 switch bodies in DIN rail applications. On-off faceplate included. | PDF |
| H12B |  | Two-position, lockable in OFF only | Pistol | Black/gray | Direct mount | NEMA 1 | Merz ML3 switch bodies in DIN rail applications. On-off faceplate included. | PDF |
| H12R |  | Two-position, lockable in OFF only | Pistol | Red/yellow | Direct mount | NEMA 1 | Merz ML3 switch bodies in DIN rail applications. On-off faceplate included. | PDF |

## Adjustable Shatits for External Handles

\(\left.\begin{array}{|l|c|c|c|c|c|}\hline Part Number \& Price \& Description \& \begin{array}{c}Length <br>

(mm[in])\end{array} \& Use With\end{array}\right]\)| Drawing Link |
| :---: |
| AL-165 |

NOTE: Shaft supports are necessary for extension of AL-265 and AL-365.

## Merz UL 508 Non-Fusible Disconnect Switches

## Accessories

Merz UL 508 Additional Pole Modules (For Use with Merz MLx Switch Bodies in DIN Rail Applioations)

| Part Number | Price | Description | Module Rating (A) | Use With | Drawing Link |
| :---: | :---: | :---: | :---: | :---: | :---: |
| SK1-V |  | Fourth pole module (load break capable) | 40A | ML1 switch bodies | PDF |
| SK2-V |  | Fourth pole module (load break capable) | 80A | ML2 switch bodies | PDF |
| SK3-V |  | Fourth pole module (load break capable) | 125A | ML3 switch bodies | PDF |
| PE1-V |  | Ground pole module | 40A | ML1 switch bodies | PDF |
| PE2-V |  | Ground pole module | 80A | ML2 switch bodies | PDF |
| PE3-V |  | Ground pole module | 125 A | ML3 switch bodies | PDF |
| N1-V |  | Solid neutral pole module | 40A | ML1 switch bodies | PDF |
| N2-V |  | Solid neutral pole module | 80A | ML2 switch bodies | PDF |
| N3-V |  | Solid neutral pole module | 125A | ML3 switch bodies | PDF |


| Merz UL 508 Auxiliary Contact |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Partumber | Price | Descripion | Rating | Drawing Link |
| AUX1-V |  | $1 \mathrm{NO} / 1 \mathrm{NC}$ auxiliary contacts, left or right side mount For use with Merz ML1, ML2 or ML3 DIN rail mount switch bodies | $10 \pm \propto$ bovac | P0F |


| MerZ UL 508 Terminal |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Part Number | Price | Description | Rating | Drawing Link |  |
| $\underline{2 K L-V}$ |  | 2-pole solid feed-through terminal, left or right side mount <br> For use with Merz ML1, ML2 or ML3 DIN rail mount switch bodies <br> -A01, -A02, -E01R, -E02R, E03R, -E04R, -E05R | $10 \mathrm{~A} @ 600 \mathrm{VAC}$ | PDF |  |

## Optional contact, auxiliary contact, and terminal 2-pole



## Optional contact/terminal

Max. 2NV/SK
In total max 3 contacts
+max 1 PE terminal
+max 1 N terminal


Optional contact/auxiliary contact/terminal

Max. 2NV/SK/AUX11
In total max 3 contacts
+max 1 PE terminal
+max 1 N terminal


Optional contact/auxiliary contact/terminal 2-pole/terminal

Max. 2NV/SK/AUX11
In total max 3 contacts
+max 2 2KL terminal 2-pole
+max 1 PE terminal

+ max 1 N terminal


# Merz UL 508 Non-Fusible Disconnect Switches With External Handle, Front Door Mount 



Wire connections accessible from the rear

Switch Body With Front External Handle

| Merz UL 508 Non-Fusible Disconnect Switches - With External Handle, Front Mount |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Part Number | Price | Description | Switch Body Rating (A) | Poles | Handle | Drawing Link |
| ML1-016-E-H03R |  | Non-fusible UL 508 / UL 60947 manual motor controller 600VAC "suitable as motor" disconnect switch | 16 | 3 | Red/yellow | PDF |
| ML1-016-E-H03B |  |  | 16 |  | Black/gray | PDF |
| ML1-025-E-H03R |  |  | 25 |  | Red/yellow | PDF |
| ML1-025-E-H03B |  |  | 25 |  | Black/gray | PDF |
| ML1-032-E-H03R |  |  | 32 |  | Red/yellow | PDF |
| ML1-032-E-H03B |  |  | 32 |  | Black/gray | PDF |
| ML1-040-E-H03R |  |  | 40 |  | Red/yellow | PDF |
| ML1-040-E-H03B |  |  | 40 |  | Black/gray | PDF |
| ML2-063-E-H04R |  |  | 63 |  | Red/yellow | PDF |
| ML2-063-E-H04B |  |  | 63 |  | Black/gray | PDF |

NOTE: Hardware for 4-hole door mounting and lockable handle for use with NEMA 4/4X enclosures included

| Merz UL 508 Auxiliary Contact |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Part Number | Price | Description | Rating | Drawing Link |
| AUX11-E |  | Auxiliary contact, left or right side mount, 1 NO / 1 NC contacts For use with Merz ML1, ML2 or ML3 door mount switch bodies -H03R(B), -H04R(B) | 10A@ 600VAC | PDF |


| Merz UL 508 Terminal |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Part Number | Price | Description | Rating | Drawing Link |
| 2KL-E |  | 2-pole solid feed-through terminal, left or right side mount <br> For use with Merz ML1, ML2 or ML3 door mount switch bodies -H03R(B), -H04R(B) | 10A @ 600VAC | PDF |

## Merz UL 508 Non-Fusible Disconnect Switches With Enclosure



Switch Body With Enclosure

## General characteristics

- Gray enclosure with red handle
- Equipped with a 3-pole Merz ML1, ML2 or ML3 disconnect
- 1 removable ground terminal
- Possibility of adding 1 power pole and 1 auxiliary contact
- Operating temperature max $45^{\circ} \mathrm{C}$ or $55^{\circ} \mathrm{C}\left[113^{\circ} \mathrm{F}\right.$ or $\left.131^{\circ} \mathrm{F}\right]$
- Operating temperature min $-5^{\circ} \mathrm{C}\left[23^{\circ} \mathrm{F}\right]$
- Polycarbonate plastic enclosure
- NEMA/UL Type 1, 3R, 4, 4X

| Merz UL 508 Non-Fusible Disconnect Switches - With Enclosure |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Part Number | Price | Description | Enclosure Rating (A) | Poles | $\begin{gathered} \text { Enclosure } \\ \text { Size } \\ \text { (in [mm]) } \end{gathered}$ | Weight <br> (lb [kg]) | Included With PE/Neutral Terminal | Included With Auxiliary Contacts | Drawing Link |
| ML1-025-V-E01R |  | Non-fusible UL 508 / UL 60947 manual motor controller 600 VAC "suitable as motor" disconnect switch | 25 | 3 | $\begin{aligned} & 4.80 \times 7.72 \\ & {[122 \times 120]} \end{aligned}$ | 1.35 [0.61] | PE1-V | $\frac{\mathrm{AUX11-V}}{1 \mathrm{NO} 1 \mathrm{NC}}$ | PDF |
| ML1-032-V-E01R |  |  | 32 |  | $\begin{aligned} & 4.80 \times 7.72 \\ & {[122 \times 120]} \end{aligned}$ | 1.35 [0.61] | PE1-V |  | PDF |
| ML1-040-V-E02R |  |  | 40 |  | $\begin{aligned} & 7.87 \times 7.87 \\ & {[200 \times 200]} \end{aligned}$ | 3.35 [1.52] | PE1-V |  | PDF |
| ML2-063-V-E03R |  |  | 63 |  | $\begin{aligned} & 7.87 \times 7.87 \\ & {[200 \times 200]} \\ & \hline \end{aligned}$ | 3.85 [1.75] | PE2-V |  | PDF |
| ML2-080-V-E03R |  |  | 80 |  | $\begin{aligned} & 7.87 \times 7.87 \\ & {[200 \times 200]} \\ & \hline \end{aligned}$ | 3.85 [1.75] | PE2-V |  | PDF |
| ML3-125-V-E03R |  |  | 125 |  | $\begin{aligned} & 7.87 \times 7.87 \\ & {[200 \times 200]} \\ & \hline \end{aligned}$ | 4.05 [1.84] | PE3-V |  | PDF |
| ML1-040-V-E04R |  |  | 40 |  | $\begin{aligned} & 7.87 \times 7.87 \\ & {[200 \times 200]} \\ & \hline \end{aligned}$ | 3.40 [1.54] | $\underline{\text { PE1-V + NV2-V }}$ |  | PDF |
| ML2-063-V-E05R |  |  | 63 |  | $\begin{aligned} & 7.87 \times 7.87 \\ & {[200 \times 200]} \\ & \hline \end{aligned}$ | 4.05 [1.84] | PE2-V + NV2-V |  | PDF |

## Merz UL 508 Non-Fusible Disconnect Switches

## Accessories

Terminal Shrouds

| Part Number | Price | Description | Use With | Poles | Drawing Link |
| :--- | :---: | :---: | :---: | :---: | :---: |
| HS1-ML1 |  | Terminal shroud, line or load side | Merz ML1 switch bodies | 1 | PDF |
| HS3-ML1 |  | Terminal shroud, line or load side | Merz ML1 switch bodies | 3 | PDF |
| HS1-ML2 |  | Terminal shroud, line or load side | Merz ML2 switch bodies | 1 | PDF |
| HS3-ML2 |  | Terminal shroud, line or load side | Merz ML2 switch bodies | 3 | PDF |
| HS1-ML3 |  | Terminal shroud, line or load side | Merz ML3 switch bodies | 1 | PDF |
| HS3-ML3 |  | Terminal shroud, line or load side | Merz ML3 switch bodies | 3 | PDF |



HS1-ML1

## Replacement Mounting Screws

| Part Number | Price | Description | Use With | Drawing Link |
| :---: | :---: | :---: | :---: | :---: |
| ML-SKT-1 |  | Cover mounting screws | Merz small size enclosed disconnects -E01R | PDF |
| ML-SKT-2 |  | Cover mounting screws | Merz large size enclosed disconnects -E02R, -E03R, -E04R, -E05R | PDF |
| ML-SKT-3 |  | Screw kit, mounting and hardware screws | Shafts AL-165, AL-265, AL-365 (Shaft support ASB-AL265-365 and terminal shrouds HS3-ML1, HS3-ML2, HS3-ML3 included) | PDF |
| ML-SKT-4 |  | Handle mounting screws |  | PDF |



ML-SKT-1

## Merz UL 508 Non-Fusible Disconnect Switches

## Technical Characteristics

| Characteristics AcGording to UL 508, UL 60947-4-1 |  |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Type | ML1-016 | ML1-025 | ML1-032 | ML1-040 | ML2-063- | ML2-080 | ML3-125 |  |
| General use rating (A) | 16 | 25 | 32 | 40 | 63 | 80 | 125 |  |
| Short-circuit rating at 600VAC (kA) | 5 | 5 | 5 | 5 | 5 | 5 | 5 |  |
| Type of fuse | RK5 | RK5 | RK5 | RK5 | RK5 | RK5 | RK5 |  |
| Max. fuse rating (A) | 50 | 50 | 50 | 50 | 80 | 80 | 125 |  |


| Max. Motor ho / Max. 3-Phase Motor FLA |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Type |  | ML1-016 | ML1-025 | ML1-032 | ML1-040 | ML2-063 | ML2-080 | ML3-125 |
| General purpose 600VAC 3-phase [A] |  | 16 | 25 | 32 | 40 | 63 | 80 | 125 |
| Motor 3-phase | 240VAC (hp [FLA]) | 7.5 [22] | 7.5 [22] | 10 [28] | 10 [28] | 15 [42] | 20 [54] | 25 [68] |
|  | 480VAC (hp [FLA]) | 10 [14] | 10 [14] | 20 [27] | 20 [27] | 30 [40] | 40 [52] | 50 [65] |
|  | 600VAC (hp [FLA]) | 10 [11] | 10 [11] | 20 [22] | 20 [22] | 30 [32] | 40 [41] | 50 [52] |
| Motor 1-phase | 120VAC (hp [FLA]) | 1 [16] | 1 [16] | 1.5 [20] | 1.5 [20] | 3 [34] | 5 [56] | 7.5 [80] |
|  | $\begin{gathered} \text { 240VAC 2-Pole } \\ (\mathrm{hp}[\text { FLA]) } \end{gathered}$ | 2 [12] | 2 [12] | 3 [17] | 3 [17] | 7.5 [40] | 10 [50] | 15 [68] |


| Wire Type / Temperature - Use | er (Cu) | Wire Only, $75^{\circ} \mathrm{C}$ [167$\left.{ }^{\circ} \mathrm{F}\right]$ or Higher |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Type | ML1 | ML2 | ML3 | AUX11 | 2KL |
| Terminal cross section [AWG] | 14-8 | 14-2 | 8-1/0 | 17-13 | 17-13 |
| Single or multi-core [mm2] | 2.5-16 | 2.5-35 | 6-70 | 1-4 | 1-4 |
| Stranded with sleeve [mm2] | 2.5-16 | 1.5-25 | 6-50 | 1-2.5 | 1-2.5 |
| Stripping distance connector cable (mm [in]) | 10 [0.39] | 13 [0.51] | 16 [0.63] | 10 [0.39] | 10 [0.39] |
| Torque terminal screw (N•m [lbft]) | 1.2 [0.89] | 2.5 [1.84] | 3 [2.21] | 0.6 [0.44] | 0.6 [0.44] |


| Environmental - Switch Body |  |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Type | ML1-016 | ML1-025 | ML1-032 | ML1-040 | ML2-063 | ML2-080 | ML3-125 |  |
| Max. surrounding air temperature <br> (Open type) (C [F]) | $60[140]$ | $60[140]$ | $60[140]$ | $60[140]$ | $70[158]$ | $70[158]$ | $75[167]$ |  |
| Max. ambient temperature <br> (Enclosed type) (C [F]) | $45[113]$ | $45[113]$ | $45[113]$ | $45[113]$ | $50[122]$ | $50[122]$ | $55[131]$ |  |
| Mounting | Horizontal on DIN rail or front door panel |  |  |  |  |  |  |  |

## Auxiliary contacts

Electrical characteristics
A600, thermal 10A @ 600VAC

| Product Weight $-\mathrm{Ib}(\mathrm{kg})$ |  |  |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Type | ML1-016 | ML1-025 | ML1-032 | ML1-040 | ML2-063 | ML2-080 | ML3-125 |  |
| Open switches | $0.40[0.18]$ | $0.40[0.18]$ | $0.40[0.18]$ | $0.40[0.18]$ | $0.75[0.34]$ | $0.75[0.34]$ | $0.95[0.43]$ |  |

[^0]
[^0]:    Agency Approvals
    UL file \#E195426 (Manual Motor Controllers)

