

# Specifications



## Eaton 139572

Eaton Moeller® series Z5 Overload relay, Ir= 50 - 70 A, 1 N/O, 1 N/C, For use with: DILM185A, DILM225A

### General specifications

|                     |                                                 |
|---------------------|-------------------------------------------------|
| <b>PRODUCT NAME</b> | Eaton Moeller® series Z5 Thermal overload relay |
|---------------------|-------------------------------------------------|

|                       |        |
|-----------------------|--------|
| <b>CATALOG NUMBER</b> | 139572 |
|-----------------------|--------|

|                   |              |
|-------------------|--------------|
| <b>MODEL CODE</b> | Z5-70/FF225A |
|-------------------|--------------|

|            |               |
|------------|---------------|
| <b>EAN</b> | 4015081363506 |
|------------|---------------|

|                             |        |
|-----------------------------|--------|
| <b>PRODUCT LENGTH/DEPTH</b> | 146 mm |
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|                       |        |
|-----------------------|--------|
| <b>PRODUCT HEIGHT</b> | 164 mm |
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|                      |        |
|----------------------|--------|
| <b>PRODUCT WIDTH</b> | 128 mm |
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|                       |         |
|-----------------------|---------|
| <b>PRODUCT WEIGHT</b> | 1.47 kg |
|-----------------------|---------|

|                       |                                                                                                                                                                                                                         |
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| <b>CERTIFICATIONS</b> | IEC/EN 60947-4-1<br>CSA-C22.2 No. 60947-4-1-14<br>UL<br>CSA File No.: 012528<br>CSA<br>CE<br>UL File No.: E29184<br>UL Category Control No.: NKCR<br>CSA Class No.: 3211-03<br>VDE 0660<br>UL 60947-4-1<br>IEC/EN 60947 |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



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## Features & Functions

### FEATURES

Phase-failure sensitivity  
(according to IEC/EN  
60947, VDE 0660 Part 102)  
Reset pushbutton  
manual/auto  
Test/off button  
Trip-free release

## General information

|                                                       |                                                                                               |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <b>AMBIENT OPERATING TEMPERATURE - MIN</b>            | -25 °C                                                                                        |
| <b>AMBIENT OPERATING TEMPERATURE - MAX</b>            | 60 °C                                                                                         |
| <b>AMBIENT OPERATING TEMPERATURE (ENCLOSED) - MIN</b> | 25 °C                                                                                         |
| <b>AMBIENT OPERATING TEMPERATURE (ENCLOSED) - MAX</b> | 40 °C                                                                                         |
| <b>CLASS</b>                                          | CLASS 10 A                                                                                    |
| <b>CLIMATIC PROOFING</b>                              | Damp heat, constant, to IEC 60068-2-78<br>Damp heat, cyclic, to IEC 60068-2-30                |
| <b>DEGREE OF PROTECTION</b>                           | IP00                                                                                          |
| <b>MOUNTING METHOD</b>                                | Direct attachment<br>Separate mounting<br>Direct mounting                                     |
| <b>OVERLOAD RELEASE CURRENT SETTING - MIN</b>         | 50 A                                                                                          |
| <b>OVERLOAD RELEASE CURRENT SETTING - MAX</b>         | 70 A                                                                                          |
| <b>OVERVOLTAGE CATEGORY</b>                           | III                                                                                           |
| <b>POLLUTION DEGREE</b>                               | 3                                                                                             |
| <b>PRODUCT CATEGORY</b>                               | Overload relay Z5                                                                             |
| <b>PROTECTION</b>                                     | With terminal cover,<br>Protection against direct contact when actuated from front (EN 50274) |
| <b>RATED IMPULSE WITHSTAND VOLTAGE (UIMP)</b>         | 4000 V (auxiliary and control circuits)<br>8000 V AC                                          |
| <b>SHOCK RESISTANCE</b>                               | 10 g, Mechanical,<br>Sinusoidal, Shock duration 10 ms                                         |
| <b>SUITABLE FOR</b>                                   | Branch circuits, (UL/CSA)                                                                     |
| <b>TEMPERATURE COMPENSATION</b>                       | ≤ 0.25 %/K, residual error for T > 40°<br>Continuous                                          |

## Terminal capacities

|                                                    |                                                                                                                                           |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TERMINAL CAPACITY (BUSBAR)</b>                  | 25 mm width, Main connection                                                                                                              |
| <b>TERMINAL CAPACITY (FLEXIBLE WITH CABLE LUG)</b> | 185 mm <sup>2</sup>                                                                                                                       |
| <b>TERMINAL CAPACITY (FLEXIBLE WITH FERRULE)</b>   | 2 x (0.75 - 2.5) mm <sup>2</sup> , Control circuit cables<br>1 x (0.75 - 2.5) mm <sup>2</sup> , Control circuit cables                    |
| <b>TERMINAL CAPACITY (SOLID)</b>                   | 2 x (0.75 - 4) mm <sup>2</sup> , Control circuit cables<br>1 x (0.75 - 4) mm <sup>2</sup> , Control circuit cables                        |
| <b>TERMINAL CAPACITY (SOLID/STRANDED AWG)</b>      | 2 x (18 - 14), Control circuit cables<br>2/0 - 500 MCM, Main cables                                                                       |
| <b>TERMINAL CAPACITY (STRANDED WITH CABLE LUG)</b> | 185 mm <sup>2</sup>                                                                                                                       |
| <b>WIDTH ACROSS FLATS</b>                          | 16 mm (Hexagon head spanner SW)                                                                                                           |
| <b>STRIPPING LENGTH (CONTROL CIRCUIT CABLE)</b>    | 8 mm                                                                                                                                      |
| <b>SCREW SIZE</b>                                  | M10 x 35, Terminal screw, Main connections<br>M3.5, Terminal screw, Control circuit cables                                                |
| <b>SCREWDRIVER SIZE</b>                            | 1 x 6 mm, Terminal screw, Control circuit cables, Standard screwdriver<br>2, Terminal screw, Control circuit cables, Pozidriv screwdriver |
| <b>TIGHTENING TORQUE</b>                           | 1.2 Nm, Screw terminals, Control circuit cables<br>18 Nm, Main cable connection screw/bolt                                                |

## Electrical rating

|                                                                              |                                                                                                                                                                                                     |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CONVENTIONAL THERMAL CURRENT ITH OF AUXILIARY CONTACTS (1-POLE, OPEN)</b> | 6 A                                                                                                                                                                                                 |
| <b>RATED OPERATIONAL CURRENT (IE) AT AC-15, 120 V</b>                        | 1.5 A                                                                                                                                                                                               |
| <b>RATED OPERATIONAL CURRENT (IE) AT AC-15, 220 V, 230 V, 240 V</b>          | 1.5 A                                                                                                                                                                                               |
| <b>RATED OPERATIONAL CURRENT (IE) AT AC-15, 380 V, 400 V, 415 V</b>          | 0.9 A                                                                                                                                                                                               |
| <b>RATED OPERATIONAL CURRENT (IE) AT DC-13, 110 V</b>                        | 0.4 A                                                                                                                                                                                               |
| <b>RATED OPERATIONAL CURRENT (IE) AT DC-13, 220 V, 230 V</b>                 | 0.2 A                                                                                                                                                                                               |
| <b>RATED OPERATIONAL CURRENT (IE) AT DC-13, 24 V</b>                         | 0.9 A                                                                                                                                                                                               |
| <b>RATED OPERATIONAL CURRENT (IE) AT DC-13, 60 V</b>                         | 0.75 A                                                                                                                                                                                              |
| <b>RATED OPERATIONAL VOLTAGE (UE) - MAX</b>                                  | 1000 V                                                                                                                                                                                              |
| <b>SAFE ISOLATION</b>                                                        | 500 V AC, Between main circuits, According to EN 61140<br>240 V AC, Between auxiliary contacts, According to EN 61140<br>440 V, Between auxiliary contacts and main contacts, According to EN 61140 |
| <b>SWITCHING CAPACITY (AUXILIARY CONTACTS, PILOT DUTY)</b>                   | R300, DC operated (UL/CSA)<br>B300 at opposite polarity, AC operated (UL/CSA)<br>B600 at opposite polarity, AC operated (UL/CSA)                                                                    |
| <b>VOLTAGE RATING - MAX</b>                                                  | 600 VAC                                                                                                                                                                                             |

## Short-circuit rating

|                                                    |                                                                       |
|----------------------------------------------------|-----------------------------------------------------------------------|
| <b>SHORT-CIRCUIT CURRENT RATING (BASIC RATING)</b> | 250 A, max. Fuse, SCCR (UL/CSA)                                       |
|                                                    | 250 A, max. CB, SCCR (UL/CSA)                                         |
|                                                    | 10 kA, SCCR (UL/CSA)                                                  |
| <b>SHORT-CIRCUIT PROTECTION RATING</b>             | Max. 6 A gG/gL, fuse, Without welding, Auxiliary and control circuits |
|                                                    | 250 A gG/gL, Fuse, Type "1" coordination                              |
|                                                    | 160 A gG/gL, Fuse, Type "2" coordination                              |

## Contacts

|                                                            |   |
|------------------------------------------------------------|---|
| <b>NUMBER OF AUXILIARY CONTACTS (CHANGE-OVER CONTACTS)</b> | 0 |
|------------------------------------------------------------|---|

|                                                                |   |
|----------------------------------------------------------------|---|
| <b>NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)</b> | 1 |
|----------------------------------------------------------------|---|

|                                                              |   |
|--------------------------------------------------------------|---|
| <b>NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)</b> | 1 |
|--------------------------------------------------------------|---|

|                                                      |   |
|------------------------------------------------------|---|
| <b>NUMBER OF CONTACTS (NORMALLY CLOSED CONTACTS)</b> | 1 |
|------------------------------------------------------|---|

|                                                    |   |
|----------------------------------------------------|---|
| <b>NUMBER OF CONTACTS (NORMALLY OPEN CONTACTS)</b> | 1 |
|----------------------------------------------------|---|

## Design verification

|                                                                                         |                                                                    |
|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| <b>EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID</b>                               | 21 W                                                               |
| <b>HEAT DISSIPATION CAPACITY PDISS</b>                                                  | 0 W                                                                |
| <b>HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID</b>                                | 7 W                                                                |
| <b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b>                    | 70 A                                                               |
| <b>STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS</b>                               | 0 W                                                                |
| <b>10.2.2 CORROSION RESISTANCE</b>                                                      | Meets the product standard's requirements.                         |
| <b>10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES</b>                         | Meets the product standard's requirements.                         |
| <b>10.2.3.2 VERIFICATION OF RESISTANCE OF INSULATING MATERIALS TO NORMAL HEAT</b>       | Meets the product standard's requirements.                         |
| <b>10.2.3.3 RESIST. OF INSUL. MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS</b> | Meets the product standard's requirements.                         |
| <b>10.2.4 RESISTANCE TO ULTRA-VIOLET (UV) RADIATION</b>                                 | Meets the product standard's requirements.                         |
| <b>10.2.5 LIFTING</b>                                                                   | Does not apply, since the entire switchgear needs to be evaluated. |
| <b>10.2.6 MECHANICAL IMPACT</b>                                                         | Does not apply, since the entire switchgear needs to be evaluated. |
| <b>10.2.7 INSCRIPTIONS</b>                                                              | Meets the product standard's requirements.                         |
| <b>10.3 DEGREE OF PROTECTION OF ASSEMBLIES</b>                                          | Does not apply, since the entire switchgear needs to be evaluated. |
| <b>10.4 CLEARANCES AND CREEPAGE DISTANCES</b>                                           | Meets the product standard's requirements.                         |
| <b>10.5 PROTECTION AGAINST ELECTRIC SHOCK</b>                                           | Does not apply, since the entire switchgear needs to be evaluated. |
| <b>10.6 INCORPORATION OF SWITCHING DEVICES AND COMPONENTS</b>                           | Does not apply, since the entire switchgear needs to be evaluated. |

## Resources

|                            |                                                                                                                                                                                |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CATALOGUES                 | <a href="#">Product Range Catalog Switching and protecting motors</a><br><a href="#">eaton-product-overview-for-machinery-catalogue-ca08103003zen-en-us.pdf</a>                |
| CHARACTERISTIC CURVE       | <a href="#">eaton-tripping-z5-overload-relay-characteristic-curve.eps</a><br><a href="#">eaton-tripping-devices-z5-overload-relay-characteristic-curve.eps</a>                 |
| DECLARATIONS OF CONFORMITY | <a href="#">eaton-thermal-overload-relay-declaration-of-conformity-eu250785en.pdf</a><br><a href="#">eaton-thermal-overload-relay-declaration-of-conformity-uk251268en.pdf</a> |
| DRAWINGS                   | <a href="#">eaton-tripping-devices-overload-relay-z5-overload-relay-dimensions.eps</a><br><a href="#">eaton-tripping-devices-z5-overload-relay-3d-drawing.eps</a>              |
| ECAD MODEL                 | <a href="#">ETN.139572.edz</a>                                                                                                                                                 |
| INSTALLATION INSTRUCTIONS  | <a href="#">IL03407138Z</a><br><a href="#">eaton-overload-relays-z5-zb150-il03407006z.pdf</a>                                                                                  |
| MCAD MODEL                 | <a href="#">z5_100_ff225a.stp</a><br><a href="#">z5_100_ff225a.dwg</a>                                                                                                         |
| SYSTEM OVERVIEW            | <a href="#">eaton-contactors-system55-dilm-explosion-drawing.eps</a><br><a href="#">eaton-tripping-devices-overload-relay-zeb-overload-relay-wiring-diagram.eps</a>            |
| WIRING DIAGRAMS            | <a href="#">eaton-general-release-zeb-overload-relay-wiring-diagram.eps</a>                                                                                                    |

|                                                                 |                                                                                                                                  |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>10.7 INTERNAL ELECTRICAL CIRCUITS AND CONNECTIONS</b>        | Is the panel builder's responsibility.                                                                                           |
| <b>10.8 CONNECTIONS FOR EXTERNAL CONDUCTORS</b>                 | Is the panel builder's responsibility.                                                                                           |
| <b>10.9.2 POWER-FREQUENCY ELECTRIC STRENGTH</b>                 | Is the panel builder's responsibility.                                                                                           |
| <b>10.9.3 IMPULSE WITHSTAND VOLTAGE</b>                         | Is the panel builder's responsibility.                                                                                           |
| <b>10.9.4 TESTING OF ENCLOSURES MADE OF INSULATING MATERIAL</b> | Is the panel builder's responsibility.                                                                                           |
| <b>10.10 TEMPERATURE RISE</b>                                   | The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices. |
| <b>10.11 SHORT-CIRCUIT RATING</b>                               | Is the panel builder's responsibility. The specifications for the switchgear must be observed.                                   |
| <b>10.12 ELECTROMAGNETIC COMPATIBILITY</b>                      | Is the panel builder's responsibility. The specifications for the switchgear must be observed.                                   |
| <b>10.13 MECHANICAL FUNCTION</b>                                | The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.                         |

|                 |
|-----------------|
| PROJECT NAME:   |
| PROJECT NUMBER: |
| PREPARED BY:    |
| DATE:           |



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