
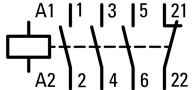




**Contactor, 3 pole, 380 V 400 V 4 kW, 1 NC, 24 V 50/60 Hz, AC operation, Screw terminals**

**Part no. DILM9-01(24V50/60HZ)**  
**Catalog No. 276729**  
**Alternate Catalog No. XTCE009B01T**

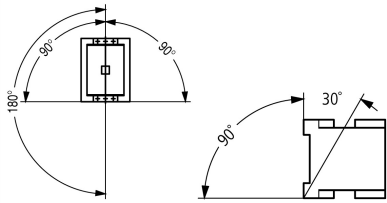
**Delivery program**

|   |                |    |  |   |
|---|----------------|----|--|---|
| Product range   |                |    |  | Contactors  |
| Application   |                |    |  | Contactors for Motors   |
| Subrange  |                |    |  | Contactors up to 170 A, 3 pole  |
| Utilization category                                      |                |    |  | AC-1: Non-inductive or slightly inductive loads, resistance furnaces<br>AC-3/AC-3e: Normal AC induction motors: Starting, switching off while running<br>AC-4: Normal AC induction motors: starting, plugging, reversing, inching |
|   |                |    |  |   |
| Notes   |                |    |  | Also suitable for motors with efficiency class IE3.<br>IE3-ready devices are identified by the logo on their packaging.   |
| Connection technique                                      |                |    |  | Screw terminals   |
| Number of poles   |                |    |  | 3 pole  |
| <b>Rated operational current</b>                          |                |    |  |   |
| AC-3  |                |    |  |   |
| Notes   |                |    |  | At maximum permissible ambient temperature (open.)<br>Also tested according to AC-3e.   |
| 380 V 400 V   | $I_e$          | A  |  | 9   |
| AC-1  |                |    |  |   |
| Conventional free air thermal current, 3 pole, 50 - 60 Hz |                |    |  |   |
| Open  |                |    |  |   |
| at 40 °C  | $I_{th} = I_e$ | A  |  | 22  |
| enclosed  | $I_{th}$       | A  |  | 18  |
| Conventional free air thermal current, 1 pole             |                |    |  |   |
| open  | $I_{th}$       | A  |  | 50  |
| enclosed  | $I_{th}$       | A  |  | 45  |
| <b>Max. rating for three-phase motors, 50 - 60 Hz</b>     |                |    |  |   |
| AC-3  |                |    |  |   |
| 220 V 230 V   | P              | kW |  | 2.5   |
| 380 V 400 V   | P              | kW |  | 4   |
| 660 V 690 V   | P              | kW |  | 4.5   |
| AC-4  |                |    |  |   |
| 220 V 230 V   | P              | kW |  | 1.5   |
| 380 V 400 V   | P              | kW |  | 2.5   |
| 660 V 690 V   | P              | kW |  | 3.6   |
| <b>Contacts</b>   |                |    |  |   |
| N/C = Normally closed                                     |                |    |  | 1 NC  |
| Contact sequence  |                |    |  |   |
| <b>Instructions</b>                                       |                |    |  |   |
| Can be combined with auxiliary contact                    |                |    |  | DILA-XHI(V)...  |
| Actuating voltage   |                |    |  | 24 V 50/60 Hz   |
| Voltage AC/DC   |                |    |  | AC operation  |
| Connection to SmartWire-DT                                |                |    |  | no  |

|            |  |   |
|------------|--|---|
| Frame size |  | 1 |
|------------|--|---|

## Technical data

### General

|   |              |                 |  |
|---|--------------|-----------------|--|
| Standards   |              |                 | IEC/EN 60947, VDE 0660, UL, CSA  |
| Lifespan, mechanical  |              |                 |  |
| AC operated   | Operations   | $\times 10^6$   | 10   |
| Operating frequency, mechanical                                       |              |                 |  |
| AC operated   | Operations/h |                 | 9000   |
| Climatic proofing   |              |                 | Damp heat, constant, to IEC 60068-2-78<br>Damp heat, cyclic, to IEC 60068-2-30     |
| Ambient temperature   |              |                 |  |
| Open  |              | °C              | -25 - +60  |
| Enclosed  |              | °C              | - 25 - 40  |
| Storage   |              | °C              | - 40 - 80  |
| Mounting position   |              |                 |  |
| Mechanical shock resistance (IEC/EN 60068-2-27)                       |              |                 |  |
| Half-sinusoidal shock, 10 ms  |              |                 |  |
| Main contacts   |              |                 |  |
| N/O contact   |              | g               | 10   |
| Auxiliary contacts  |              |                 |  |
| N/O contact   |              | g               | 7  |
| N/C contact   |              | g               | 5  |
| Mechanical shock resistance (IEC/EN 60068-2-27) when tabletop-mounted |              |                 |  |
| Half-sinusoidal shock, 10 ms  |              |                 |  |
| Main contacts   |              |                 |  |
| N/O contact   |              | g               | 5.7  |
| Auxiliary contacts  |              |                 |  |
| N/O contact   |              | g               | 3.4  |
| N/C contact   |              | g               | 3.4  |
| Degree of Protection  |              |                 | IP20   |
| Protection against direct contact when actuated from front (EN 50274) |              |                 | Finger and back-of-hand proof  |
| Altitude  |              | m               | Max. 2000  |
| Weight  |              |                 |  |
| AC operated   |              | kg              | 0.24   |
| Screw connector terminals   |              |                 |  |
| Terminal capacity main cable  |              |                 |  |
| Solid   |              | mm <sup>2</sup> | 1 x (0.75 - 4)<br>2 x (0.75 - 2.5)   |
| Flexible with ferrule   |              | mm <sup>2</sup> | 1 x (0.75 - 2.5)<br>2 x (0.75 - 2.5)   |
| Solid or stranded   |              | AWG             | single 18 - 10, double 18 - 14   |
| Stripping length  |              | mm              | 10   |
| Terminal screw  |              |                 | M3.5   |
| Tightening torque   |              | Nm              | 1.2  |
| Tool  |              |                 |  |
| Pozidriv screwdriver  |              | Size            | 2  |
| Standard screwdriver  |              | mm              | 0.8 x 5.5<br>1 x 6   |
| Terminal capacity control circuit cables                              |              |                 |  |
| Solid   |              | mm <sup>2</sup> | 1 x (0.75 - 4)<br>2 x (0.75 - 2.5)   |
| Flexible with ferrule   |              | mm <sup>2</sup> | 1 x (0.75 - 2.5)   |

|                      |  |      |                    |
|----------------------|--|------|--------------------|
|                      |  |      | 2 x (0.75 - 2.5)   |
| Solid or stranded    |  | AWG  | 18 - 14            |
| Stripping length     |  | mm   | 10                 |
| Terminal screw       |  |      | M3.5               |
| Tightening torque    |  | Nm   | 1.2                |
| Tool                 |  |      |                    |
| Pozidriv screwdriver |  | Size | 2                  |
| Standard screwdriver |  | mm   | 0.8 x 5.5<br>1 x 6 |

### Main conducting paths

|  |                |      |       |
|--|----------------|------|-------|
| Rated impulse withstand voltage        | $U_{imp}$      | V AC | 8000  |
| Overvoltage category/pollution degree  |                |      | III/3 |
| Rated insulation voltage               | $U_i$          | V AC | 690   |
| Rated operational voltage              | $U_e$          | V AC | 690   |
| Safe isolation to EN 61140             |                |      |       |
| between coil and contacts              |                | V AC | 400   |
| between the contacts                   |                | V AC | 400   |
| Making capacity (p.f. to IEC/EN 60947) |                |      |       |
|  | $U_p$ to 690 V | A    | 112   |
| Breaking capacity                      |                |      |       |
| 220 V 230 V                            |                | A    | 90    |
| 380 V 400 V                            |                | A    | 90    |
| 500 V                                  |                | A    | 70    |
| 660 V 690 V                            |                | A    | 50    |
| Short-circuit rating                   |                |      |       |
| Short-circuit protection maximum fuse  |                |      |       |
| Type "2" coordination                  |                |      |       |
| 400 V                                  | gG/gL 500 V    | A    | 20    |
| 690 V                                  | gG/gL 690 V    | A    | 16    |
| Type "1" coordination                  |                |      |       |
| 400 V                                  | gG/gL 500 V    | A    | 35    |
| 690 V                                  | gG/gL 690 V    | A    | 20    |

### AC

|   |                |   |   |
|---|----------------|---|---|
| AC-1  |                |   |   |
| Rated operational current                                 |                |   |   |
| Conventional free air thermal current, 3 pole, 50 - 60 Hz |                |   |   |
| Open  |                |   |   |
| at 40 °C  | $I_{th} = I_e$ | A | 22  |
| at 50 °C  | $I_{th} = I_e$ | A | 21  |
| at 55 °C  | $I_{th} = I_e$ | A | 21  |
| at 60 °C  | $I_{th} = I_e$ | A | 20  |
| enclosed  | $I_{th}$       | A | 18  |
| Conventional free air thermal current, 1 pole             |                |   |   |
| open  | $I_{th}$       | A | 50  |
| enclosed  | $I_{th}$       | A | 45  |
| AC-3  |                |   |   |
| Rated operational current                                 |                |   |   |
| Open, 3-pole: 50 – 60 Hz                                  |                |   |   |
| Notes   |                |   | At maximum permissible ambient temperature (open.)<br>Also tested according to AC-3e. |
| 220 V 230 V   | $I_e$          | A | 9   |
| 240 V   | $I_e$          | A | 9   |
| 380 V 400 V   | $I_e$          | A | 9   |
| 415 V   | $I_e$          | A | 9   |
| 440V  | $I_e$          | A | 9   |

|                          |                |     |     |
|--------------------------|----------------|-----|-----|
| 500 V                    | I <sub>e</sub> | A   | 7   |
| 660 V 690 V              | I <sub>e</sub> | A   | 5   |
| 380 V 400 V              | I <sub>e</sub> | A   | 9   |
| Motor rating             | P              | kWh |     |
| 220 V 230 V              | P              | kW  | 2.5 |
| 240V                     | P              | kW  | 3   |
| 380 V 400 V              | P              | kW  | 4   |
| 415 V                    | P              | kW  | 5.5 |
| 440 V                    | P              | kW  | 5.5 |
| 500 V                    | P              | kW  | 4.5 |
| 660 V 690 V              | P              | kW  | 4.5 |
| <b>AC-4</b>              |                |     |     |
| Open, 3-pole: 50 – 60 Hz |                |     |     |
| 220 V 230 V              | I <sub>e</sub> | A   | 6   |
| 240 V                    | I <sub>e</sub> | A   | 6   |
| 380 V 400 V              | I <sub>e</sub> | A   | 6   |
| 415 V                    | I <sub>e</sub> | A   | 6   |
| 440 V                    | I <sub>e</sub> | A   | 6   |
| 500 V                    | I <sub>e</sub> | A   | 5   |
| 660 V 690 V              | I <sub>e</sub> | A   | 4.5 |
| Motor rating             | P              | kWh |     |
| 220 V 230 V              | P              | kW  | 1.5 |
| 240 V                    | P              | kW  | 1.6 |
| 380 V 400 V              | P              | kW  | 2.5 |
| 415 V                    | P              | kW  | 2.8 |
| 440 V                    | P              | kW  | 3   |
| 500 V                    | P              | kW  | 2.8 |
| 660 V 690 V              | P              | kW  | 3.6 |

## DC

|                                 |                |   |    |
|---------------------------------|----------------|---|----|
| Rated operational current, open |                |   |    |
| <b>DC-1</b>                     |                |   |    |
| 60 V                            | I <sub>e</sub> | A | 20 |
| 110 V                           | I <sub>e</sub> | A | 20 |
| 220 V                           | I <sub>e</sub> | A | 15 |

## Current heat loss

|   |  |    |     |
|---|--|----|-----|
| 3 pole, at I <sub>th</sub> (60°)                  |  | W  | 3   |
| Current heat loss at I <sub>e</sub> to AC-3/400 V |  | W  | 0.6 |
| Impedance per pole                                |  | mΩ | 2.5 |

## Magnet systems

|  |          |                  |            |
|--|----------|------------------|------------|
| Voltage tolerance  |          |                  |            |
| AC operated  | Pick-up  | x U <sub>c</sub> | 0.8 - 1.1  |
| Drop-out voltage AC operated   | Drop-out | x U <sub>c</sub> | 0.3 - 0.6  |
| Power consumption of the coil in a cold state and 1.0 x U <sub>S</sub> |          |                  |            |
| 50/60 Hz   | Pick-up  | VA               | 27<br>25   |
| 50/60 Hz   | Sealing  | VA               | 4.2<br>3.3 |
| 50/60 Hz   | Sealing  | W                | 1.4<br>1.2 |
| Duty factor  |          | % DF             | 100        |
| Changeover time at 100 % U <sub>S</sub> (recommended value)            |          |                  |            |
| Main contacts  |          |                  |            |
| AC operated  |          |                  |            |
| Closing delay  |          | ms               | 15 - 21    |
| Opening delay  |          | ms               | 9 - 18     |
| Arcing time  |          | ms               | 10         |

|  |                   |  |
|--|-------------------|--|
| Lifespan, mechanical; Coil 50/60 Hz        | x 10 <sup>6</sup> | Mechanical lifespan at 50 Hz approx. 30% lower than under → Technical data general |
| <b>Electromagnetic compatibility (EMC)</b> |                   |  |
| Emitted interference                       |                   | to EN 60947-1  |
| Interference immunity                      |                   | to EN 60947-1  |
| <b>Rating data for approved types</b>      |                   |  |
| Switching capacity                         |                   |  |
| Maximum motor rating                       |                   |  |
| Three-phase                                |                   |  |
| 200 V<br>208 V                             | HP                | 3  |
| 230 V<br>240 V                             | HP                | 3  |
| 460 V<br>480 V                             | HP                | 5  |
| 575 V<br>600 V                             | HP                | 7.5  |
| Single-phase                               |                   |  |
| 115 V<br>120 V                             | HP                | 0.5  |
| 230 V<br>240 V                             | HP                | 1.5  |
| General use                                | A                 | 20   |
| Auxiliary contacts                         |                   |  |
| Pilot Duty                                 |                   |  |
| AC operated                                |                   | A600   |
| DC operated                                |                   | P300   |
| General Use                                |                   |  |
| AC   | V                 | 600  |
| AC   | A                 | 10   |
| DC   | V                 | 250  |
| DC   | A                 | 1  |
| Short Circuit Current Rating               |                   |  |
| Basic Rating                               |                   |  |
| SCCR                                       | kA                | 5  |
| max. Fuse                                  | A                 | 45   |
| max. CB                                    | A                 | 60   |
| 480 V High Fault                           |                   |  |
| SCCR (fuse)                                | kA                | 30/100   |
| max. Fuse                                  | A                 | 25 Class RK5/20 Class J  |
| SCCR (CB)                                  | kA                | 65   |
| max. CB                                    | A                 | 16   |
| 600 V High Fault                           |                   |  |
| SCCR (fuse)                                | kA                | 30/100   |
| max. Fuse                                  | A                 | 25 Class RK5/20 Class J  |
| Special Purpose Ratings                    |                   |  |
| Electrical Discharge Lamps (Ballast)       |                   |  |
| 480V 60Hz 3phase, 277V 60Hz 1phase         | A                 | 18   |
| 600V 60Hz 3phase, 347V 60Hz 1phase         | A                 | 18   |
| Incandescent Lamps (Tungsten)              |                   |  |
| 480V 60Hz 3phase, 277V 60Hz 1phase         | A                 | 14   |
| 600V 60Hz 3phase, 347V 60Hz 1phase         | A                 | 14   |
| Resistance Air Heating                     |                   |  |
| 480V 60Hz 3phase, 277V 60Hz 1phase         | A                 | 18   |
| 600V 60Hz 3phase, 347V 60Hz 1phase         | A                 | 18   |
| Refrigeration Control (CSA only)           |                   |  |
| LRA 480V 60Hz 3phase                       | A                 | 60   |
| FLA 480V 60Hz 3phase                       | A                 | 10   |
| LRA 600V 60Hz 3phase                       | A                 | 60   |

|   |    |     |
|---|----|-----|
| FLA 600V 60Hz 3phase                                      | A  | 10  |
| Definite Purpose Ratings (100,000 cycles acc. to UL 1995) |    |     |
| LRA 480V 60Hz 3phase                                      | A  | 54  |
| FLA 480V 60Hz 3phase                                      | A  | 9   |
| Elevator Control  |    |     |
| 200V 60Hz 3phase  | HP | 2   |
| 200V 60Hz 3phase  | A  | 7.8 |
| 240V 60Hz 3phase  | HP | 2   |
| 240V 60Hz 3phase  | A  | 6.8 |
| 480V 60Hz 3phase  | HP | 3   |
| 480V 60Hz 3phase  | A  | 4.8 |
| 600V 60Hz 3phase  | HP | 5   |
| 600V 60Hz 3phase  | A  | 6.1 |

## Design verification as per IEC/EN 61439

|  |            |    |  |
|--|------------|----|--|
| Technical data for design verification   |            |    |  |
| Rated operational current for specified heat dissipation   | $I_n$      | A  | 9  |
| Heat dissipation per pole, current-dependent   | $P_{vid}$  | W  | 0.2  |
| Equipment heat dissipation, current-dependent  | $P_{vid}$  | W  | 0  |
| Static heat dissipation, non-current-dependent   | $P_{vs}$   | W  | 1.4  |
| Heat dissipation capacity  | $P_{diss}$ | W  | 0  |
| Operating ambient temperature min.   |            | °C | -25  |
| Operating ambient temperature max.   |            | °C | 60   |
| IEC/EN 61439 design verification   |            |    |  |
| 10.2 Strength of materials and parts   |            |    |  |
| 10.2.2 Corrosion resistance  |            |    | Meets the product standard's requirements.   |
| 10.2.3.1 Verification of thermal stability of enclosures   |            |    | Meets the product standard's requirements.   |
| 10.2.3.2 Verification of resistance of insulating materials to normal heat   |            |    | Meets the product standard's requirements.   |
| 10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects |            |    | Meets the product standard's requirements.   |
| 10.2.4 Resistance to ultra-violet (UV) radiation   |            |    | Meets the product standard's requirements.   |
| 10.2.5 Lifting   |            |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.2.6 Mechanical impact   |            |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.2.7 Inscriptions  |            |    | Meets the product standard's requirements.   |
| 10.3 Degree of protection of ASSEMBLIES  |            |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.4 Clearances and creepage distances   |            |    | Meets the product standard's requirements.   |
| 10.5 Protection against electric shock   |            |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.6 Incorporation of switching devices and components   |            |    | Does not apply, since the entire switchgear needs to be evaluated.   |
| 10.7 Internal electrical circuits and connections  |            |    | Is the panel builder's responsibility.   |
| 10.8 Connections for external conductors   |            |    | Is the panel builder's responsibility.   |
| 10.9 Insulation properties   |            |    |  |
| 10.9.2 Power-frequency electric strength   |            |    | Is the panel builder's responsibility.   |
| 10.9.3 Impulse withstand voltage   |            |    | Is the panel builder's responsibility.   |
| 10.9.4 Testing of enclosures made of insulating material   |            |    | Is the panel builder's responsibility.   |
| 10.10 Temperature rise   |            |    | The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices. |
| 10.11 Short-circuit rating   |            |    | Is the panel builder's responsibility. The specifications for the switchgear must be observed.                                   |
| 10.12 Electromagnetic compatibility  |            |    | Is the panel builder's responsibility. The specifications for the switchgear must be observed.                                   |
| 10.13 Mechanical function  |            |    | The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.                         |

## Technical data ETIM 7.0

|   |   |         |
|---|---|---------|
| Low-voltage industrial components (EG000017) / Power contactor, AC switching (EC000066)   |   |         |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Contactor (LV) / Power contactor, AC switching (ecl@ss10.0.1-27-37-10-03 [AAB718015]) |   |         |
| Rated control supply voltage $U_s$ at AC 50HZ   | V | 24 - 24 |

|   |    |                  |
|---|----|------------------|
| Rated control supply voltage Us at AC 60HZ              | V  | 24 - 24          |
| Rated control supply voltage Us at DC                   | V  | 0 - 0            |
| Voltage type for actuating                              |    | AC               |
| Rated operation current Ie at AC-1, 400 V               | A  | 22               |
| Rated operation current Ie at AC-3, 400 V               | A  | 9                |
| Rated operation power at AC-3, 400 V                    | kW | 4                |
| Rated operation current Ie at AC-4, 400 V               | A  | 6                |
| Rated operation power at AC-4, 400 V                    | kW | 2.5              |
| Rated operation power NEMA                              | kW | 3.7              |
| Modular version   |    | No               |
| Number of auxiliary contacts as normally open contact   |    | 0                |
| Number of auxiliary contacts as normally closed contact |    | 1                |
| Type of electrical connection of main circuit           |    | Screw connection |
| Number of normally closed contacts as main contact      |    | 0                |
| Number of main contacts as normally open contact        |    | 3                |

## Approvals

|                                      |  |  |
|--------------------------------------|--|--|
| Product Standards                    |  | IEC/EN 60947-4-1; UL 60947-4-1; CSA - C22.2 No. 60947-4-1-14; CE marking |
| UL File No.                          |  | E29096   |
| UL Category Control No.              |  | NLDX   |
| CSA File No.                         |  | 012528   |
| CSA Class No.                        |  | 2411-03, 3211-04   |
| North America Certification          |  | UL listed, CSA certified   |
| Specially designed for North America |  | No   |



- 1: Overload relay
- 2: Suppressor
- 3: Auxiliary contact modules





- Squirrel-cage motor
- Operating characteristics
- Starting: from rest
- Stopping: after attaining full running speed
- Electrical characteristics
- Make: up to 6 x rated motor current
- Break: up to 1 x rated motor current
- Utilization category
- 100 % AC-3
- Typical applications
- Compressors
- Lifts
- Mixers
- Pumps
- Escalators
- Agitators
- Fans
- Conveyor belts
- Centrifuges
- Hinged flaps
- Bucket-elevators
- Air conditioning system
- General drives in manufacturing and processing machines



- Extreme switching duty
- Squirrel-cage motor
- Operating characteristics
- Inching, plugging, reversing
- Electrical characteristics
- Make: up to 6 x rated motor current
- Break: up to 6 x rated motor current
- Utilization category
- 100 % AC-4
- Typical applications
- Printing presses
- Wire-drawing machines
- Centrifuges
- Special drives for manufacturing and processing machines



Switching conditions for non-motor consumers, 3 pole, 4 pole  
 Operating characteristics  
 Non inductive and slightly inductive loads  
 Electrical characteristics  
 Switch on: 1 x rated operational current  
 Switch off: 1 x rated operational current  
 Utilization category  
 100 % AC-1  
 Typical examples of application  
 Electric heat

## Dimensions



Contactor with auxiliary contact module DILM32-XHI.../DILA-XHI...



Contactor with auxiliary contact module DILA-XHIT...



### Additional product information (links)

#### IL03407013Z (AWA2100-2126) Contactors

|  |   |
|--|---|
| IL03407013Z (AWA2100-2126) Contactors  | <a href="https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407013Z2020_05.pdf">https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407013Z2020_05.pdf</a>                               |
| Motor starters and "Special Purpose Ratings" for the North American market                   | <a href="http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_3258146.pdf">http://www.eaton.eu/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_3258146.pdf</a> |
| Switchgear of Power Factor Correction Systems  | <a href="http://www.moeller.net/binary/ver_techpapers/ver934en.pdf">http://www.moeller.net/binary/ver_techpapers/ver934en.pdf</a>   |
| X-Start - Modern Switching Installations Efficiently Fitted and Wired Securely               | <a href="http://www.moeller.net/binary/ver_techpapers/ver938en.pdf">http://www.moeller.net/binary/ver_techpapers/ver938en.pdf</a>   |
| Mirror Contacts for Highly-Reliable Information Relating to Safety-Related Control Functions | <a href="http://www.moeller.net/binary/ver_techpapers/ver944en.pdf">http://www.moeller.net/binary/ver_techpapers/ver944en.pdf</a>   |
| Effect of the Cable Capacitance of Long Control Cables on the Actuation of Contactors        | <a href="http://www.moeller.net/binary/ver_techpapers/ver949en.pdf">http://www.moeller.net/binary/ver_techpapers/ver949en.pdf</a>   |
| Switchgear for Luminaires  | <a href="http://www.moeller.net/binary/ver_techpapers/ver955en.pdf">http://www.moeller.net/binary/ver_techpapers/ver955en.pdf</a>   |

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| Standard Compliant and Functionally Safe Engineering Design with Mechanical Auxiliary Contacts | <a href="http://www.moeller.net/binary/ver_techpapers/ver956en.pdf">http://www.moeller.net/binary/ver_techpapers/ver956en.pdf</a> |
| The Interaction of Contactors with PLCs  | <a href="http://www.moeller.net/binary/ver_techpapers/ver957en.pdf">http://www.moeller.net/binary/ver_techpapers/ver957en.pdf</a> |
| Busbar Component Adapters for modern Industrial control panels                                 | <a href="http://www.moeller.net/binary/ver_techpapers/ver960en.pdf">http://www.moeller.net/binary/ver_techpapers/ver960en.pdf</a> |