



**Contactor relay, 110 V DC, 3 N/O, 1 NC, Spring-loaded terminals, DC operation**

**Part no. DILAC-31(110VDC)**  
**Catalog No. 276491**  
**Alternate Catalog No. XTREC10B31E0**

Similar to illustration

## Delivery program

|   |       |   |  |  |
|---|-------|---|--|--|
| Product range                                 |       |   |  | DILA relays  |
| Application                                   |       |   |  | Contactor relays   |
| Description                                   |       |   |  | Basic devices with positive operation contacts   |
| Connection technique                          |       |   |  | Spring-loaded terminals  |
| <b>Rated operational current</b>              |       |   |  |  |
| AC-15   |       |   |  |  |
| 220 V 230 V 240 V                             | $I_e$ | A |  | 4  |
| 380 V 400 V 415 V                             | $I_e$ | A |  | 4  |
| <b>Contacts</b>                               |       |   |  |  |
| N/O = Normally open                           |       |   |  | 3 N/O  |
| N/C = Normally closed                         |       |   |  | 1 NC   |
| Contact sequence                              |       |   |  |  |
| <b>Instructions</b>                           |       |   |  | Contact numbers to EN 50011<br>Coil terminal markings to EN 50005<br>built-in suppressor circuit'<br>Integrated varistor suppressor circuit. |
| <b>Code number and version of combination</b> |       |   |  |  |
| Distinctive number                            |       |   |  | 31E  |
| Can be combined with auxiliary contact module |       |   |  | DILA-XHIC(V)...  |
| Actuating voltage                             |       |   |  | 110 V DC   |
| Voltage AC/DC                                 |       |   |  | DC operation   |
| Suppressor circuit                            |       |   |  | built-in   |
| Connection to SmartWire-DT                    |       |   |  | no   |
| <b>Instructions</b>                           |       |   |  | Contact numbers to EN 50011<br>Coil terminal markings to EN 50005<br>built-in suppressor circuit'<br>Integrated varistor suppressor circuit. |

## Technical data

### General

|                              |              |               |  |  |
|------------------------------|--------------|---------------|--|--|
| Standards                    |              |               |  | IEC/EN 60947, EN 60947-5-1, VDE 0660, UL, CSA                                  |
| Lifespan, mechanical         |              |               |  |  |
| DC operated                  | Operations   | $\times 10^6$ |  | 20   |
| Maximum operating frequency  | 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   |
| Ambient temperature, storage |              | °C            |  | -40 - 80   |
| Mounting position            |              |               |  |  |

|   |  |                 |                                      |
|---|--|-----------------|--------------------------------------|
| Mounting position   |  |                 |                                      |
| Mechanical shock resistance (IEC/EN 60068-2-27)                       |  |                 |                                      |
| Half-sinusoidal shock, 10 ms  |  |                 |                                      |
| Basic unit with auxiliary contact module                              |  | g               |                                      |
| N/O contact   |  | g               | 7                                    |
| N/C contact   |  | g               | 5                                    |
| 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  |  |                 |                                      |
| DC operated   |  | kg              | 0.294                                |
| Terminal capacities   |  | mm <sup>2</sup> |                                      |
| Spring-loaded terminals   |  |                 |                                      |
| Solid   |  | mm <sup>2</sup> | 1 x (0.75 - 2.5)<br>2 x (0.75 - 2.5) |
| Flexible with or without ferrule DIN 46228                            |  | mm <sup>2</sup> | 1 x (0,75 - 1.5)<br>2 x (0,75 - 1.5) |
| Solid or stranded   |  | AWG             | 18 - 14                              |
| Stripping length  |  | mm              | 10                                   |
| Standard screwdriver  |  | mm              | 0.6 x 3.5                            |

## Contacts

|   |                |      |   |
|---|----------------|------|---|
| Positive operating contacts to ZH 1/457, including auxiliary contact module |                |      | Yes   |
| Rated impulse withstand voltage   | $U_{imp}$      | V AC | 6000  |
| Overtoltage 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 auxiliary contacts   |                | V AC | 400   |
| between the auxiliary contacts  |                | V AC | 400   |
| Rated operational current   |                | A    |   |
| Conventional free air thermal current, 1 pole                               |                |      |   |
| Open  |                |      |   |
| at 60 °C  | $I_{th} = I_e$ | A    | 16  |
| AC-15   |                |      |   |
| 220 V 230 V 240 V   | $I_e$          | A    | 4   |
| 380 V 400 V 415 V   | $I_e$          | A    | 4   |
| 500 V   | $I_e$          | A    | 1.5   |
| DC current  |                |      |   |
| Notes   |                |      | Switch-on and switch-off conditions based on DC-13, time constant as specified. |
| DC L/R $\leq$ 15 ms   |                |      |   |
| Contacts in series:   |                | A    |   |
| 1   | 24 V           | A    | 10  |
| 1   | 60 V           | A    | 6   |
| 2   | 60 V           | A    | 10  |
| 1   | 110 V          | A    | 3   |
| 3   | 110 V          | A    | 6   |
| 1   | 220 V          | A    | 1   |
| 3   | 220 V          | A    | 5   |
| DC L/R $\leq$ 50 ms   |                |      |   |
| Contacts in series:   |                | A    |   |
| 3   | 24 V           | A    | 4   |

|                                       |              |           |  |
|---------------------------------------|--------------|-----------|--|
| 3                                     | 60 V         | A         | 4  |
| 3                                     | 110 V        | A         | 2  |
| 3                                     | 220 V        | A         | 1  |
| Control circuit reliability           | Failure rate | $\lambda$ | $<10^{-8}$ , < one failure at 100 million operations<br>(at $U_e = 24$ V DC, $U_{min} = 17$ V, $I_{min} = 5.4$ mA) |
| Short-circuit rating without welding  |              |           |  |
| Maximum overcurrent protective device |              |           |  |
| 220 V 230 V 240 V                     |              | PKZM0     | 4  |
| 380 V 400 V 415 V                     |              | PKZM0     | 4  |
| Short-circuit protection maximum fuse |              |           |  |
| 500 V                                 |              | A gG/gL   | 10   |
| Current heat loss at $I_{th}$         |              |           |  |
| DC operated                           |              | W         | 0.85   |

## Magnet systems

|   |                   |         |  |
|---|-------------------|---------|--|
| Voltage tolerance   |                   |         |  |
| DC operated   |                   |         |  |
| Notes   |                   |         | Smoothed DC, three-phase bridge rectifiers or smoothed double-wave rectification |
| Pick-up voltage   |                   |         | 0.8 - 1.1  |
| at 24 V: without auxiliary contact component (40 °C)          | Pick-up           | $x U_c$ | 0.7 - 1.3  |
| Power consumption   |                   |         |  |
| DC operation  |                   |         |  |
| DC operated   | Pull-in = sealing | W       | 3  |
| duty factor   |                   | % DF    | 100  |
| Changeover time at 100 % $U_S$ (recommended value)            |                   |         |  |
| DC operated closing delay                                     |                   |         | ms   |
| Switching times, DC operated, max. closing delay              |                   |         | ms 31  |
| DC operated N/O contact opening delay                         |                   |         | ms   |
| Switching times, DC actuated make contact Opening delay, max. |                   |         | ms 12  |

## Rating data for approved types

|                    |  |   |      |
|--------------------|--|---|------|
| Auxiliary contacts |  |   |      |
| Pilot Duty         |  |   |      |
| AC operated        |  |   | A600 |
| DC operated        |  |   | P300 |
| General Use        |  |   |      |
| AC                 |  | V | 600  |
| AC                 |  | A | 15   |
| DC                 |  | V | 250  |
| DC                 |  | A | 1    |

## Design verification as per IEC/EN 61439

|  |            |    |  |
|--|------------|----|--|
| Technical data for design verification   |            |    |  |
| Rated operational current for specified heat dissipation   | $I_n$      | A  | 15.5                                       |
| Heat dissipation per pole, current-dependent   | $P_{vid}$  | W  | 0.8  |
| Equipment heat dissipation, current-dependent  | $P_{vid}$  | W  | 0  |
| Static heat dissipation, non-current-dependent   | $P_{vs}$   | W  | 3  |
| 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) / Contactor relay (EC000196)   |   |                         |
| Electric engineering, automation, process control engineering / Low-voltage switch technology / Contactor (LV) / Contactor relay (ecl@ss10.0.1-27-37-10-01 [AAB716014]) |   |                         |
| Rated control supply voltage Us at AC 50HZ  | V | 0 - 0                   |
| Rated control supply voltage Us at AC 60HZ  | V | 0 - 0                   |
| Rated control supply voltage Us at DC   | V | 110 - 110               |
| Voltage type for actuating  |   | DC                      |
| Rated operation current Ie, 400 V   | A | 4                       |
| Connection type auxiliary circuit   |   | Spring clamp connection |
| Mounting method   |   | DIN-rail/screw          |
| Interface   |   | No                      |
| Number of auxiliary contacts as normally closed contact   |   | 1                       |
| Number of auxiliary contacts as normally open contact   |   | 3                       |
| Number of auxiliary contacts as normally closed contact, delayed switching  |   | 0                       |
| Number of auxiliary contacts as normally open contact, leading  |   | 0                       |
| With LED indication   |   | No                      |
| Number of auxiliary contacts as change-over contact   |   | 0                       |
| Manual operation possible   |   | No                      |

## Approvals

|                                      |  |   |
|--------------------------------------|--|---|
| Product Standards                    |  | IEC/EN 60947-4-1; UL 508; CSA-C22.2 No. 14-05; CE marking |
| UL File No.                          |  | E29184  |
| UL Category Control No.              |  | NKCR  |
| CSA File No.                         |  | 012528  |
| CSA Class No.                        |  | 3211-03   |
| North America Certification          |  | UL listed, CSA certified                                  |
| Specially designed for North America |  | No  |



1: Suppressor  
2: Auxiliary contact module



Component lifespan (operations)  
 $I_e$  = rated operational current

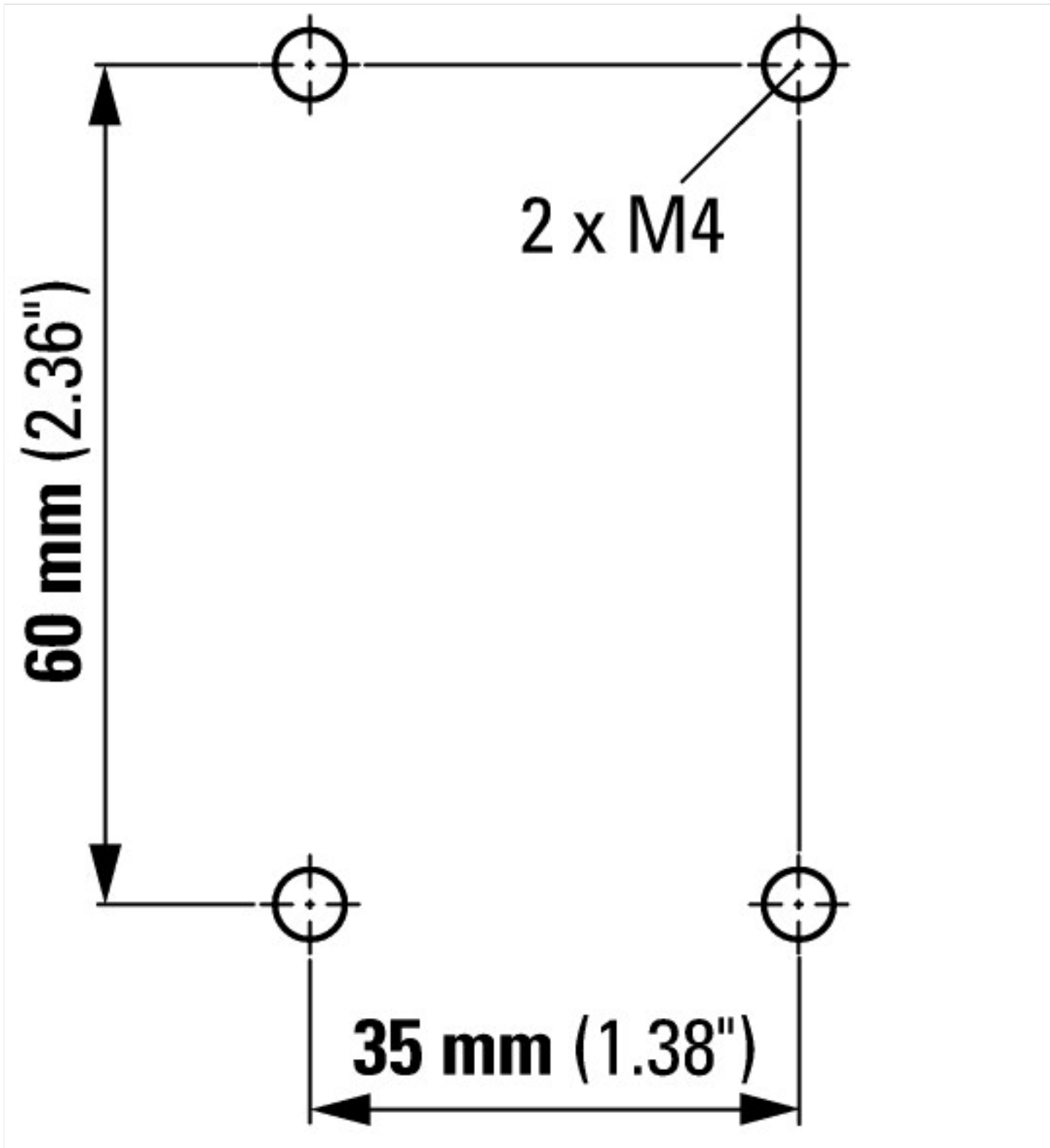


Component lifespan (operations)  
 $I_e$  = rated operational current  
 Three contacts in series

## Dimensions



Contactor with auxiliary contact module



### Additional product information (links)

IL03407013Z (AWA2100-2126) Contactors

IL03407013Z (AWA2100-2126) Contactors

[https://es-assets.eaton.com/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL03407013Z2020\\_05.pdf](https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL03407013Z2020_05.pdf)