

# Energy Control DIL Contactors

239460 585-970  
239471  
221-326 / 221-338

|                                                                                                                        |                        |               |    | DIL EEM                                                                               | DIL EEM-G       | DIL EM    | DIL EM-G | DIL EM-GI |
|------------------------------------------------------------------------------------------------------------------------|------------------------|---------------|----|---------------------------------------------------------------------------------------|-----------------|-----------|----------|-----------|
| <b>General</b>                                                                                                         |                        |               |    | 585-932                                                                               |                 |           |          |           |
| Standards                                                                                                              |                        |               |    | IEC 947, (BS) EN 60 947, DIN VDE 0660, CSA, UL, SEV, LRS, GL, BV, ONV, CIS, RINA, PRS |                 |           |          |           |
| Mechanical lifespan                                                                                                    | Operations             | $\times 10^6$ |    | 10                                                                                    | 20              | 10        | 20       |           |
| Maximum operating frequency                                                                                            | Ops./h                 |               |    | 9000                                                                                  |                 |           |          |           |
| Mechanical                                                                                                             |                        |               |    | See table, Page 32/090                                                                |                 |           |          |           |
| Electrical                                                                                                             |                        |               |    | Damp heat, constant, to IEC 68 Part 2-3                                               |                 |           |          |           |
| Climatic proofing                                                                                                      |                        |               |    | Damp heat, cyclic, to IEC 68 Teil 2-30                                                |                 |           |          |           |
| Ambient temperature                                                                                                    | Open                   | Max./min.     | °C | +50/-25                                                                               | +50/-20         | +50/-25   | +50/-20  |           |
|                                                                                                                        | Enclosed <sup>1)</sup> | Max./min.     | °C | +40/-25                                                                               | +40/-20         | +40/-25   | +40/-20  |           |
| Mounting position                                                                                                      |                        |               |    | As required, except vertical with terminal A1/A2 at the bottom                        |                 |           |          |           |
| Mechanical shock resistance (sinusoidal shock 20 ms)                                                                   |                        |               |    |                                                                                       |                 |           |          |           |
| <i>Basic unit</i>                                                                                                      |                        |               |    |                                                                                       |                 |           |          |           |
| Main contacts                                                                                                          | g                      |               |    | 8                                                                                     | 20              | 8         | 20       |           |
| Make contacts                                                                                                          |                        |               |    |                                                                                       |                 |           |          |           |
| Auxiliary contacts                                                                                                     | g                      |               |    | 8/5.5                                                                                 | 20/20           | 8/5.5     | 20/20    |           |
| Make/break contacts                                                                                                    |                        |               |    |                                                                                       |                 |           |          |           |
| <i>Basic unit with auxiliary contact module</i>                                                                        |                        |               |    |                                                                                       |                 |           |          |           |
| Main contacts                                                                                                          | g                      |               |    | 7.5                                                                                   | 20              | 7.5       | 20       |           |
| Make contacts                                                                                                          |                        |               |    |                                                                                       |                 |           |          |           |
| Auxiliary contacts                                                                                                     | g                      |               |    | 7.5/4.5                                                                               | 20/20           | 7.5/4.5   | 20/20    |           |
| Make/break contacts                                                                                                    |                        |               |    |                                                                                       |                 |           |          |           |
| Degree of protection                                                                                                   |                        |               |    | IP                                                                                    | 20              |           |          |           |
| Protection against direct contact when actuated from the front by a perpendicular test finger (DIN VDE 0106, Part 100) |                        |               |    | Finger- and back-of-hand proof <sup>2)</sup>                                          |                 |           |          |           |
| Dimensions                                                                                                             |                        |               |    | Page 32/114                                                                           |                 |           |          |           |
| Weights                                                                                                                |                        |               |    | kg                                                                                    | 0.17            | 0.2       | 0.17     | 0.2       |
| Terminal capacities                                                                                                    |                        |               |    |                                                                                       |                 |           |          |           |
| Auxiliary and main contacts                                                                                            |                        |               |    |                                                                                       |                 |           |          |           |
| Solid                                                                                                                  |                        |               |    | Min.                                                                                  | mm <sup>2</sup> | 2 x 0.75  |          |           |
|                                                                                                                        |                        |               |    | Max.                                                                                  | mm <sup>2</sup> | 2 x 2.5   |          |           |
| Flexible                                                                                                               |                        |               |    |                                                                                       |                 |           |          |           |
| With ferrule to DIN 46 228                                                                                             |                        |               |    | Max.                                                                                  | mm <sup>2</sup> | 2 x 1.5   |          |           |
| With Klockner-Mosler ferrule                                                                                           |                        |               |    | Max.                                                                                  | mm <sup>2</sup> | 2 x 2.5   |          |           |
| Solid or stranded                                                                                                      |                        |               |    | Min.                                                                                  | AWG             | 18        |          |           |
|                                                                                                                        |                        |               |    | Max.                                                                                  | AWG             | 14        |          |           |
| Terminal screw                                                                                                         |                        |               |    | M 3.5                                                                                 |                 |           |          |           |
| Pozidrive screwdriver                                                                                                  |                        |               |    | Size                                                                                  | mm              | 2         |          |           |
| Standard screwdriver                                                                                                   |                        |               |    |                                                                                       | mm              | 0.8 x 5.5 |          |           |
|                                                                                                                        |                        |               |    |                                                                                       |                 | 1 x 6     |          |           |
| Tightening torque                                                                                                      |                        |               |    | Max.                                                                                  | Nm              | 1.2       |          |           |
| <b>Main contacts</b>                                                                                                   |                        |               |    |                                                                                       |                 |           |          |           |
| Rated impulse withstand voltage                                                                                        |                        |               |    | U <sub>imp</sub>                                                                      | V               | 6000      |          |           |
| Overvoltage category/pollution degree                                                                                  |                        |               |    |                                                                                       |                 | III/3     |          |           |
| Rated insulation voltage                                                                                               |                        |               |    | U <sub>i</sub>                                                                        | V~              | 690       |          |           |
| Rated operational voltage                                                                                              |                        |               |    | U <sub>e</sub>                                                                        | V~              | 690       |          |           |
| "Safe isolation" to DIN VDE 0106 Part 101 and Part 101 A                                                               |                        |               |    |                                                                                       |                 |           |          |           |
| between coil and contacts, and between contacts                                                                        |                        |               |    |                                                                                       | V~              | 300       |          |           |

<sup>1)</sup> For suitable enclosure, see Pages 32/086, 087

<sup>2)</sup> DIL EM-F: only finger-proof when 6.3 x 0.8 mm blade terminals with ferrules are used

# Command System Control Circuit Devices

|                                                    |                  |       |                              |  | Contact elements                        | Foot and palm switches  | Lamp socket elements | Lamp transformers   |
|----------------------------------------------------|------------------|-------|------------------------------|--|-----------------------------------------|-------------------------|----------------------|---------------------|
|                                                    |                  |       |                              |  |                                         | Emergency-stop switches | Front fixing         |                     |
| <b>General</b>                                     |                  |       |                              |  | IEC 947, EN 60 947, DIN VDE 0660        |                         |                      |                     |
| Standards                                          |                  |       |                              |  | 10                                      | 0.5                     | -                    | -                   |
| Mechanical lifespan                                |                  |       | Operations × 10 <sup>5</sup> |  | -                                       | -                       | -                    | -                   |
|                                                    |                  |       | Operations × 10 <sup>6</sup> |  | 6000                                    | 6000                    | -                    | -                   |
| Maximum operating frequency                        |                  |       | Ops./h                       |  | ≤ 5                                     | ≤ 25                    | -                    | -                   |
| Operating force                                    |                  |       | N                            |  | IEC 11: ≤ 7.3                           | -                       | -                    | -                   |
|                                                    |                  |       | N                            |  | IEC 20: ≤ 9                             | -                       | -                    | -                   |
|                                                    |                  |       | N                            |  | IEC 02: ≤ 5.5                           | -                       | -                    | -                   |
|                                                    |                  |       | N                            |  | -                                       | -                       | -                    | -                   |
| Operating torque                                   |                  |       | Nm                           |  | -                                       | -                       | -                    | -                   |
| Degree of protection to IEC 529                    |                  |       |                              |  | IP 20                                   | IP 65                   | IP 20                | -                   |
| Climatic proofing                                  |                  |       |                              |  | Damp heat, constant, to IEC 68 Part 2-3 |                         |                      |                     |
|                                                    |                  |       |                              |  | Damp heat, cyclic, to IEC 68 Part 2-30  |                         |                      |                     |
| Ambient temperature                                | Open             |       | Max./min. °C                 |  | +60/-25                                 |                         |                      |                     |
|                                                    | Enclosed         |       | Max./min. °C                 |  | +40/-25                                 |                         |                      |                     |
| Mounting position                                  |                  |       |                              |  | As required                             |                         |                      |                     |
| Mechanical shock resistance (shock duration 20 ms) |                  |       | g                            |  | > 30                                    |                         |                      |                     |
| Terminal capacity                                  | Solid            |       | Max./min. mm <sup>2</sup>    |  | 2.5/0.75                                |                         |                      |                     |
|                                                    | Stranded         |       | Max./min. mm <sup>2</sup>    |  | 1.5/0.5                                 |                         |                      |                     |
| Dimensions                                         |                  |       | Page                         |  | 21/092-095                              |                         |                      |                     |
| <b>Contacts</b>                                    |                  |       |                              |  | 6                                       | 4                       | 4 <sup>1)</sup>      | 6                   |
| Rated impulse withstand voltage                    | U <sub>imp</sub> |       | kV                           |  | 500                                     | 250                     | 250                  | 630                 |
| Rated insulation voltage                           | U <sub>i</sub>   |       | V                            |  | 3                                       |                         |                      |                     |
| Pollution degree                                   |                  |       |                              |  | III                                     |                         |                      |                     |
| Overvoltage category                               |                  |       |                              |  | PKZM 1-6/                               | PKZM 1-6/               | -                    | Short-circuit-proof |
| Max. short-circuit protective device               | Fuseless         |       | Type                         |  | FAZN B10                                | FAZN B10                | -                    | Short-circuit-proof |
|                                                    | Fuse, gL         |       | A                            |  | 10                                      | 10                      | -                    |                     |
| <b>Switching capacity</b>                          |                  |       |                              |  | 2                                       | -                       | -                    | -                   |
| Rated operational current I <sub>a</sub> AC-15     | 500 V            |       | A                            |  | 4                                       | -                       | -                    | -                   |
|                                                    | 400 V            |       | A                            |  | 6                                       | 6                       | -                    | -                   |
|                                                    | 230 V            |       | A                            |  | 0.5                                     | 0.5                     | -                    | -                   |
| Rated operational current I <sub>a</sub> DC-13     | 220 V            |       | A                            |  | 1.1                                     | 1.1                     | -                    | -                   |
|                                                    | 110 V            |       | A                            |  |                                         |                         |                      |                     |
| Electrical lifespan                                |                  |       |                              |  | 0.6                                     | -                       | -                    | -                   |
| AC-15                                              | 230 V            | 1.2 A | Operations × 10 <sup>4</sup> |  | 0.3                                     | -                       | -                    | -                   |
|                                                    |                  | 3.6 A | Operations × 10 <sup>3</sup> |  | 1.2                                     | -                       | -                    | -                   |
| DC-13                                              | 12 V             | 2.8 A | Operations × 10 <sup>4</sup> |  |                                         |                         |                      |                     |

<sup>1)</sup> EF 1 (C) : 2.5 kV, EF 0 (C) : 0.8 kV

# RMQ 22 Technical Data

RMQ 16

| Push-button<br>actuators | Emergency-<br>stop<br>actuators | Double<br>actuators <sup>2)</sup> | Selector<br>switches                | Toggle<br>switches | Key-operated<br>actuators | Key-release<br>mushroom<br>actuators | Illuminated<br>push-button<br>actuators<br>- stay-put <sup>3)</sup> | Indicator<br>lights |
|--------------------------|---------------------------------|-----------------------------------|-------------------------------------|--------------------|---------------------------|--------------------------------------|---------------------------------------------------------------------|---------------------|
| Mushroom<br>actuators    |                                 |                                   | Illuminated<br>selector<br>switches |                    |                           |                                      |                                                                     |                     |



IEC 947, EN 60 947, DIN VDE 0660

|      |      |      |       |      |       |     |                   |   |
|------|------|------|-------|------|-------|-----|-------------------|---|
| 5    | 0.1  | 0.2  | 0.1   | 0.1  | 0.1   | 0.1 | 3<br>R(M)LTR: 0.3 | - |
| 6000 | 10   | 6000 | 2000  | 2500 | 100   | 100 | 6000              | - |
| ≤ 5  | ≤ 30 | ≤ 5  | -     | ≤ 2  | -     | ≤ 7 | ≤ 5               | - |
| -    | -    | -    | -     | -    | -     | -   | -                 | - |
| -    | -    | -    | ≤ 0.2 | -    | ≤ 0.4 | -   | -                 | - |



IP 65

Damp heat, constant, to IEC 68 Part 2-3  
Damp heat, cyclic, to IEC 68 Part 2-30

+60/-25  
+40/-25

As required

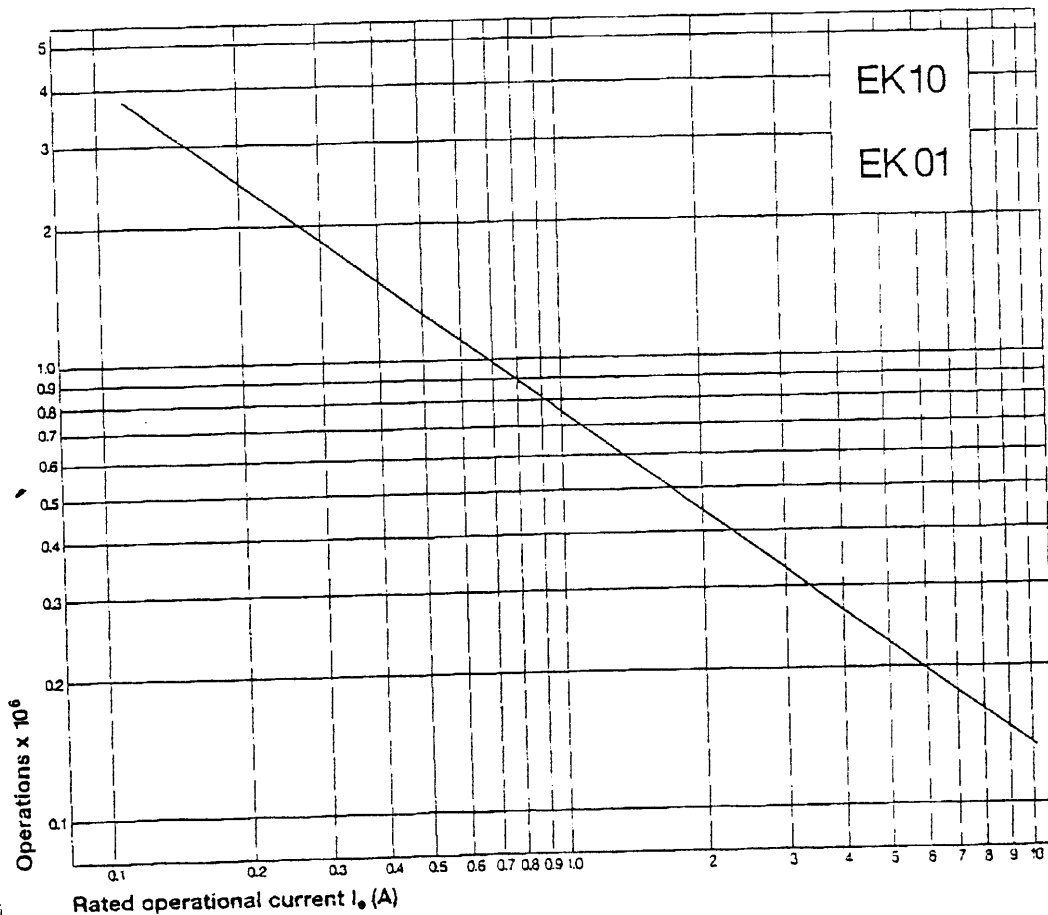
|      |      |      |   |   |   |   |   |   |
|------|------|------|---|---|---|---|---|---|
| > 30 | > 50 | > 30 | - | - | - | - | - | - |
| -    | -    | -    | - | - | - | - | - | - |



21/090, 091  
21/092-095

RMQ 22

## Electrical lifespan AC-15 to EN 60 947-5-1



<sup>2)</sup> Only for ⊗ up to 2 W    <sup>3)</sup> Only for ⊗ up to 1.2 W

# DIL EM Mini Contactors Technical Data

|                                                                                                    |                                      |   | DIL EEM           | DIL EEM-G | DIL EM               | DIL EM4 | DIL EM-G | DIL EM-GI |                                                                                              |
|----------------------------------------------------------------------------------------------------|--------------------------------------|---|-------------------|-----------|----------------------|---------|----------|-----------|----------------------------------------------------------------------------------------------|
| Making capacity<br>cos φ to IEC 947                                                                |                                      | A | 110               | 90        | 200                  | 110     | 110      |           |  32/006   |
| Breaking capacity<br>cos φ to IEC 947                                                              | 220/230 V                            | A | 70                |           |                      |         |          |           |  32/022   |
|                                                                                                    | 380/400 V                            | A | 70                |           |                      |         |          |           |                                                                                              |
|                                                                                                    | 500 V                                | A | 52                |           |                      |         |          |           |                                                                                              |
|                                                                                                    | 660/690 V                            | A | 40                |           |                      |         |          |           |                                                                                              |
| Component lifespan<br>AC-1, AC-3, AC-4                                                             | Operations                           |   | Pages 32/088, 089 |           |                      |         |          |           |  32/022   |
| Short-circuit rating<br>Maximum fuse <sup>1)</sup>                                                 |                                      | A | 10                |           |                      |         |          |           |  32/028   |
| Type "2" co-ordination                                                                             | gL                                   | A | 20                |           |                      |         |          |           |                                                                                              |
| Type "1" co-ordination                                                                             | gL                                   |   |                   |           |                      |         |          |           |                                                                                              |
| <b>A.C.</b>                                                                                        |                                      |   |                   |           |                      |         |          |           |                                                                                              |
| <b>AC-1 duty</b>                                                                                   |                                      |   |                   |           |                      |         |          |           |                                                                                              |
| Conventional free air thermal current $I_{th}$ $\Delta$ rated operational current $I_n$ , 50-60 Hz |                                      |   |                   |           |                      |         |          |           |                                                                                              |
| 3-pole                                                                                             | Open at 40 °C                        | A | 22                |           | (19.8) <sup>2)</sup> |         |          |           |  32/038   |
|                                                                                                    | at 50 °C                             | A | 20                |           | (18) <sup>2)</sup>   |         |          |           |                                                                                              |
|                                                                                                    | at 55 °C                             | A | 19                |           | (17) <sup>2)</sup>   |         |          |           |                                                                                              |
|                                                                                                    | Enclosed <sup>3)</sup>               | A | 16                |           |                      |         |          |           |                                                                                              |
| 1-pole                                                                                             | Open <sup>3)</sup>                   | A | 50                |           | 60                   | 50      |          |           |  32/048 |
|                                                                                                    | Three/four main contacts in parallel | A | 40                |           | 50                   | 40      |          |           |                                                                                              |
| <b>AC-3 duty</b>                                                                                   |                                      |   |                   |           |                      |         |          |           |                                                                                              |
| Rated operational current $I_n$ , Open <sup>3)</sup> , 50-60 Hz                                    |                                      |   |                   |           |                      |         |          |           |                                                                                              |
|                                                                                                    | 220 V                                | A | 6                 |           | 8.7                  |         |          |           |  32/056 |
|                                                                                                    | 230 V                                | A | 6                 |           | 8.7                  |         |          |           |                                                                                              |
|                                                                                                    | 380 V                                | A | 6.6               |           | 8.5                  |         |          |           |  32/008 |
|                                                                                                    | 400 V                                | A | 6.6               |           | 8.5                  |         |          |           |                                                                                              |
|                                                                                                    | 500 V                                | A | 5                 |           | 6.4                  |         |          |           |  32/022 |
|                                                                                                    | 660 V                                | A | 3.5               |           | 4.9                  |         |          |           |                                                                                              |
|                                                                                                    | 690 V                                | A | 3.5               |           | 4.8                  |         |          |           |                                                                                              |
| <b>AC-4 duty</b>                                                                                   |                                      |   |                   |           |                      |         |          |           |                                                                                              |
| Rated operational current $I_n$ , Open <sup>3)</sup> , 50-60 Hz                                    |                                      |   |                   |           |                      |         |          |           |                                                                                              |
|                                                                                                    | 220 V                                | A | 4.5               |           | 6                    |         |          |           |  32/028 |
|                                                                                                    | 230 V                                | A | 4.5               |           | 6                    |         |          |           |                                                                                              |
|                                                                                                    | 380 V                                | A | 5                 |           | 6.6                  |         |          |           |  32/068 |
|                                                                                                    | 400 V                                | A | 5                 |           | 6.6                  |         |          |           |                                                                                              |
|                                                                                                    | 500 V                                | A | 3.7               |           | 5                    |         |          |           |  32/088 |
|                                                                                                    | 660 V                                | A | 2.9               |           | 3.5                  |         |          |           |                                                                                              |
|                                                                                                    | 690 V                                | A | 2.9               |           | 3.4                  |         |          |           |                                                                                              |
| <b>D.C.</b>                                                                                        |                                      |   |                   |           |                      |         |          |           |                                                                                              |
| Circuitry                                                                                          |                                      |   |                   |           |                      |         |          |           |                                                                                              |
| Rated operational current $I_n$ , Open <sup>3)</sup>                                               |                                      |   |                   |           |                      |         |          |           |                                                                                              |
| <b>DC-1 duty</b>                                                                                   |                                      |   |                   |           |                      |         |          |           |                                                                                              |
|                                                                                                    | 12 V-                                | A | 20                |           | -                    |         | 20       |           |  32/088 |
|                                                                                                    | 24 V-                                | A | 20                |           | -                    |         | 20       |           |                                                                                              |
|                                                                                                    | 60 V-                                | A | 20                |           | -                    |         | 20       |           |  32/088 |
|                                                                                                    | 110 V-                               | A | 20                |           | -                    |         | 20       |           |                                                                                              |
|                                                                                                    | 220 V-                               | A | 20                |           | -                    |         | 20       |           |                                                                                              |
| <b>DC-3 duty</b>                                                                                   |                                      |   |                   |           |                      |         |          |           |                                                                                              |
|                                                                                                    | 12 V-                                | A | 6                 |           | 8                    | -       | 8        |           |  32/088 |
|                                                                                                    | 24 V-                                | A | 6                 |           | 8                    | -       | 8        |           |                                                                                              |
|                                                                                                    | 60 V-                                | A | 3                 |           | 4                    | -       | 4        |           |  32/088 |
|                                                                                                    | 110 V-                               | A | 2                 |           | 3                    | -       | 3        |           |                                                                                              |
|                                                                                                    | 220 V-                               | A | -                 | -         | -                    | 1       | -        |           |                                                                                              |
| <b>DC-5 duty</b>                                                                                   |                                      |   |                   |           |                      |         |          |           |                                                                                              |
|                                                                                                    | 12 V-                                | A | 1.8               |           | 2.5                  | -       | 2.5      |           |  32/088 |
|                                                                                                    | 24 V-                                | A | 1.8               |           | 2.5                  | -       | 2.5      |           |                                                                                              |
|                                                                                                    | 60 V-                                | A | 1.8               |           | 2.5                  | -       | 2.5      |           |  32/088 |
|                                                                                                    | 110 V-                               | A | 1.1               |           | 1.5                  | 2.5     | 1.5      |           |                                                                                              |
|                                                                                                    | 220 V-                               | A | 0.2               |           | 0.3                  | 1       | 0.3      |           |                                                                                              |
| Current heat loss (3- or 4-pole)                                                                   |                                      |   |                   |           |                      |         |          |           |                                                                                              |
| at conventional free air thermal current $I_{th}$                                                  |                                      |   |                   |           |                      |         |          |           |                                                                                              |
|                                                                                                    |                                      | W | 2                 | 3.5       | 2                    | 2.7     | 3.5      |           |  32/088 |
|                                                                                                    | at $I_n$ , AC-3/400 V                | W | 0.3               | 0.4       | 0.5                  | -       | 0.7      |           |                                                                                              |

<sup>1)</sup> See overlay "Fuses" for time/current characteristics  
<sup>2)</sup> At maximum permissible ambient temperature

<sup>3)</sup> DIL EM-...F

# Energy Control DIL Contactors

|                                                                      |                                                              |             |              | DIL EEM                                                                                         | DIL EEM-G | DIL EM   | DIL EM-G | DIL EM-GI |
|----------------------------------------------------------------------|--------------------------------------------------------------|-------------|--------------|-------------------------------------------------------------------------------------------------|-----------|----------|----------|-----------|
| <b>Magnet system</b>                                                 |                                                              |             |              |                                                                                                 |           |          |          |           |
| Pick-up and drop-out values                                          | A.C. operated                                                |             |              |                                                                                                 |           |          |          |           |
|                                                                      | Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz | Pick-up     | $\times U_c$ | 0.8-1.1                                                                                         | -         | 0.8-1.1  | -        | -         |
|                                                                      | Dual-frequency coil ... V, 50/60 Hz                          | Pick-up     | $\times U_c$ | 0.85-1.1                                                                                        | -         | 0.85-1.1 | -        | -         |
|                                                                      | D.C. operated                                                | Pick-up     | $\times U_c$ | -                                                                                               | 0.85-1.1  | -        | 0.85-1.1 | 0.7-1.3   |
| Power consumption of the coil                                        | A.C. operated                                                |             |              |                                                                                                 |           |          |          |           |
|                                                                      | Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz | Pick-up     | VA/W         | 25/22                                                                                           | -         | 25/22    | -        | -         |
|                                                                      |                                                              | Sealing     | VA/W         | 4.6/1.3                                                                                         | -         | 4.6/1.3  | -        | -         |
|                                                                      | Dual-frequency coil ... V, 50/60 Hz at 50 Hz                 | Pick-up     | VA/W         | 30/26                                                                                           | -         | 30/26    | -        | -         |
|                                                                      |                                                              | Sealing     | VA/W         | 5.4/1.6                                                                                         | -         | 5.4/1.6  | -        | -         |
|                                                                      | ... V, 50/60 Hz at 60 Hz                                     | Pick-up     | VA/W         | 29/24                                                                                           | -         | 29/24    | -        | -         |
|                                                                      |                                                              | Sealing     | VA/W         | 3.9/1.1                                                                                         | -         | 3.9/1.1  | -        | -         |
|                                                                      | D.C. operated                                                | Pick-up = W |              | -                                                                                               | 2.6       | -        | 2.6      | 1.5       |
|                                                                      |                                                              | Sealing     |              |                                                                                                 |           |          |          |           |
| Duty factor                                                          |                                                              | % DF        |              | 100                                                                                             |           |          |          |           |
| Switching times at 100 % $U_c$ (approximate values)<br>Make contacts | Closing delay                                                | ms          |              | 14-21                                                                                           | 26-35     | 14-21    | 26-35    |           |
|                                                                      | Opening delay                                                | ms          |              | 8-18                                                                                            | 15-17     | 8-18     | 15-17    | 14-20     |
|                                                                      |                                                              |             |              |                                                                                                 |           |          |          |           |
| Reversing contactors                                                 |                                                              |             |              |                                                                                                 |           |          |          |           |
| Changeover time at 110 % $U_c$                                       |                                                              | ms          |              | 16-21                                                                                           | 30-40     | 16-21    | 30-40    |           |
| Arcing time when a.c. operated 690 V                                 |                                                              | ms          |              | 12                                                                                              |           |          |          |           |
| Coil 50/60 Hz                                                        |                                                              |             |              | Mechanical lifespan at 50 Hz approximately 30 % less than listed under "General", (Page 32/092) |           |          |          |           |

# DIL EM Mini Contactors Technical Data

|                                                                                                                               |                                    |                              |                                                                    |     | DIL EEM | DIL EEM-G | DIL EM | DIL EM-G | DIL EM-GI |                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------|--------------------------------------------------------------------|-----|---------|-----------|--------|----------|-----------|---------------------------------------------------------------------------------------|
| <b>Contacts</b>                                                                                                               |                                    |                              |                                                                    |     |         |           |        |          |           |    |
| Interlocked opposing contacts to German specification ZH 1/457, including auxiliary contact modules                           |                                    |                              |                                                                    |     | +       | +         | +      | +        | +         | 32/006                                                                                |
| Rated impulse withstand voltage                                                                                               | $U_{imp}$                          | V                            | 6000                                                               |     |         |           |        |          |           |    |
| Overvoltage category/pollution degree                                                                                         |                                    |                              | III/3                                                              |     |         |           |        |          |           | 32/022                                                                                |
| Rated insulation voltage                                                                                                      | $U_i$                              | V~                           | 690                                                                |     |         |           |        |          |           |                                                                                       |
| Rated operational voltage                                                                                                     | $U_o$                              | V~                           | 600                                                                |     |         |           |        |          |           |                                                                                       |
| "Safe isolation" to DIN VDE 0106 Part 101 and Part 101 A1 between coil and auxiliary contacts, and between auxiliary contacts |                                    |                              |                                                                    |     |         |           |        |          |           |    |
|                                                                                                                               |                                    | V~                           | 300                                                                |     |         |           |        |          |           | 32/028                                                                                |
| Rated operational current $I_n$                                                                                               |                                    |                              |                                                                    |     |         |           |        |          |           |    |
| AC-15                                                                                                                         |                                    |                              |                                                                    |     |         |           |        |          |           | 32/038                                                                                |
|                                                                                                                               | 220/240 V                          | A                            | 6                                                                  |     |         |           |        |          |           |                                                                                       |
|                                                                                                                               | 380/415 V                          | A                            | 3                                                                  |     |         |           |        |          |           |                                                                                       |
|                                                                                                                               | 500 V                              | A                            | 1.5                                                                |     |         |           |        |          |           |                                                                                       |
| DC-13 <sup>1)</sup>                                                                                                           | Contacts in series                 |                              |                                                                    |     |         |           |        |          |           |    |
| Above 110 V and at L/R > 15 ms it is essential that means of arc suppression be used in parallel with the contacts:           | L/R ≤ 15 ms                        | 1                            | 24 V~                                                              | A   | 2.5     |           |        |          |           | 32/048                                                                                |
| Required capacitor C-1 μF                                                                                                     | e. g. contactor coils              | 2                            | 60 V~                                                              | A   | 2.5     |           |        |          |           |                                                                                       |
| R-0.5 Ω in series                                                                                                             | solenoid valves                    | 3                            | 110 V~                                                             | A   | 1.5     |           |        |          |           |                                                                                       |
|                                                                                                                               | d.c. motors                        | 3                            | 220 V~                                                             | A   | 0.5     |           |        |          |           |                                                                                       |
| Control circuit reliability at $U_c = 24$ V DC                                                                                |                                    |                              |                                                                    |     |         |           |        |          |           |  |
| Voltage, current and tolerances to DIN 19 240, 17 V, 5.4 mA                                                                   | Error rate                         | $H_F$                        | < 10 <sup>-4</sup> , < 1 fault operation in 100 million operations |     |         |           |        |          |           | 32/056                                                                                |
| Conventional free air thermal current $I_n$                                                                                   |                                    | A                            | 10                                                                 |     |         |           |        |          |           |  |
| Component lifespan                                                                                                            |                                    |                              |                                                                    |     |         |           |        |          |           | 32/008                                                                                |
| $U_c = 240$ V AC-15                                                                                                           | Operations × 10 <sup>6</sup>       |                              | Page 32/088                                                        |     |         |           |        |          |           |  |
| $U_c = 240$ V DC-13 <sup>1)</sup>                                                                                             | At $I_n = 0.5$ A, L/R = 50 ms      |                              |                                                                    |     |         |           |        |          |           | 32/022                                                                                |
|                                                                                                                               | 2 contacts in series               | Operations × 10 <sup>6</sup> | 0.15                                                               |     |         |           |        |          |           |                                                                                       |
| Short-circuit rating                                                                                                          | Without welding                    |                              |                                                                    |     |         |           |        |          |           |  |
| With direct connection to mains or transformer > 1000 VA                                                                      | Max. overcurrent protective device | 220/240 V PKZM 1             | 4                                                                  |     |         |           |        |          |           | 32/028                                                                                |
|                                                                                                                               |                                    | 380/415 V PKZM 1             | 4                                                                  |     |         |           |        |          |           |                                                                                       |
|                                                                                                                               | Without welding                    | 500 V                        | A gL                                                               | 6   |         |           |        |          |           |  |
|                                                                                                                               | Maximum fuse <sup>2)</sup>         | 500 V                        | A fast                                                             | 10  |         |           |        |          |           | 32/058                                                                                |
| Current heat loss at conventional free air thermal current $I_n$                                                              | Per contact                        | Max.                         | W                                                                  | 0.2 | 0.3     | 0.2       | 0.3    |          |           |  |
|                                                                                                                               |                                    |                              |                                                                    |     |         |           |        |          |           | 32/068                                                                                |
|                                                                                                                               |                                    |                              |                                                                    |     |         |           |        |          |           |  |
|                                                                                                                               |                                    |                              |                                                                    |     |         |           |        |          |           | 32/088                                                                                |
|                                                                                                                               |                                    |                              |                                                                    |     |         |           |        |          |           |  |
|                                                                                                                               |                                    |                              |                                                                    |     |         |           |        |          |           | 32/114                                                                                |

<sup>1)</sup> Making and breaking currents to DC-13, time constant as stated  
<sup>2)</sup> See overlay "Fuses" for time/current characteristics