

| Type of contactor                             |                                                                              |    | LC1-D09...D18<br>DT20 & DT25                                                                                      | LC1-D25...D38<br>DT32...DT60 | LC1-D40 | LC1-D50...D95 | LC1-D115 &<br>LC1-D150 |
|-----------------------------------------------|------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------------------------------|------------------------------|---------|---------------|------------------------|
| Environment                                   |                                                                              |    |                                                                                                                   |                              |         |               |                        |
| Rated insulation voltage (Ui)                 | Conforming to EN 60947-4-1, overvoltage category III, degree of pollution: 3 | V  | 690                                                                                                               |                              | 1000    |               |                        |
|                                               | Conforming to UL, CSA                                                        | V  | 600                                                                                                               |                              |         |               |                        |
| Rated impulse withstand voltage (Uimp)        | Conforming to EN 60947                                                       | kV | 6                                                                                                                 |                              | 8       |               |                        |
| Conforming to standards                       |                                                                              |    | IEC 947-1, 947-4-1, NFC 63-110, VDE 0660, BS 5424, JEM 1038, EN 60947-1, EN 60947-4-1. GL, DNV, PTB, RINA pending |                              |         |               |                        |
| Product certifications                        |                                                                              |    | UL, CSA<br>Complies with SNCF, Sichere Trennung recommendations                                                   |                              |         |               |                        |
| Separation insulation                         | Conforming to VDE 0106 parts 101 and A1 (project 2/89)                       | V  | 400                                                                                                               |                              |         |               |                        |
| Degree of protection (1)<br>(front face only) | Conforming to VDE 0106                                                       |    |                                                                                                                   |                              |         |               |                        |
|                                               | Power connection                                                             |    | Protection against direct finger contact IP 2X                                                                    |                              |         |               |                        |
|                                               | Coil connection                                                              |    | Protection against direct finger contact IP 2X (except LC1-D40...D80)                                             |                              |         |               |                        |
| Protective treatment                          | Conforming to IEC 68                                                         |    | "TH"                                                                                                              |                              |         |               |                        |
| Ambient air temperature around the device     | Storage                                                                      | °C | - 60...+ 80                                                                                                       |                              |         |               |                        |
|                                               | Operation                                                                    | °C | - 5...+ 60                                                                                                        |                              |         |               |                        |
|                                               | Permissible                                                                  | °C | - 40...+ 70, for operation at Uc                                                                                  |                              |         |               |                        |
| Maximum operating altitude                    | Without derating                                                             | m  | 3000                                                                                                              |                              |         |               |                        |
| Operating position                            | Without derating                                                             |    | ± 30° possible, in relation to normal vertical mounting plane                                                     |                              |         |               |                        |
| Flame resistance                              | Conforming to UL 94                                                          |    | V 1                                                                                                               |                              |         |               |                        |
|                                               | Conforming to IEC 695-2-1                                                    | °C | 960                                                                                                               |                              |         |               |                        |
| Shock resistance (2)<br>1/2 sine wave = 11ms  | Contacteur open                                                              | gn | 10                                                                                                                | 8                            | 8       | 8             | 6                      |
|                                               | Contacteur closed                                                            | gn | 15                                                                                                                | 15                           | 10      | 10            | 15                     |
| Vibration resistance (2)<br>5...300 Hz        | Contacteur open                                                              | gn | 2                                                                                                                 |                              |         |               |                        |
|                                               | Contacteur closed                                                            | gn | 4                                                                                                                 | 4                            | 4       | 3             | 4                      |

(1) Protection ensured for the connection cross-sections shown on the next page and for connection via cable.

(2) In the least favourable direction, without change of contact state (coil supplied at Ue).

| Type of contactor | LC1- | D09 & D12<br>DT20 &<br>DT25 | D18<br>(3P) | D25 | D32 | D38 | D18 (4P)<br>DT32...DT60 | D40 | D50 &<br>D65 | D80 &<br>D95 | D115 & D150 |
|-------------------|------|-----------------------------|-------------|-----|-----|-----|-------------------------|-----|--------------|--------------|-------------|
|-------------------|------|-----------------------------|-------------|-----|-----|-----|-------------------------|-----|--------------|--------------|-------------|

## Power circuit connections

### Connection via cable

| Tightening                          |                    |                 | Screw clamps |         |          |          | 2-input connector | Screw<br>clamps | 1-input connector | 2-input connector |
|-------------------------------------|--------------------|-----------------|--------------|---------|----------|----------|-------------------|-----------------|-------------------|-------------------|
| Flexible cable<br>without cable end | 1 conductor        | mm <sup>2</sup> | 1...4        | 1.5...6 | 1.5...10 | 2.5...10 | 2.5...16          | 2.5...25        | 2.5...25          | 4...50            |
|                                     | 2 conductors       | mm <sup>2</sup> | 1...4        | 1.5...6 | 1.5...6  | 2.5...10 | 2.5...16          | 2.5...16        | 2.5...16          | 4...25            |
| Flexible cable<br>with cable end    | 1 conductor        | mm <sup>2</sup> | 1...4        | 1...6   | 1...6    | 1...10   | 2.5...10          | 2.5...25        | 2.5...25          | 4...50            |
|                                     | 2 conductors       | mm <sup>2</sup> | 1...2.5      | 1...4   | 1...4    | 1.5...6  | 2.5...10          | 2.5...10        | 2.5...10          | 4...16            |
| Solid cable<br>without cable end    | 1 conductor        | mm <sup>2</sup> | 1...4        | 1.5...6 | 1.5...6  | 1.5...10 | 2.5...16          | 2.5...25        | 2.5...25          | 4...50            |
|                                     | 2 conductors       | mm <sup>2</sup> | 1...4        | 1.5...6 | 1.5...6  | 2.5...10 | 2.5...16          | 2.5...16        | 2.5...16          | 4...25            |
| Screwdriver                         | Phillips head      |                 | N° 2         | N° 2    | N° 2     | N° 2     | N° 2              | —               | —                 | —                 |
|                                     | Ø flat screwdriver |                 | Ø 6          | Ø 6     | Ø 6      | Ø 6      | Ø 6               | Ø 6...Ø 8       | Ø 6...Ø 8         | Ø 6...Ø 8         |
| 6 sided key                         |                    |                 | —            | —       | —        | —        | —                 | —               | —                 | 4                 |
| Tightening torque                   |                    | N.m             | 1.7          | 1.7     | 2.5      | 2.5      | 2.5               | 5               | 5                 | 9                 |

### Connection via spring terminals

|                                     |              |                 |                  |   |   |   |   |   |   |   |
|-------------------------------------|--------------|-----------------|------------------|---|---|---|---|---|---|---|
| Flexible cable<br>without cable end | 1 conductor  | mm <sup>2</sup> | 2.5<br>(4: DT25) | 4 | 4 | 4 | — | — | — | — |
|                                     | 2 conductors | mm <sup>2</sup> | 2.5<br>(4: DT25) | 4 | 4 | 4 | — | — | — | — |

### Connection via bars or lugs

|                                |                    |     |      |      |      |      |      |      |      |        |        |
|--------------------------------|--------------------|-----|------|------|------|------|------|------|------|--------|--------|
| Bar cross-section              |                    |     | —    | —    | —    | —    | —    | —    | —    | 3 x 16 | 5 x 25 |
| Lug external Ø                 |                    | mm  | 8    | 8    | 10   | 10   | 12   | 13   | 16   | 17     | 25     |
| Ø of screw                     |                    | mm  | M3.5 | M3.5 | M4   | M4   | M5   | M5   | M6   | M6     | M8     |
| Screwdriver                    | Phillips head      |     | N° 2 | N° 2 | N° 2 | N° 2 | N° 2 | N° 2 | N° 3 | —      | —      |
|                                | Ø flat screwdriver |     | Ø 6  | Ø 6  | Ø 6  | Ø 6  | Ø 6  | Ø 8  | Ø 8  | Ø 8    | —      |
| Key for hexagonal headed screw |                    |     | —    | —    | —    | —    | —    | —    | —    | 10     | 13     |
| Tightening torque              |                    | N.m | 1.7  | 1.7  | 2.5  | 2.5  | 2.5  | 6    | 6    | 8      | 14     |

## Control circuit connections

### Connection via cable (tightening via screw clamps)

|                                     |                    |                 |         |         |         |         |         |         |         |         |         |
|-------------------------------------|--------------------|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Flexible cable<br>without cable end | 1 conductor        | mm <sup>2</sup> | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...2.5 |
|                                     | 2 conductors       | mm <sup>2</sup> | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...2.5 |
| Flexible cable<br>with cable end    | 1 conductor        | mm <sup>2</sup> | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...2.5 | 1...2.5 | 1...2.5 | 1...2.5 |
|                                     | 2 conductors       | mm <sup>2</sup> | 1...2.5 | 1...2.5 | 1...2.5 | 1...2.5 | 1...2.5 | 1...2.5 | 1...2.5 | 1...2.5 | 1...2.5 |
| Solid cable<br>without cable end    | 1 conductor        | mm <sup>2</sup> | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...2.5 |
|                                     | 2 conductors       | mm <sup>2</sup> | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...4   | 1...2.5 |
| Screwdriver                         | Phillips head      |                 | N° 2    | N° 2    | N° 2    | N° 2    | N° 2    | N° 2    | N° 2    | N° 2    | N° 2    |
|                                     | Ø flat screwdriver |                 | Ø 6     | Ø 6     | Ø 6     | Ø 6     | Ø 6     | Ø 6     | Ø 6     | Ø 6     | Ø 6     |
| Tightening torque                   |                    | N.m             | 1.7     | 1.7     | 1.7     | 1.7     | 1.7     | 1.2     | 1.2     | 1.2     | 1.2     |

### Connection via spring terminals

|                                     |              |                 |     |     |     |     |   |   |   |   |   |
|-------------------------------------|--------------|-----------------|-----|-----|-----|-----|---|---|---|---|---|
| Flexible cable<br>without cable end | 1 conductor  | mm <sup>2</sup> | 2.5 | 2.5 | 2.5 | 2.5 | — | — | — | — | — |
|                                     | 2 conductors | mm <sup>2</sup> | 2.5 | 2.5 | 2.5 | 2.5 | — | — | — | — | — |

### Connection via bars or lugs

|                   |                    |     |     |   |   |   |   |      |      |      |      |
|-------------------|--------------------|-----|-----|---|---|---|---|------|------|------|------|
| Lug external Ø    |                    | mm  | (1) | — | — | — | — | 8    | 8    | 8    | 8    |
| Ø of screw        |                    | mm  | (1) | — | — | — | — | M3.5 | M3.5 | M3.5 | M3.5 |
| Screwdriver       | Phillips head      |     | —   | — | — | — | — | N° 2 | N° 2 | N° 2 | N° 2 |
|                   | Ø flat screwdriver |     | —   | — | — | — | — | Ø 6  | Ø 6  | Ø 6  | N°6  |
| Tightening torque |                    | N.m | —   | — | — | — | — | 1.2  | 1.2  | 1.2  | 1.2  |

(1) Spade connector or cable lug, see connection via cable above.

| Type of contactor                                                                            |                                            | LC1-        | D09                                                                                                          | DT20                                                         | D12      | DT25 | D18      | DT32 | D25      | DT40 |  |  |
|----------------------------------------------------------------------------------------------|--------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------|------|----------|------|----------|------|--|--|
| Pole characteristics                                                                         |                                            |             |                                                                                                              |                                                              |          |      |          |      |          |      |  |  |
| Rated operational current (Ie)<br>(Ue ≤ 440 V)                                               | In AC-3, θ ≤ 60 °C                         | A           | 9                                                                                                            |                                                              | 12       |      | 18       |      | 25       |      |  |  |
|                                                                                              | In AC-1, θ ≤ 60 °C                         | A           | 25                                                                                                           | 20                                                           | 25       |      | 32       |      | 40       |      |  |  |
| Rated operational voltage (Ue)                                                               | Up to                                      | V           | 690                                                                                                          |                                                              | 690      |      | 690      |      | 690      |      |  |  |
| Frequency limits                                                                             | Of the operating current                   | Hz          | 25...400                                                                                                     |                                                              | 25...400 |      | 25...400 |      | 25...400 |      |  |  |
| Conventional thermal current (Ith)                                                           | θ ≤ 60 °C                                  | A           | 25                                                                                                           | 20                                                           | 25       | 25   | 32       | 32   | 40       | 40   |  |  |
| Rated making capacity (440 V)                                                                | Conforming to IEC 947                      |             | 250                                                                                                          |                                                              | 250      |      | 300      |      | 450      |      |  |  |
| Rated breaking capacity (440 V)                                                              | Conforming to IEC 947                      |             | 250                                                                                                          |                                                              | 250      |      | 300      |      | 450      |      |  |  |
| Permissible short-time rating<br>No current flowing for preceding<br>15 minutes at θ ≤ 40 °C | For 1 s                                    | A           | 210                                                                                                          |                                                              | 210      |      | 240      |      | 380      |      |  |  |
|                                                                                              | For 10 s                                   | A           | 105                                                                                                          |                                                              | 105      |      | 145      |      | 240      |      |  |  |
|                                                                                              | For 1 min                                  | A           | 61                                                                                                           |                                                              | 61       |      | 84       |      | 120      |      |  |  |
|                                                                                              | For 10 min                                 | A           | 30                                                                                                           |                                                              | 30       |      | 40       |      | 50       |      |  |  |
| Protection by fuse<br>against short-circuits (U ≤ 690 V)                                     | Without thermal overload relay,<br>fuse gG | type 1<br>A | 25                                                                                                           |                                                              | 40       |      | 50       |      | 63       |      |  |  |
|                                                                                              |                                            | type 2<br>A | 20                                                                                                           |                                                              | 25       |      | 35       |      | 40       |      |  |  |
|                                                                                              | With thermal overload relay                | A           | See pages 2/52 and 2/53, for aM or gG fuse ratings<br>corresponding to the associated thermal overload relay |                                                              |          |      |          |      |          |      |  |  |
| Average impedance per pole                                                                   | At Ith and 50 Hz                           | mΩ          | 2.5                                                                                                          |                                                              | 2.5      |      | 2.5      |      | 2        |      |  |  |
| Power dissipation per pole<br>for the above operating currents                               | AC-3                                       | W           | 0.20                                                                                                         |                                                              | 0.36     |      | 0.8      |      | 1.25     |      |  |  |
|                                                                                              | AC-1                                       | W           | 1.56                                                                                                         |                                                              | 1.56     |      | 2.5      |      | 3.2      |      |  |  |
| a.c. control circuit characteristics                                                         |                                            |             |                                                                                                              |                                                              |          |      |          |      |          |      |  |  |
| Rated control circuit voltage (Uc)                                                           | 50/60 Hz                                   | V           | 12...690                                                                                                     |                                                              |          |      |          |      |          |      |  |  |
| Control voltage limits<br>50 or 60 Hz coils                                                  | Operational                                |             | —                                                                                                            |                                                              |          |      |          |      |          |      |  |  |
|                                                                                              | Drop-out                                   |             | —                                                                                                            |                                                              |          |      |          |      |          |      |  |  |
|                                                                                              | 50/60 Hz coils                             | Operational |                                                                                                              | 0.8...1.1 Uc on 50 Hz and<br>0.85...1.1 Uc on 60 Hz at 60 °C |          |      |          |      |          |      |  |  |
|                                                                                              | Drop-out                                   |             | 0.3...0.6 Uc at 60 °C                                                                                        |                                                              |          |      |          |      |          |      |  |  |
| Average consumption<br>at 20 °C and at Uc                                                    | ∼ 50 Hz                                    | Inrush      | 50 Hz coil                                                                                                   | VA                                                           | —        |      |          |      |          |      |  |  |
|                                                                                              |                                            |             | Cos φ                                                                                                        |                                                              | 0.75     |      |          |      |          |      |  |  |
|                                                                                              |                                            |             | 50/60 Hz coil                                                                                                | VA                                                           | 70       |      |          |      |          |      |  |  |
|                                                                                              |                                            | Sealed      | 50 Hz coil                                                                                                   | VA                                                           | —        |      |          |      |          |      |  |  |
|                                                                                              |                                            |             | Cos φ                                                                                                        |                                                              | 0.3      |      |          |      |          |      |  |  |
|                                                                                              |                                            |             | 50/60 Hz coil                                                                                                | VA                                                           | 7        |      |          |      |          |      |  |  |
|                                                                                              | ∼ 60 Hz                                    | Inrush      | 60 Hz coil                                                                                                   | VA                                                           | —        |      |          |      |          |      |  |  |
|                                                                                              |                                            |             | Cos φ                                                                                                        |                                                              | 0.75     |      |          |      |          |      |  |  |
|                                                                                              |                                            |             | 50/60 Hz coil                                                                                                | VA                                                           | 70       |      |          |      |          |      |  |  |
|                                                                                              |                                            | Sealed      | 60 Hz coil                                                                                                   | VA                                                           | —        |      |          |      |          |      |  |  |
|                                                                                              |                                            |             | Cos φ                                                                                                        |                                                              | 0.3      |      |          |      |          |      |  |  |
|                                                                                              |                                            |             | 50/60 Hz coil                                                                                                | VA                                                           | 7.5      |      |          |      |          |      |  |  |
| Heat dissipation                                                                             | 50/60 Hz                                   | W           | 2...3                                                                                                        |                                                              |          |      |          |      |          |      |  |  |
| Operating time (3)                                                                           | Closing “C”                                | ms          | 12...22                                                                                                      |                                                              |          |      |          |      |          |      |  |  |
|                                                                                              | Opening “O”                                | ms          | 4...19                                                                                                       |                                                              |          |      |          |      |          |      |  |  |
| Mechanical life<br>in millions of operating cycles                                           | 50 or 60 Hz coil                           |             | —                                                                                                            |                                                              |          |      |          |      |          |      |  |  |
|                                                                                              | 50/60 Hz coil on 50 Hz                     |             | 15                                                                                                           |                                                              |          |      |          |      |          |      |  |  |
| Maximum operating rate<br>at ambient temperature < 60 °C                                     | In operating cycles per hour               |             | 3600                                                                                                         |                                                              |          |      |          |      |          |      |  |  |

(1) Protection ensured for the connection cross-sections shown on page 2/33 and for connection via cable.

(2) In the least favourable direction, without change of contact state (coil supplied at Ue).

(3) The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.

| D32      | DT60     | D38      | D40      | D50      | D65      | D80      | D95      | D115     | D150     |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 32       | 32       | 38       | 40       | 50       | 65       | 80       | 95       | 115      | 150      |
| 50       | 60       | 50       | 60       | 80       | 80       | 125      | 125      | 200      | 200      |
| 690      | 690      | 690      | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     | 1000     |
| 25...400 | 25...400 | 25...400 | 25...400 | 25...400 | 25...400 | 25...400 | 25...400 | 25...400 | 25...400 |
| 50       | 60       | 50       | 60       | 80       | 80       | 125      | 125      | 200      | 200      |
| 550      | 500      | 550      | 800      | 900      | 1000     | 1100     | 1100     | 1260     | 1660     |
| 550      | 500      | 550      | 800      | 900      | 1000     | 1100     | 1100     | 1100     | 1400     |
| 430      | 430      | 430      | 720      | 810      | 900      | 990      | 1100     | 1100     | 1400     |
| 260      | 260      | 310      | 320      | 400      | 520      | 640      | 800      | 950      | 1200     |
| 138      | 138      | 150      | 165      | 208      | 260      | 320      | 400      | 550      | 580      |
| 60       | 60       | 60       | 72       | 84       | 110      | 135      | 135      | 250      | 250      |
| 63       | 63       | 63       | 80       | 100      | 160      | 200      | 200      | 250      | 315      |
| 63       | 63       | 63       | 80       | 100      | 125      | 160      | 160      | 200      | 250      |

See pages 2/52 and 2/53, for aM or gG fuse ratings corresponding to the associated thermal overload relay

|   |   |   |     |     |     |      |      |     |      |
|---|---|---|-----|-----|-----|------|------|-----|------|
| 2 | 2 | 2 | 1.5 | 1.5 | 1   | 0.8  | 0.8  | 0.6 | 0.6  |
| 2 | 2 | 3 | 2.4 | 3.7 | 4.2 | 5.1  | 7.2  | 7.9 | 13.5 |
| 5 | 5 | 5 | 5.4 | 9.6 | 6.4 | 12.5 | 12.5 | 24  | 24   |

|                                                              |                                                              |         |         |         |         |         |                                    |           |
|--------------------------------------------------------------|--------------------------------------------------------------|---------|---------|---------|---------|---------|------------------------------------|-----------|
| 12...690                                                     | 24...660                                                     |         |         |         |         |         | 24...500                           |           |
| –                                                            | 0.85...1.1 Uc at 55 °C                                       |         |         |         |         |         | 0.85...1.1 Uc at 55 °C             |           |
| –                                                            | 0.3...0.6 Uc at 55 °C                                        |         |         |         |         |         | 0.3...0.5 Uc at 55 °C              |           |
| 0.8...1.1 Uc on 50 Hz and<br>0.85...1.1 Uc on 60 Hz at 60 °C | 0.8...1.1 Uc on 50 Hz and<br>0.85...1.1 Uc on 60 Hz at 55 °C |         |         |         |         |         | 0.8...1.15 Uc on 50/60 Hz at 55 °C |           |
| 0.3...0.6 Uc at 60 °C                                        | 0.3...0.6 Uc at 55 °C                                        |         |         |         |         |         | 0.3...0.5 Uc at 55 °C              |           |
| –                                                            | 200                                                          |         |         |         |         |         | 300                                | –         |
| 0.75                                                         | 0.75                                                         |         |         |         |         |         | 0.8                                | 0.9       |
| 70                                                           | 245                                                          |         |         |         |         |         | 280...350                          | 280...350 |
| –                                                            | 20                                                           |         |         |         |         |         | 22                                 | –         |
| 0.3                                                          | 0.3                                                          |         |         |         |         |         | 0.3                                | 0.9       |
| 7                                                            | 26                                                           |         |         |         |         |         | 2...18                             | 2...18    |
| –                                                            | 220                                                          |         |         |         |         |         | 300                                | –         |
| 0.75                                                         | 0.75                                                         |         |         |         |         |         | 0.8                                | 0.9       |
| 70                                                           | 245                                                          |         |         |         |         |         | 280...350                          | 280...350 |
| –                                                            | 22                                                           |         |         |         |         |         | 22                                 | –         |
| 0.3                                                          | 0.3                                                          |         |         |         |         |         | 0.3                                | 0.9       |
| 7.5                                                          | 26                                                           |         |         |         |         |         | 2...18                             | 2...18    |
| 2...3                                                        | 6...10                                                       |         |         |         |         |         | 3...8                              | 3...4.5   |
| 12...22                                                      | 20...26                                                      | 20...26 | 20...26 | 20...35 | 20...35 | 20...50 | 20...35                            |           |
| 4...19                                                       | 8...12                                                       | 8...12  | 8...12  | 6...20  | 6...20  | 6...20  | 40...75                            |           |
| –                                                            | 16                                                           | 16      | 16      | 10      | 10      | 8       | –                                  |           |
| 15                                                           | 6                                                            | 6       | 6       | 4       | 4       | 8       | 8                                  |           |
| 3600                                                         | 3600                                                         | 3600    | 3600    | 3600    | 3600    | 2400    | 1200                               |           |

## d.c. control circuit characteristics

| Type of contactor                                                                                                                                                                                                                                                   |                                 |                 | LC1-D09...D38<br>DT20...DT60 | LC1 or LP1-D40...D65   | LC1 or LP1-D80 | LC1-D115 &<br>LC1-D150    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------|------------------------------|------------------------|----------------|---------------------------|
| Rated control circuit voltage (Uc)                                                                                                                                                                                                                                  | ---                             | V               | 12...440                     | 12...440               |                | 24...440                  |
| Rated insulation voltage                                                                                                                                                                                                                                            | Conforming to IEC 947-1         | V               | 690                          |                        |                |                           |
|                                                                                                                                                                                                                                                                     | Conforming to UL, CSA           | V               | 600                          |                        |                |                           |
| Control voltage limits                                                                                                                                                                                                                                              | Operational                     | Standard coil   | 0.7...1.25 Uc<br>at 60 °C    | 0.85...1.1 Uc at 55 °C |                | 0.75...1.2 Uc<br>at 55 °C |
|                                                                                                                                                                                                                                                                     |                                 | Wide range coil | —                            | 0.75...1.2 Uc at 55 °C |                | —                         |
|                                                                                                                                                                                                                                                                     | Drop-out                        |                 | 0.1...0.25 Uc<br>at 60 °C    | 0.1...0.3 Uc at 55 °C  |                | 0.15...0.4 Uc<br>at 55 °C |
| Average consumption<br>at 20 °C and at Uc                                                                                                                                                                                                                           | Inrush                          | W               | 5.4                          | 22                     | 22             | 270 to 365                |
|                                                                                                                                                                                                                                                                     | Sealed                          | W               | 5.4                          | 22                     | 22             | 2.4...5.1                 |
| Average operating time (1)<br>at Uc                                                                                                                                                                                                                                 | Closing                         | "C"             | ms                           | 55                     | 85...110       | 95...130                  |
|                                                                                                                                                                                                                                                                     | Opening                         | "O"             | ms                           | 20                     | 20...35        | 20...35                   |
| <b>Note:</b> The arcing time depends on the circuit switched by the poles. For normal 3-phase applications, the arcing time is usually less than 10 ms. The load is isolated from the supply after a time equal to the sum of the opening time and the arcing time. |                                 |                 |                              |                        |                |                           |
| Time constant (L/R)                                                                                                                                                                                                                                                 |                                 | ms              | 28                           | 65                     | 75             | 25                        |
| Mechanical life at Uc                                                                                                                                                                                                                                               | In millions of operating cycles |                 | 30                           | 20                     | 20             | 8                         |
| Maximum operating rate<br>at ambient temperature ≤ 60 °C                                                                                                                                                                                                            | In operating cycles per hour    |                 | 3600                         | 3600                   | 3600           | 1200                      |

## Low consumption control circuit characteristics

|                                                      |                                    |        |                |
|------------------------------------------------------|------------------------------------|--------|----------------|
| Rated insulation voltage                             | Conforming to EN 60947-1           | V      | 690            |
|                                                      | Conforming to UL, CSA              | V      | 600            |
| Maximum voltage                                      | Of the control circuit on ---      |        | 250            |
| Average consumption<br>d.c.<br>at 20 °C and at Uc    | Wide range coil<br>(0.7...1.25 Uc) | Inrush | W              |
|                                                      |                                    | Sealed | W              |
| Operating time (1)<br>at Uc and at 20 °C             | Closing                            | "C"    | ms             |
|                                                      | Opening                            | "O"    | ms             |
| Voltage limits (θ ≤ 60 °C)<br>of the control circuit | Operational                        |        | 0.7 to 1.25 Uc |
|                                                      | Drop-out                           |        | 0.1...0.3 Uc   |
| Time constant (L/R)                                  |                                    | ms     | 40             |
| Mechanical life                                      | In millions of operating cycles    |        | 30             |
| Maximum operating rate                               | At ambient temperature ≤ 60 °C     | ops/h  | 3600           |

(1) Operating times depend on the type of contactor electromagnet and its control mode.

The closing time "C" is measured from the moment the coil supply is switched on to initial contact of the main poles. The opening time "O" is measured from the moment the coil supply is switched off to the moment the main poles separate.

(2) In the least favourable direction, without change of contact state.

Contactor integral auxiliary contact characteristics

|                                                          |                                                                                                                               |    |                                            |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----|--------------------------------------------|
| Linked contacts conforming to draft standard IEC 947-4-5 | Each contactor has 2 N/O and N/C contacts mechanically linked on the same movable contact holder                              |    |                                            |
| Mirror contact                                           | The N/C contact on each contactor represents the state of the power contacts and can be connected to a PREVENTA safety module |    |                                            |
| Rated operational voltage (Ue)                           | Up to                                                                                                                         | V  | 690                                        |
| Rated insulation voltage (Ui)                            | Conforming to IEC 947-1                                                                                                       | V  | 690                                        |
|                                                          | Conforming to UL, CSA                                                                                                         | V  | 600                                        |
| Conventional thermal current (Ith)                       | For ambient temperature ≤ 60 °C                                                                                               | A  | 10                                         |
| Operating current frequency                              |                                                                                                                               | Hz | 25...400                                   |
| Minimum switching capacity<br>$\lambda = 10^{-8}$        | U min.                                                                                                                        | V  | 17                                         |
|                                                          | I min.                                                                                                                        | mA | 5                                          |
| Short-circuit protection                                 | Conforming to EN 60947-5-1                                                                                                    |    | gG fuse: 10 A                              |
| Rated making capacity                                    | Conforming to EN 60947-5-1, I rms                                                                                             | A  | ~: 140, ---: 250                           |
| Short-time rating                                        | Permissible for                                                                                                               |    |                                            |
|                                                          | 1 s                                                                                                                           | A  | 100                                        |
|                                                          | 500 ms                                                                                                                        | A  | 120                                        |
| Insulation resistance                                    |                                                                                                                               | MΩ | > 10                                       |
|                                                          |                                                                                                                               |    |                                            |
| Non-overlap time                                         | Guaranteed between N/C and N/O contacts                                                                                       | ms | 1.5 on energisation and on de-energisation |

Contact operating power  
conforming to EN 60947-5-1

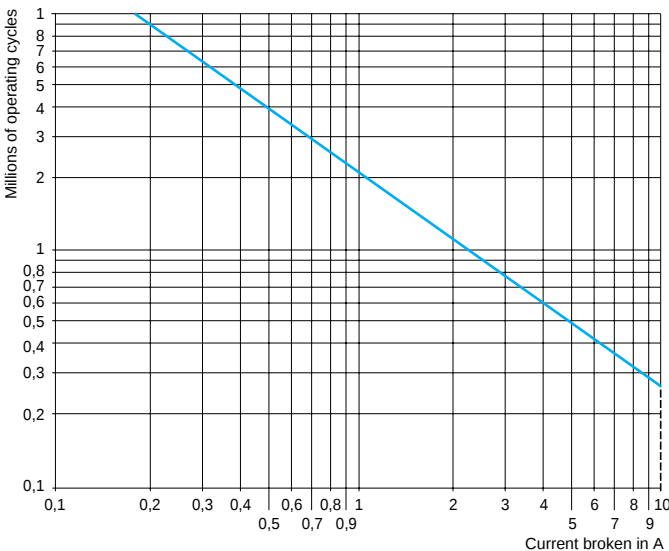
**a.c. supply categories AC-14 and AC-15**  
Electrical life (valid for up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making power ( $\cos \varphi 0.7$ ) = 10 times the power broken ( $\cos \varphi 0.4$ ).

**d.c. supply category DC-13**  
Electrical life (valid for up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the load.

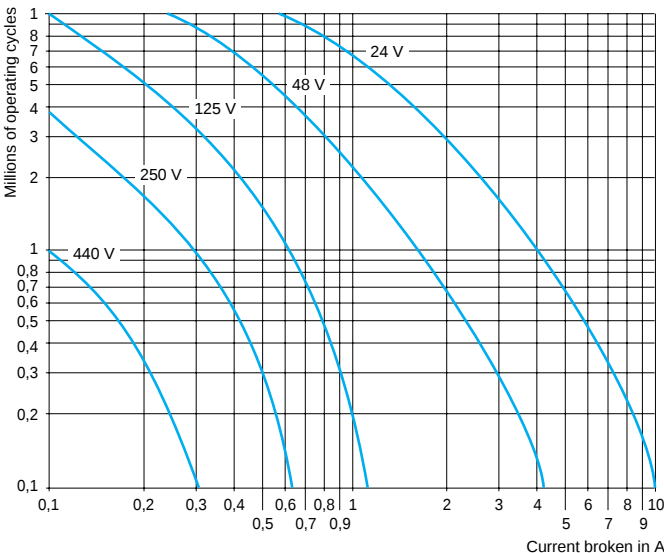
|                             |    |    |     |     |     |     |      |      |
|-----------------------------|----|----|-----|-----|-----|-----|------|------|
|                             | V  | 24 | 48  | 115 | 230 | 400 | 440  | 600  |
| 1 million operating cycles  | VA | 60 | 120 | 280 | 560 | 960 | 1050 | 1440 |
| 3 million operating cycles  | VA | 16 | 32  | 80  | 160 | 280 | 300  | 420  |
| 10 million operating cycles | VA | 4  | 8   | 20  | 40  | 70  | 80   | 100  |

|                             |   |    |    |     |     |     |
|-----------------------------|---|----|----|-----|-----|-----|
|                             | V | 24 | 48 | 125 | 250 | 440 |
| 1 million operating cycles  | W | 96 | 76 | 76  | 76  | 44  |
| 3 million operating cycles  | W | 48 | 38 | 38  | 32  | –   |
| 10 million operating cycles | W | 14 | 12 | 12  | –   | –   |

AC-15



DC-13



Selection:  
pages 1/6 to 1/35

References:  
pages 2/6 to 2/9

Dimensions:  
pages 2/44 to 2/47

Schemes:  
pages 2/48 and 2/49

| Contact block type                        |                                                                               |     | LAD-N or C                                       | LAD-T & S | LAD-R | LAD-8 |
|-------------------------------------------|-------------------------------------------------------------------------------|-----|--------------------------------------------------|-----------|-------|-------|
| Environment                               |                                                                               |     |                                                  |           |       |       |
| Conforming to standards                   |                                                                               |     | IEC 947-5-1, NF C 63-140, VDE 0660, EN 60947-5-1 |           |       |       |
| Product certifications                    |                                                                               |     | UL, CSA                                          |           |       |       |
| Protective treatment                      | Conforming to IEC 68                                                          |     | "TH"                                             |           |       |       |
| Degree of protection                      | Conforming to VDE 0106                                                        |     | Protection against direct finger contact IP 2X   |           |       |       |
| Ambient air temperature around the device | Storage                                                                       | °C  | - 60...+ 80                                      |           |       |       |
|                                           | Operation                                                                     | °C  | - 5...+ 60                                       |           |       |       |
|                                           | Permissible for operation at Uc                                               | °C  | - 40...+ 70                                      |           |       |       |
| Maximum operating altitude                | Without derating                                                              | m   | 3000                                             |           |       |       |
| Cabling                                   | Phillips N° 2 and Ø 6 mm<br>Flexible or solid cable with or without cable end | mm² | Min.: 1 x 1; max.: 2 x 2.5                       |           |       |       |
| Connection by spring terminals            | Flexible or solid cable without cable end                                     | mm² | Max.: 2 x 2.5                                    |           |       |       |

## Instantaneous and time delay contact characteristics

|                                                                                                                       |                                                  |    |                                              |               |               |    |
|-----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----|----------------------------------------------|---------------|---------------|----|
| Number of contacts                                                                                                    |                                                  |    | 1, 2 or 4                                    | 2             | 2             | 2  |
| Rated operational voltage (Ue)                                                                                        | Up to                                            | V  | 690                                          |               |               |    |
| Rated insulation voltage (Ui)                                                                                         | Conforming to EN 60947-5-1                       | V  | 690                                          |               |               |    |
|                                                                                                                       | Conforming to UL, CSA                            | V  | 600                                          |               |               |    |
| Conventional thermal current (Ith)                                                                                    | For ambient temperature ≤ 60 °C                  | A  | 10                                           |               |               |    |
| Frequency of operational current                                                                                      |                                                  | Hz | 25...400                                     |               |               |    |
| Minimum switching capacity                                                                                            | U min.                                           | V  | 17                                           |               |               |    |
|                                                                                                                       | I min.                                           | mA | 5                                            |               |               |    |
| Short-circuit protection                                                                                              | Conforming to EN 60947-5-1 and VDE 0660. gG fuse | A  | 10                                           |               |               |    |
| Rated making capacity                                                                                                 | Conforming to EN 60947-5-1, I rms                | A  | ~: 140; ---: 250                             |               |               |    |
| Short-time rating                                                                                                     | Permissible for: 1 s                             | A  | 100                                          |               |               |    |
|                                                                                                                       | 500 ms                                           | A  | 120                                          |               |               |    |
|                                                                                                                       | 100 ms                                           | A  | 140                                          |               |               |    |
| Insulation resistance                                                                                                 |                                                  | MΩ | > 10                                         |               |               |    |
| Non-overlap time                                                                                                      | Guaranteed between N/C and N/O contacts          | ms | 1.5 (on energisation and on de-energisation) |               |               |    |
| Overlap time                                                                                                          | Guaranteed between N/C and N/O on LAD-C22        | ms | 1.5                                          | —             | —             | —  |
| Time delay<br>(LAD-T, R and S contact blocks)<br>Accuracy only valid for setting range<br>indicated on the front face | Ambient air temperature for operation            | °C | —                                            | - 40...+ 70   | - 40...+ 70   | —  |
|                                                                                                                       | Repeat accuracy                                  |    | —                                            | ± 2 %         | ± 2 %         | —  |
|                                                                                                                       | Drift up to 0.5 million operating cycles         |    | —                                            | + 15 %        | + 15 %        | —  |
|                                                                                                                       | Drift depending on ambient air temperature       |    | —                                            | 0.25 % per °C | 0.25 % per °C | —  |
| Mechanical durability                                                                                                 | In millions of operating cycles                  |    | 30                                           | 5             | 5             | 30 |
| Operational power of contacts                                                                                         |                                                  |    | See page 2/40                                |               |               |    |

| Contact block type                                                       |                                                                                  |                 | LA1-DX                                         | LA1-DX<br>protected                         | non protected    | LA1-DY                                      |
|--------------------------------------------------------------------------|----------------------------------------------------------------------------------|-----------------|------------------------------------------------|---------------------------------------------|------------------|---------------------------------------------|
| Environment                                                              |                                                                                  |                 |                                                |                                             |                  |                                             |
| Conforming to standards                                                  |                                                                                  |                 | IEC 947-5-1, VDE 0660                          |                                             |                  |                                             |
| Product certifications                                                   |                                                                                  |                 | UL, CSA                                        |                                             |                  |                                             |
| Protective treatment                                                     | Conforming to IEC 68                                                             |                 | "TH"                                           |                                             |                  |                                             |
| Degree of protection                                                     | Conforming to VDE 0106                                                           |                 | Protection against direct finger contact IP 2X |                                             |                  |                                             |
| Ambient air temperature                                                  | Storage and operation                                                            | °C              | - 25...+ 70                                    |                                             |                  |                                             |
| Cabling                                                                  | Phillips N° 2 and Ø 6 mm<br>Flexible or solid cable<br>with or without cable end | mm <sup>2</sup> | Min.: 1 x 1<br>Max.: 2 x 2.5                   |                                             |                  |                                             |
| Number of contacts                                                       |                                                                                  |                 | 2                                              | 2                                           | 2                | 2                                           |
| Contact characteristics                                                  |                                                                                  |                 |                                                |                                             |                  |                                             |
| Rated operational voltage (Ue)                                           | Up to                                                                            | V               | 50                                             | 50                                          | 690              | 24                                          |
| Rated insulation voltage (Ui)                                            | Conforming to IEC 947-5-1                                                        | V               | 250                                            | 250                                         | 690              | 250                                         |
|                                                                          | Conforming to UL, CSA                                                            | V               | –                                              | –                                           | 600              | –                                           |
| Conventional thermal current (Ith)                                       | For ambient temperature ≤ 40 °C                                                  | A               | –                                              | –                                           | 10               | –                                           |
| Maximum operational current (Ie)                                         |                                                                                  | mA              | 50                                             | 50                                          | 10               | 50                                          |
| Frequency of operational current                                         |                                                                                  | Hz              | –                                              | –                                           | 25...400         | –                                           |
| Minimum switching capacity                                               | U min.                                                                           | V               | 3                                              | 3                                           | 17               | 3                                           |
|                                                                          | I min.                                                                           | mA              | 0.3                                            | 0.3                                         | 5                | 0.3                                         |
| Short-circuit protection                                                 | Conforming to EN 60947-5-1, gG fuse                                              | A               | –                                              | –                                           | 10               | –                                           |
| Rated making capacity                                                    | Conforming to EN 60947-5-1, I rms                                                | A               | –                                              | –                                           | ~: 140; ---: 250 | –                                           |
| Short-time rating                                                        | Permissible for: 1 s                                                             | A               | –                                              | –                                           | 100              | –                                           |
|                                                                          | 500 ms                                                                           | A               | –                                              | –                                           | 120              | –                                           |
|                                                                          | 100 ms                                                                           | A               | –                                              | –                                           | 140              | –                                           |
| Insulation resistance                                                    |                                                                                  | MΩ              | > 10                                           | > 10                                        | > 10             | > 10                                        |
| Mechanical durability                                                    | In millions of operating cycles                                                  |                 | 5                                              | 5                                           | 30               | 5                                           |
| Materials and technology<br>used for dust and damp<br>protected contacts |                                                                                  |                 | Gold - Single<br>break with<br>crossed bars    | Gold - Single<br>break with<br>crossed bars | –                | Gold - Single<br>break with<br>crossed bars |

# TeSys contactors

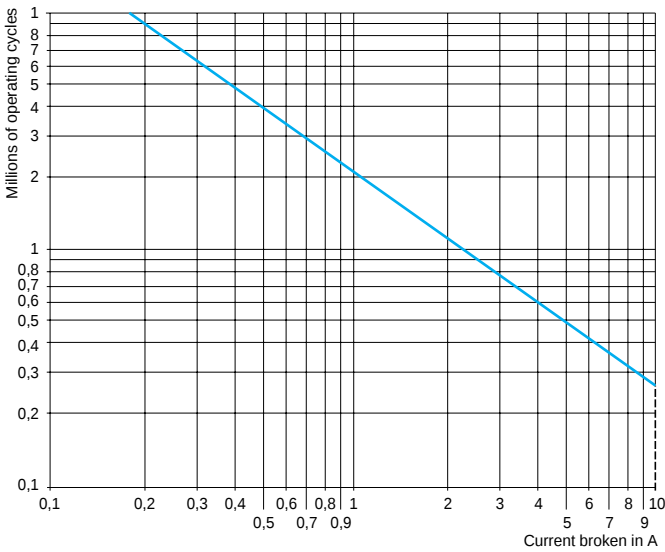
Auxiliary contact blocks with  
dust and damp protected contacts  
for model d contactors

## Operational power of contacts (conforming to EN 60947-5-1)

### a.c. supply, categories AC-14 and AC-15

Electrical durability (valid up to 3600 operating cycles/hour) on an inductive load such as the coil of an electromagnet: making power ( $\cos \varphi 0.7$ ) = 10 times the power broken ( $\cos \varphi 0.4$ ).

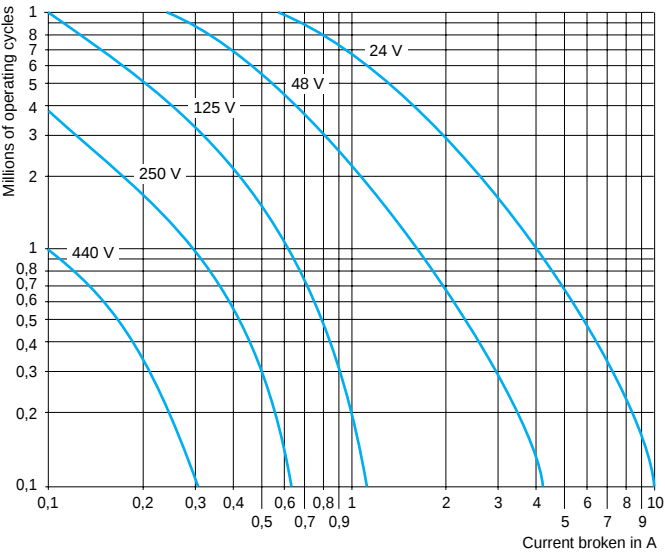
|                             | V  | 24 | 48  | 115 | 230 | 400 | 440  | 600  |
|-----------------------------|----|----|-----|-----|-----|-----|------|------|
| 1 million operating cycles  | VA | 60 | 120 | 280 | 560 | 960 | 1050 | 1440 |
| 3 million operating cycles  | VA | 16 | 32  | 80  | 160 | 280 | 300  | 420  |
| 10 million operating cycles | VA | 4  | 8   | 20  | 40  | 70  | 80   | 100  |



### d.c. supply, category DC-13

Electrical durability (valid up to 1200 operating cycles/hour) on an inductive load such as the coil of an electromagnet, without economy resistor, the time constant increasing with the power.

|                             | V | 24  | 48 | 125 | 250 | 440 |
|-----------------------------|---|-----|----|-----|-----|-----|
| 1 million operating cycles  | W | 120 | 90 | 75  | 68  | 61  |
| 3 million operating cycles  | W | 70  | 50 | 38  | 33  | 28  |
| 10 million operating cycles | W | 25  | 18 | 14  | 12  | 10  |



## Environment

|                                           |                                 |    |                                                |
|-------------------------------------------|---------------------------------|----|------------------------------------------------|
| Conforming to standards                   |                                 |    | IEC 947-5-1                                    |
| Product certifications                    |                                 |    | UL, CSA                                        |
| Protective treatment                      | Conforming to IEC 68            |    | "TH"                                           |
| Degree of protection                      | Conforming to VDE 0106          |    | Protection against direct finger contact IP 2X |
| Ambient air temperature around the device | Storage                         | °C | - 40...+ 80                                    |
|                                           | Operation                       | °C | - 25...+ 55                                    |
|                                           | Permissible for operation at Uc | °C | - 25...+ 70                                    |

## "Auto - Man - Stop" control modules

|                           |                                                                                                             |    |                                                  |
|---------------------------|-------------------------------------------------------------------------------------------------------------|----|--------------------------------------------------|
| Recommendation            | The Auto - Man selector switch must only be operated with the Start - Stop ("O" "I") switch in position "O" |    |                                                  |
| Rated insulation voltage  | Conforming to EN 60947-5-1                                                                                  | V  | 250                                              |
| Rated operational voltage | Conforming to EN 60947-5-1                                                                                  | V  | 250                                              |
| Protection                | Against electric shocks                                                                                     | kV | 2                                                |
| Built-in protection       | Contacteur coil suppression                                                                                 |    | By varistor                                      |
| Indication                | By integral LED                                                                                             |    | Illuminates when the contactor coil is energised |
| Electrical durability     | In operating cycles                                                                                         |    | 20,000                                           |

## Coil suppressor modules

| Module type                        |           |    | LA4-DA<br>LAD-4RC | LA4-DB<br>LAD-4T                  | LA4-DC          | LA4-DE<br>LAD-4V     |
|------------------------------------|-----------|----|-------------------|-----------------------------------|-----------------|----------------------|
| Type of protection                 |           |    | RC circuit        | Bidirectional peak limiting diode | Diode           | Varistor             |
| Rated control circuit voltage (Uc) |           | V  | ~<br>24...415     | ~ or ---<br>24...72               | ---<br>12...250 | ~ or ---<br>24...250 |
| Maximum peak voltage               |           |    | 3 Uc              | 2 Uc                              | Uc              | 2 Uc                 |
| Natural RC frequency               | 24/48 V   | Hz | 400               | —                                 | —               | —                    |
|                                    | 50/127 V  | Hz | 200               | —                                 | —               | —                    |
|                                    | 110/240 V | Hz | 100               | —                                 | —               | —                    |
|                                    | 380/415 V | Hz | 150               | —                                 | —               | —                    |

## Mechanical latch blocks

| Mechanical latch block type<br>For mounting on contactor |                                 |     | LA6-DK10<br>LC1D40...D65,<br>LP1-D65 | LAD-6K10<br>LC1-D09...D38,<br>DT20...DT60 | LA6-DK20<br>LC1-D80...D150<br>LP1-D80<br>and LC1-D115 |
|----------------------------------------------------------|---------------------------------|-----|--------------------------------------|-------------------------------------------|-------------------------------------------------------|
| Certification                                            |                                 |     | UL, CSA                              |                                           | UL, CSA                                               |
| Rated insulation voltage                                 | Conforming to IEC 947-5-1       | V   | 690                                  |                                           | 690                                                   |
| Rated control circuit voltage                            | ~ 50/60 Hz and ---              | V   | 24...415                             |                                           | 24...415                                              |
| Power required                                           | For unlatching                  | ~   | 25                                   |                                           | 25                                                    |
|                                                          |                                 | --- | 30                                   |                                           | 30                                                    |
| Maximum operating rate                                   | In operating cycles/hour        |     | 1200                                 |                                           | 1200                                                  |
| On-load factor                                           |                                 |     | 10 %                                 |                                           | 10 %                                                  |
| Mechanical durability at Uc                              | In millions of operating cycles |     | 0.5                                  |                                           | 0.5                                                   |

Unlatching can be manually operated locally or electrically controlled for remote operation.  
The LA6-DK or LAD-6K latch coil and the LC1-D operating coil must not be energised simultaneously. The duration of the LA6-DK or LAD-6K and LC1-D control signals must be ≥ 100 ms.

|                                            |                                                                                  |                 |                                                |                              |
|--------------------------------------------|----------------------------------------------------------------------------------|-----------------|------------------------------------------------|------------------------------|
| Module type                                |                                                                                  |                 | LA4-DT (On-delay)                              | LA4-DR (Off-delay) for LC1-D |
| Environment                                |                                                                                  |                 |                                                |                              |
| Conforming to standards                    |                                                                                  |                 | IEC 255-5                                      |                              |
| Product certifications                     |                                                                                  |                 | UL, CSA                                        |                              |
| Protective treatment                       | Conforming to IEC 68                                                             |                 | "TH"                                           |                              |
| Degree of protection                       | Conforming to VDE 0106                                                           |                 | Protection against direct finger contact IP 2X |                              |
| Ambient air temperature around the device  | Storage                                                                          | °C              | - 40...+ 80                                    |                              |
|                                            | Operation                                                                        | °C              | - 25...+ 55                                    |                              |
|                                            | For operation at U <sub>c</sub>                                                  | °C              | - 25...+ 70                                    |                              |
| Rated insulation voltage (U <sub>i</sub> ) | Conforming to EN 60947-5-1                                                       | V               | 250                                            |                              |
| Cabling                                    | Phillips N° 2 and Ø 6 mm<br>Flexible or solid cable<br>with or without cable end | mm <sup>2</sup> | Min.: 1 x 1                                    |                              |
|                                            |                                                                                  |                 | Max.: 2 x 2.5                                  |                              |

## Control circuit characteristics

|                                                 |                          |   |                            |                                                        |
|-------------------------------------------------|--------------------------|---|----------------------------|--------------------------------------------------------|
| Built-in protection                             | On input                 |   | By varistor                | By varistor                                            |
|                                                 | Suppression of contactor |   | By varistor                | By bidirectional peak limiting diode                   |
| Rated control circuit voltage (U <sub>c</sub> ) |                          | V | ~ or = 24...250            | ~ 24...250                                             |
| Permissible variation                           |                          |   | 0.8...1.1 U <sub>c</sub>   | 0.8...1.1 U <sub>c</sub>                               |
| Type of control                                 |                          |   | By mechanical contact only | By mechanical contact only,<br>connecting cable < 10 m |

## Time delay characteristics

|                                |                              |    |                                      |                                      |
|--------------------------------|------------------------------|----|--------------------------------------|--------------------------------------|
| Timing ranges                  |                              | s  | 0.1...2; 1.5...30; 25...500          | 0.1...2; 1.5...30; 25...500          |
| Repeat accuracy                | 0...40 °C                    |    | ± 3 % (10 ms minimum)                | ± 3 % (10 ms minimum)                |
| Reset time                     | During the time delay period | ms | 150                                  | 225                                  |
|                                | After the time delay period  | ms | 50                                   | —                                    |
| Immunity to micro-breaks       | During the time delay period | ms | 10                                   | 20                                   |
|                                | After the time delay period  | ms | 2                                    | —                                    |
| Minimum control pulse duration |                              | ms | —                                    | 40                                   |
| Indication of time delay       | By LED                       |    | Illuminates during time delay period | Illuminates during time delay period |

## Switching characteristics (solid state type)

|                          |                                 |    |                 |                 |
|--------------------------|---------------------------------|----|-----------------|-----------------|
| Maximum power dissipated |                                 | W  | 2               | 3.5             |
| Leakage current          |                                 | mA | < 5             | < 5             |
| Residual voltage         |                                 | V  | 3.3             | 3.3             |
| Overvoltage protection   |                                 |    | 3 kV; 0.5 joule | 3 kV; 0.5 joule |
| Electrical durability    | In millions of operating cycles |    | 30              | 30              |

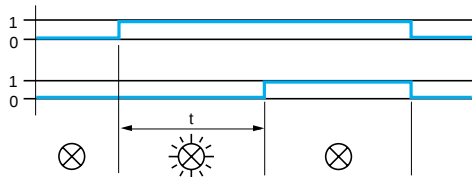
## Operating diagrams

### LA4-DT "On-delay" electronic timers

U supply  
(A1-A2)

Time delay output  
Contactor coil

Red LED



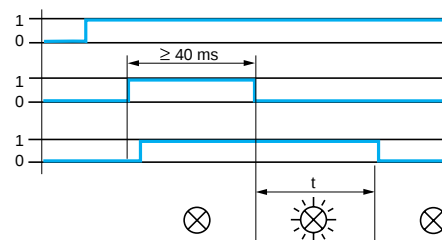
### LA4-DR "Off-delay" electronic timers

U supply  
(A1-A2)

Control  
(A2-B2)

Time delay output  
Contactor coil

Red LED



References:  
page 2/21

Dimensions:  
pages 2/44 and 2/45

Schemes:  
pages 2/48 and 2/49

## Environment

|                                           |                                 |    |                                                |
|-------------------------------------------|---------------------------------|----|------------------------------------------------|
| Conforming to standards                   |                                 |    | IEC 255-5                                      |
| Product certifications                    |                                 |    | UL, CSA                                        |
| Protective treatment                      | Conforming to IEC 68            |    | "TH"                                           |
| Degree of protection                      | Conforming to VDE 0106          |    | Protection against direct finger contact IP 2X |
| Ambient air temperature around the device | Storage                         | °C | - 40...+ 80                                    |
|                                           | Operation                       | °C | - 25...+ 55                                    |
|                                           | Permissible for operation at Uc | °C | - 25...+ 70                                    |

## Other characteristics

| Module type                                   |                                                                                                                                                                                                                                                                                                                                         |                 | LA4-DFBQ                   | LA4-DFB                    | LA4-DFE    | LA4-DLB               | LA4-DLE | LA4-DWB                    |       |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------|----------------------------|------------|-----------------------|---------|----------------------------|-------|
|                                               |                                                                                                                                                                                                                                                                                                                                         |                 | With relay                 | With relay                 | With relay | With relay + override |         | Solid state                |       |
| Rated insulation voltage                      | Conforming to EN 60947-5-1                                                                                                                                                                                                                                                                                                              | V               | 5                          | 250                        |            |                       |         |                            |       |
| Rated operational voltage                     | Conforming to EN 60947-5-1                                                                                                                                                                                                                                                                                                              | V               | 415                        | 250                        |            |                       |         |                            |       |
| Indication of input state                     | By integral LED which illuminates when the contactor coil is energised                                                                                                                                                                                                                                                                  |                 |                            |                            |            |                       |         |                            |       |
| Input signals                                 | Control voltage (E1-E2)                                                                                                                                                                                                                                                                                                                 | V               | — 24                       | — 24                       | — 48       | — 24                  | — 48    | — 24                       |       |
|                                               | Permissible variation                                                                                                                                                                                                                                                                                                                   | V               | 17...30                    | 17...30                    | 33...60    | 17...30               | 33...60 | 5...30                     |       |
|                                               | Current consumption at 20 °C                                                                                                                                                                                                                                                                                                            | mA              | 25                         | 25                         | 15         | 25                    | 15      | 8.5 for 5 V<br>15 for 24 V |       |
|                                               | State “0” guaranteed for                                                                                                                                                                                                                                                                                                                | U               | V                          | < 2.4                      | < 2.4      | < 4.8                 | < 2.4   | < 4.8                      | < 2.4 |
|                                               |                                                                                                                                                                                                                                                                                                                                         | I               | mA                         | < 2                        | < 2        | < 1.3                 | < 2     | < 1.3                      | < 2   |
|                                               | State “1” guaranteed for                                                                                                                                                                                                                                                                                                                | U               | V                          | 17                         | 17         | 33                    | 17      | 33                         | 5     |
| Built-in protection                           | Against reverse polarity                                                                                                                                                                                                                                                                                                                |                 | By diode                   |                            |            |                       |         |                            |       |
|                                               | Of the input                                                                                                                                                                                                                                                                                                                            |                 | By diode                   |                            |            |                       |         |                            |       |
| Electrical durability at 220/240 V            | In millions of operating cycles                                                                                                                                                                                                                                                                                                         |                 | 3                          | 10                         | 10         | 3                     | 3       | 20                         |       |
| Maximum immunity time to micro-breaks         |                                                                                                                                                                                                                                                                                                                                         | ms              | 4                          | 4                          | 4          | 4                     | 4       | 1                          |       |
| Power dissipated                              | At 20 °C                                                                                                                                                                                                                                                                                                                                | W               | 0.6                        | 0.6                        | 0.6        | 0.6                   | 0.6     | 0.4                        |       |
| Direct mounting without contactor             | With coil: ~ 24...250 V                                                                                                                                                                                                                                                                                                                 |                 | —                          | LC1-D40...D150             |            |                       |         | —                          |       |
|                                               | ~ 100...250 V                                                                                                                                                                                                                                                                                                                           |                 | —                          | —                          |            |                       |         | LC1-D40...D115             |       |
|                                               | ~ 380...415 V                                                                                                                                                                                                                                                                                                                           |                 | LC1-D40...D150             | —                          |            |                       |         | —                          |       |
| Mounting with cabling adaptor LAD-4BB         | With coil: ~ 24...250 V                                                                                                                                                                                                                                                                                                                 |                 | —                          | LC1-D09...D38, DT20...DT60 |            |                       |         | LC1-D09...D38, DT20...DT60 |       |
|                                               | ~ 380...415 V                                                                                                                                                                                                                                                                                                                           |                 | LC1-D09...D38, DT20...DT60 | —                          |            |                       |         | —                          |       |
| Total operating time at Uc (of the contactor) | Operating times depend on the type of contactor electromagnet and its control mode.<br>The closing time “C” is measured from the moment the coil supply is switched on to initial contact of the main poles.<br>The opening time “O” is measured from the moment the coil supply is switched off to the moment the main poles separate. |                 |                            |                            |            |                       |         |                            |       |
|                                               |                                                                                                                                                                                                                                                                                                                                         |                 |                            | LC1-D09...D38, DT20...DT60 |            | LC1-D40...D65         |         | LC1-D80 and D95            |       |
|                                               | With LA4-DF, DL                                                                                                                                                                                                                                                                                                                         | N/O<br>N/C      | ms                         | 20...30<br>16...24         |            | 28...34<br>20...24    |         | 28...43<br>18...32         |       |
| Cabling                                       | Phillips N° 2 and Ø 6 mm<br>Flexible or solid cable with or without cable end                                                                                                                                                                                                                                                           | mm <sup>2</sup> | Min.: 1 x 1                |                            |            |                       |         |                            |       |
|                                               |                                                                                                                                                                                                                                                                                                                                         | mm <sup>2</sup> | Min.: 2 x 2.5              |                            |            |                       |         |                            |       |