# Capacitor Switching Contactors

## for use with reactive or non-reactive capacitor banks

| Rated Operational Power at 50/60Hz Ambient Temperature 50°C | | | 60°C | | | Aux. Contacts Built-in Add. | | | Type | | Coil voltage [1] 220-240V 50Hz | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **380V** | 415V | 660V | 380V | 415V | 660V | | | | | **230** | | | |
| **400V** | 440V | 690V | 400V | 440V | 690V | | | | | ↓ | | Pack | Weight |
| **kVAr** | kVAr | kVAr | kVAr | kVAr | kVAr | NO | NC | pcs. | | | **Order No** | pcs. | kg/pc. |
| 0-**12,5** | 0-13 | 0-20 | 0-12,5 | 0-13 | 0-20 | 1 | - | 1 [2] | **K3-18NK10** | ... | **LA 3K1 813N** | 1 | 0,34 |
| 0-**12,5** | 0-13 | 0-20 | 0-12,5 | 0-13 | 0-20 | - | 1 | 1 [2] | **K3-18NK01** | ... | **LA 3K1 823N** | 1 | 0,34 |
| 10-**20** | 10,5-22 | 17-33 | 10-20 | 10,5-22 | 17-33 | - | - | 3 [3] | **K3-24K00** | ... | **LA 3K2 433** | 1 | 0,62 |
| 10-**25** | 10,5-27 | 17-41 | 10-25 | 10,5-27 | 17-41 | - | - | 3 [3] | **K3-32K00** | ... | **LA 3K3 233** | 1 | 0,62 |
| 20-**33,3** | 23-36 | 36-55 | 20-33,3 | 23-36 | 36-55 | - | - | 3 [3] | **K3-50K00** | ... | **LA 3K5 033** | 1 | 1,0 |
| 20-**50** | 23-53 | 36-82 | 20-50 | 23-53 | 36-82 | - | - | 3 [3] | **K3-62K00** | ... | **LA 3K6 233** | 1 | 1,0 |
| 20-**75**[4] | 23-75[4] | 36-120[4] | 20-60 | 23-64 | 36-100 | - | - | 3 [3] | **K3-74K00** | ... | **LA 3K7 433** | 1 | 1,0 |
| 33-**80** | 36-82 | 57-120 | 33-75 | 36-77 | 57-120 | - | - | 6 [5] | **K3-90K00...**/ VS [7] | | **LA 3K9 033** | 1 | 2,3 |
| 33-**100**[6] | 36-103[6] | 57-148[6] | 33-90[6] | 36-93[6] | 57-148[6] | - | - | 6 [5] | **K3-115K00...**/ VS [7] | | **LA 3K1 A33** | 1 | 2,3 |

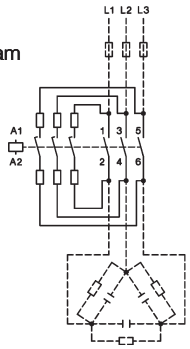


**Specification:** Contactors K3-..K are suitable for switching low-inductive and low loss capacitors in capacitor banks (IEC70 and 831, VDE 0560) without and with reactors.
Capacitor switching contactors are fitted with early make contacts and damping resistors, to reduce the value of make current $<70 \times I_e$.
**Operating Conditions:** Capacitor switching contactors are protected against contact welding for a prospective making current of $200 \times I_e$.

## Technical Data acc. to IEC 947-4-1, IEC 947-5-1, EN 60947-4-1, EN 60947-5-1, VDE 0660

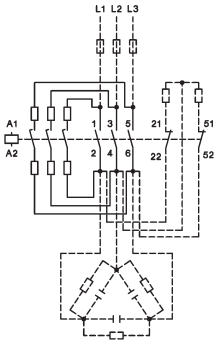
| Type | | | K3-18NK | K3-24K | K3-32K | K3-50K | K3-62K | K3-74K | K3-90K | K3-115K |
|---|---|---|---|---|---|---|---|---|---|---|
| Max. frequency of operations z | | 1/h | 120 | 120 | 120 | 120 | 120 | 80 | 80 | 80 |
| Contact life | non reactive capacitor banks | S x $10^3$ | 250 | 150 | 150 | 150 | 150 | 120 | 120 | 120 |
| | reactive capacitor banks | S x $10^3$ | 400 | 300 | 300 | 300 | 300 | 200 | 200 | 200 |
| **Rated operational current $I_e$** | at 50°C | A | **0-18** | **14-28** | **14-36** | **30-48** | **30-72** | **30-108** | **50-115** | **50-144** |
| **AC6b** | at 60°C | A | **0-18** | **14-28** | **14-36** | **30-48** | **30-72** | **30-87** | **50-108** | **50-130** |
| Rated operational current $I_{th}$ | at 50°C | A | 32 | 45 | 60 | 100 | 110 | 120 | 155 | 190 |
| AC1 | at 60°C | A | 32 | 40 | 55 | 90 | 100 | 110 | 145 | 170 |
| Overload factor | at 50°C | % | 78 | 60 | 67 | 108 | 53 | 11 | 35 | 32 |
| acc. to EN 61921: 30% min. | at 60°C | % | 78 | 43 | 53 | 88 | 39 | 26 | 34 | 31 |
| Fuses gL (gG) | from / to | A | 35 / 63 | 50 / 80 | 63 / 100 | 80 / 160 | 125 / 160 | 160/200 | 160/200 | 160/250 |

**Typical Circuit Diagram**




**Wiring Diagram for Quick Discharge Resistors**
Make sure that the current of the discharge resistors is not higher than the rated current (AC1) of the auxiliary contacts

**Mounting instructions:**
In the area of capacitor switching contactors, difficulty inflammable and self-extinguishing materials shall be used only, because abnormal temperatures within the area of the resistor spirals cannot be excluded.




1) Coil voltage range and non-standard coil voltages see page 39
2) 1 HN.. or HA.. snap-on
3) 2HB.. for side mounting and 1 HN.. or HA.. snap-on
4) Consider the max. thermal current of the contactor K3-74A: $I_{th}$ 130A
5) 2 HB.. on the left or right side and 4 HN.. or HA.. snap-on
6) Consider the min. cross-section of conductor at max. load
7) Type 230 for AC- and DC-operating 220-240V 50/60Hz and 220V DC ( with integrated coil suppressor )
Type 230VS for AC-operating 220-240V 50Hz ( with integrated coil suppressor )

# Contactors

## Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

| Main Contacts | | Type | K(G)3-10 | K(G)3-14 | K(G)3-18 | K(G)3-22 | K(G)3-24 | K(G)3-32 | K(G)3-40 | K3-50 | K3-62 | K3-74 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Rated insulation voltage $U_i$** [1] | | V AC | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 |
| **Making capacity $I_{eff}$** | at $U_e$ = 690V AC | A | 200 | 200 | 200 | 200 | 400 | 500 | 500 | 700 | 900 | 900 |
| **Breaking capacity $I_{eff}$** | 400V AC | A | 180 | 180 | 200 | 200 | 380 | 400 | 400 | 600 | 800 | 800 |
| K2-09 to K3-22 cosφ= 0,65 | 500V AC | A | 150 | 150 | 180 | 180 | 300 | 370 | 370 | 500 | 700 | 700 |
| K3-24 to K3-1200 cosφ= 0,35 | 690V AC | A | 100 | 100 | 150 | 150 | 260 | 340 | 340 | 400 | 500 | 500 |
| | 1000V AC | A | - | - | - | - | - | - | - | - | - | |
| **Utilization category AC1** | | | | | | | | | | | | |
| **Switching of resistive load** | | | | | | | | | | | | |
| Rated operational current $I_e$ (=$I_{th}$) | 690V | **A** | **25** | **25** | **32** | **32** | **50** | **65** | **80** | **110** | **120** | **130** |
| at 40°C, open | | | | | | | | | | | | |
| Rated operational power | 220V | kW | 9,5 | 9,5 | 12,2 | 12,2 | 19,0 | 24,7 | 30,4 | 41,9 | 45,7 | 49,5 |
| of three-phase resistive loads | 230V | kW | 9,9 | 9,9 | 12,7 | 12,7 | 19,9 | 25,9 | 31,8 | 43,8 | 47,7 | 51,7 |
| 50-60Hz, cosφ= 1 | 240V | kW | 10,4 | 10,4 | 13,3 | 13,3 | 20,8 | 27,0 | 33,2 | 45,7 | 49,8 | 54,0 |
| | 380V | kW | 16,4 | 16,4 | 21,0 | 21,0 | 32,9 | 42,7 | 52,6 | 72,3 | 78,9 | 85,5 |
| | 400V | kW | 17,3 | 17,3 | 22,1 | 22,1 | 34,6 | 45,0 | 55,4 | 76,1 | 83,0 | 90,0 |
| | 415V | kW | 17,9 | 17,9 | 23,0 | 23,0 | 35,9 | 46,7 | 57,4 | 79,0 | 86,2 | 93,3 |
| | 440V | kW | 19,0 | 19,0 | 24,4 | 24,4 | 38,1 | 49,5 | 60,9 | 83,7 | 91,3 | 99,0 |
| | 500V | kW | 21,6 | 21,6 | 27,7 | 27,7 | 43,3 | 56,2 | 69,2 | 95,2 | 103,8 | 112,5 |
| | 660V | kW | 28,5 | 28,5 | 36,5 | 36,5 | 57,1 | 74,2 | 91,3 | 125,6 | 137,0 | 148,4 |
| | 690V | kW | 29,8 | 29,8 | 38,2 | 38,2 | 59,7 | 77,6 | 95,5 | 131,3 | 143,2 | 155,2 |
| | 1000V | kW | - | - | - | - | - | - | - | - | - | |
| Rated operational current $I_e$ (=$I_{the}$) | 690V | A | 25 | 25 | 32 | 32 | 40 | 55 | 65 | 90 | 100 | 110 |
| at 60°C, enclosed | | | | | | | | | | | | |
| Rated operational power | 220V | kW | 9,5 | 9,5 | 12,2 | 12,2 | 15,2 | 20,9 | 24,7 | 34,3 | 38,1 | 41,9 |
| of three-phase resistive loads | 230V | kW | 9,9 | 9,9 | 12,7 | 12,7 | 15,9 | 21,9 | 25,9 | 35,8 | 39,8 | 43,8 |
| 50-60Hz, cosφ= 1 | 240V | kW | 10,4 | 10,4 | 13,3 | 13,3 | 16,6 | 22,8 | 27,0 | 37,4 | 41,5 | 45,7 |
| | 380V | kW | 16,4 | 16,4 | 21,0 | 21,0 | 26,3 | 36,2 | 42,7 | 59,2 | 65,7 | 72,3 |
| | 400V | kW | 17,3 | 17,3 | 22,1 | 22,1 | 27,7 | 38,1 | 45,0 | 62,3 | 69,2 | 76,1 |
| | 415V | kW | 17,9 | 17,9 | 23,0 | 23,0 | 28,7 | 39,5 | 46,7 | 64,6 | 71,8 | 79,0 |
| | 440V | kW | 19,0 | 19,0 | 24,4 | 24,4 | 30,4 | 41,9 | 49,5 | 68,5 | 76,1 | 83,7 |
| | 500V | kW | 21,6 | 21,6 | 27,7 | 27,7 | 34,6 | 47,6 | 56,2 | 77,9 | 86,5 | 95,2 |
| | 660V | kW | 28,5 | 28,5 | 36,5 | 36,5 | 45,7 | 62,8 | 74,2 | 102,8 | 114,2 | 125,6 |
| | 690V | kW | 29,8 | 29,8 | 38,2 | 38,2 | 47,7 | 65,7 | 77,6 | 107,4 | 119,4 | 131,3 |
| | 1000V | kW | - | - | - | - | - | - | - | - | - | |
| Minimum cross-section of conductor | | | | | | | | | | | | |
| at load with $I_e$ (=$I_{th}$) | | mm² | 4 | 4 | 6 | 6 | 10 | 16 | 25 | 35 | 50 | 50 |
| **Utilization category AC2 and AC3** | | | | | | | | | | | | |
| **Switching of three-phase motors** | | | | | | | | | | | | |
| Rated operational current $I_e$ | 220V | A | 12 | 15 | 18 | 22 | 24 | 30 | 40 | 50 | 63 | 74 |
| open and enclosed | 230V | A | 11,5 | 14,5 | 18 | 22 | 24 | 30 | 40 | 50 | 62 | 74 |
| | 240V | A | 11 | 14 | 18 | 22 | 24 | 32 | 40 | 50 | 62 | 74 |
| | **380-400V** | **A** | **10** | **14** | **18** | **22** | **24** | **32** | **40** | **50** | **62** | **74** |
| | 415V | A | 9 | 14 | 18 | 22 | 23 | 30 | 40 | 50 | 62 | 74 |
| | 440V | A | 9 | 14 | 18 | 22 | 23 | 30 | 40 | 50 | 62 | 74 |
| | 500V | A | 7 | 9 | 9 | 9 | 17,5 | 21 | 21 | 33 | 42 | 42 |
| | 660-690V | A | 6,5 | 8,5 | 8,5 | 8,5 | 17 | 20 | 20 | 31 | 40 | 40 |
| | 1000V | A | - | - | - | | - | - | - | - | - | - |
| Rated operational power | 220-230V | kW | 3 | 4 | 5 | 6 | 6 | 8,5 | 11 | 12,5 | 18,5 | 22 |
| of three-phase motors | 240V | kW | 3 | 4 | 5 | 7 | 7 | 9 | 11,5 | 13,5 | 19 | 23 |
| 50-60Hz | **380-400V** | **kW** | **4** | **5,5** | **7,5** | **11** | **11** | **15** | **18,5** | **22** | **30** | **37** |
| | 415V | kW | 4,5 | 6 | 8,5 | 12 | 12 | 16 | 20 | 24 | 33 | 40 |
| | 440V | kW | 4,5 | 6 | 8,5 | 12 | 12 | 16 | 20 | 24 | 33 | 40 |
| | 500V | kW | 5,5 | 7,5 | 10 | 10 | 15 | 18,5 | 18,5 | 30 | 37 | 45 |
| | 660-690V | kW | 5,5 | 7,5 | 10 | 10 | 15 | 18,5 | 18,5 | 30 | 37 | 45 |
| | 1000V | kW | - | - | - | - | - | - | - | - | - | - |

1) Suitable at 690V for: earthed-neutral systems, overvoltage category I to IV, pollution degree 3 (standard-industry): Uimp = 8kV.
Data for other conditions on request.

# Contactors

## Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

| Typ | K3-90 | K3-115 | K3-116 | K3-151 | K3-176 | K3-210 | K3-260 | K3-316 | K3-450 | K3-550 | K3-700 | K3-860 | K3-1000 | K3-1200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V~ | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 690 | 690 | 690 | 690 |
| A | 1100 | 1200 | 1200 | 1500 | 2000 | 2100 | 2600 | 3200 | 4500 | 5500 | 7000 | 8600 | 10000 | 12000 |
| A | 950 | 1100 | 1000 | 1200 | 1500 | 1600 | 2100 | 2600 | 4500 | 5500 | 7000 | 8000 | 8000 | 10000 |
| A | 850 | 1000 | 1000 | 1200 | 1500 | 1600 | 2100 | 2600 | 4500 | 5500 | 7000 | 8000 | 8000 | 10000 |
| A | 600 | 600 | 800 | 1000 | 800 | 1200 | 1900 | 2300 | 3200 | 4400 | 5600 | 6900 | 7000 | 8000 |
| A | - | - | 400 | 500 | 600 | 700 | 850 | 1000 | - | - | - | - | - | - |
| **A** | **160** | **200** | **200** | **230** | **250** | **350** | **450** | **500** | **700** | **760** | **1000** | **1100** | **1200** | **1350** |
| kW | 60 | 76 | 76 | 87 | 95 | 133 | 171 | 190 | 266 | 289 | 381 | 419 | 457 | 514 |
| kW | 63 | 79 | 79 | 91 | 99 | 139 | 179 | 199 | 279 | 302 | 398 | 438 | 478 | 537 |
| kW | 66 | 83 | 83 | 95 | 103 | 145 | 187 | 207 | 291 | 315 | 415 | 457 | 498 | 561 |
| kW | 105 | 131 | 131 | 151 | 164 | 230 | 296 | 329 | 460 | 500 | 658 | 724 | 789 | 888 |
| kW | 110 | 138 | 138 | 159 | 173 | 242 | 311 | 346 | 485 | 526 | 692 | 762 | 831 | 935 |
| kW | 115 | 143 | 143 | 165 | 179 | 251 | 323 | 359 | 503 | 546 | 718 | 790 | 862 | 970 |
| kW | 121 | 152 | 152 | 175 | 190 | 266 | 342 | 381 | 533 | 579 | 762 | 838 | 914 | 1028 |
| kW | 138 | 173 | 173 | 199 | 216 | 303 | 389 | 453 | 606 | 658 | 866 | 952 | 1039 | 1169 |
| kW | 182 | 228 | 228 | 262 | 285 | 400 | 514 | 571 | 800 | 868 | 1143 | 1257 | 1371 | 1543 |
| kW | 191 | 239 | 239 | 274 | 298 | 418 | 537 | 597 | 836 | 908 | 1195 | 1314 | 1434 | 1613 |
| kW | 221 | 277 | 216 | 318 | 346 | 433 | 546 | 606 | 692 | 866 | - | - | - | - |
| A | 145 | 170 | 170 | 180 | 200 | 280 | 360 | 400 | 550 | 600 | 800 | 875 | 960 | 1080 |
| kW | 55 | 64 | 64 | 68 | 76 | 106 | 137 | 152 | 209 | 228 | 304 | 333 | 365 | 411 |
| kW | 57 | 67 | 67 | 71 | 79 | 111 | 143 | 159 | 219 | 239 | 318 | 348 | 382 | 430 |
| kW | 59 | 70 | 70 | 74 | 83 | 116 | 150 | 166 | 228 | 249 | 332 | 363 | 399 | 448 |
| kW | 95 | 111 | 111 | 118 | 131 | 184 | 237 | 263 | 362 | 395 | 526 | 575 | 631 | 710 |
| kW | 100 | 117 | 117 | 124 | 138 | 193 | 249 | 277 | 381 | 415 | 554 | 606 | 665 | 748 |
| kW | 104 | 122 | 122 | 129 | 143 | 201 | 259 | 287 | 395 | 431 | 575 | 628 | 690 | 776 |
| kW | 110 | 129 | 129 | 137 | 152 | 213 | 274 | 304 | 419 | 457 | 609 | 666 | 731 | 823 |
| kW | 125 | 147 | 147 | 155 | 173 | 242 | 312 | 346 | 476 | 519 | 692 | 757 | 831 | 935 |
| kW | 165 | 194 | 194 | 205 | 228 | 320 | 412 | 457 | 628 | 685 | 914 | 1000 | 1097 | 1234 |
| kW | 173 | 202 | 202 | 215 | 239 | 334 | 430 | 478 | 657 | 717 | 956 | 1045 | 1147 | 1290 |
| kW | 166 | 187 | 216 | 277 | 346 | 388 | 499 | 554 | 692 | 866 | - | - | - | - |
| $mm^2$ | 95 | 120 | 95 | 95 | 120 | 240 | 2x150 | 2x(30x6) | 2x(40x5) | 2x(50x5) | 2x(60x5) | 2x(60x6) | 2x(60x6) | 2x(60x8) |
| A | 90 | 115 | 115 | 150 | 175 | 210 | 260 | 315 | 450 | 550 | 700 | 860 | 1000 | 1200 |
| A | 90 | 115 | 115 | 150 | 175 | 210 | 260 | 315 | 450 | 550 | 700 | 860 | 1000 | 1200 |
| A | 90 | 115 | 115 | 150 | 175 | 210 | 260 | 315 | 450 | 550 | 700 | 860 | 1000 | 1200 |
| **A** | **90** | **115** | **115** | **150** | **175** | **210** | **260** | **315** | **450** | **550** | **700** | **860** | **1000** | **1200** |
| A | 90 | 115 | 115 | 150 | 175 | 210 | 260 | 315 | 450 | 550 | 700 | 860 | 1000 | 1200 |
| A | 90 | 115 | 115 | 150 | 175 | 210 | 260 | 315 | 450 | 550 | 700 | 860 | 1000 | 1200 |
| A | 60 | 60 | 115 | 150 | 175 | 210 | 260 | 315 | 450 | 550 | 700 | 860 | 1000 | 1200 |
| A | 58 | 58 | 100 | 120 | 140 | 150 | 180 | 240 | 400 | 500 | 630 | 700 | 860 | 1000 |
| A | 58 | 58 | 45 | 60 | 70 | 85 | 100 | 125 | 200 | 250 | - | - | - | - |
| kW | 25 | 33 | 30 | 40 | 50 | 60 | 75 | 90 | 132 | 175 | 225 | 280 | 325 | 390 |
| kW | 27 | 35 | 35 | 45 | 55 | 65 | 80 | 100 | 140 | 185 | 235 | 290 | 335 | 400 |
| **kW** | **45** | **55** | **55** | **75** | **90** | **110** | **132** | **160** | **250** | **300** | **400** | **500** | **580** | **680** |
| kW | 49 | 63 | 59 | 80 | 95 | 115 | 140 | 180 | 257 | 315 | 415 | 515 | 600 | 710 |
| kW | 49 | 63 | 63 | 85 | 100 | 125 | 150 | 190 | 270 | 335 | 450 | 530 | 630 | 750 |
| kW | 55 | 55 | 75 | 90 | 100 | 132 | 160 | 210 | 300 | 375 | 500 | 600 | 720 | 850 |
| kW | 55 | 55 | 90 | 110 | 132 | 132 | 160 | 210 | 375 | 500 | 630 | 700 | 850 | 1000 |
| kW | 55 | 55 | 55 | 75 | 90 | 110 | 132 | 160 | 280 | 355 | - | - | - | - |

# Contactors

## Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

| Main Contacts | | Type | K(G)3-10 | K(G)3-14 | K(G)3-18 | K(G)3-22 | K(G)3-24 | K(G)3-32 | K(G)3-40 | K3-50 | K3-62 | K3-74 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Utilization category AC4** | | | | | | | | | | | | |
| **Switching of squirrel cage motors, inching** | | | | | | | | | | | | |
| Rated operational current $I_e$ | 220V | A | 12 | 15 | 18 | 18 | 24 | 30 | 40 | 50 | 63 | 63 |
| open and enclosed | 230V | A | 11,5 | 14,5 | 18 | 18 | 24 | 30 | 40 | 50 | 62 | 62 |
| | 240V | A | 11 | 14 | 18 | 18 | 24 | 32 | 40 | 50 | 62 | 62 |
| | **380-400V** | **A** | **10** | **14** | **18** | **18** | **24** | **32** | **40** | **50** | **62** | **62** |
| | 415V | A | 9 | 14 | 18 | 18 | 23 | 30 | 37 | 45 | 60 | 60 |
| | 440V | A | 9 | 14 | 18 | 18 | 23 | 30 | 37 | 45 | 55 | 55 |
| | 500V | A | 9 | 12 | 16 | 16 | 17,5 | 21 | 21 | 33 | 42 | 42 |
| | 660V | A | 7 | 9 | 9 | 9 | 17 | 20 | 20 | 31 | 40 | 40 |
| | 690V | A | 6,5 | 8,5 | 8,5 | 8,5 | 17 | 20 | 20 | 31 | 40 | 40 |
| | 1000V | A | - | - | - | | - | - | - | - | - | - |
| Rated operational power | 220-230V | kW | 3 | 4 | 5 | 5 | 6 | 8,5 | 11 | 12,5 | 18,5 | 18,5 |
| of three-phase motors | 240V | kW | 3 | 4 | 5 | 5 | 7 | 9 | 11,5 | 13,5 | 19 | 19 |
| 50-60Hz | **380-400V** | **kW** | **4** | **5,5** | **7,5** | **7,5** | **11** | **15** | **18,5** | **22** | **30** | **30** |
| | 415V | kW | 4,5 | 6 | 8,5 | 8,5 | 12 | 16 | 20 | 24 | 33 | 33 |
| | 440V | kW | 4,5 | 6 | 8,5 | 8,5 | 12 | 16 | 20 | 24 | 33 | 33 |
| | 500V | kW | 5,5 | 7,5 | 10 | 10 | 15 | 18,5 | 18,5 | 30 | 37 | 37 |
| | 660-690V | kW | 5,5 | 7,5 | 10 | 10 | 15 | 18,5 | 18,5 | 30 | 37 | 37 |
| | 1000V | kW | - | - | - | - | - | - | - | - | - | - |
| **Utilization category AC5a** | | | | | | | | | | | | |
| **Switching of gas discharge lamps** | | | | | | | | | | | | |
| Rated operational current $I_e$ | | | | | | | | | | | | |
| per pole at 220/230V | | | | | | | | | | | | |
| Fluorescent lamps, | | | | | | | | | | | | |
| uncompensated and serial compensated | | A | 20 | 20 | 25 | 25 | 40 | 52 | 64 | 88 | 96 | 104 |
| parallel compensated | | A | 7 | 9 | 9 | 9 | 18 | 22 | 22 | 30 | 40 | 45 |
| dual-connection | | A | 22,5 | 22,5 | 28 | 28 | 45 | 58 | 72 | 98 | 108 | 117 |
| Metal halide lamps[1], | | | | | | | | | | | | |
| uncompensated | | A | 12 | 15 | 19 | 19 | 30 | 39 | 48 | 66 | 72 | 78 |
| parallel compensated | | A | 7 | 9 | 9 | 9 | 18 | 22 | 22 | 30 | 40 | 45 |
| Mercury-vapour lamps[2], | | | | | | | | | | | | |
| uncompensated | | A | 22,5 | 25 | 28 | 28 | 45 | 58 | 72 | 99 | 108 | 117 |
| parallel compensated | | A | 7 | 9 | 9 | 9 | 18 | 22 | 22 | 30 | 40 | 45 |
| Mixed light lamps[3] | | A | 20 | 20 | 25 | 25 | 40 | 52 | 64 | 88 | 96 | 104 |
| **Utilization category AC5b** | | | | | | | | | | | | |
| **Switching of incandescent lamps[4]** | | | | | | | | | | | | |
| Rated operational current $I_e$ | | | | | | | | | | | | |
| per pole at 220/230V | | A | 12,5 | 12,5 | 12,5 | 12,5 | 25 | 31 | 31 | 43 | 56 | 56 |

1) Metal halide lamps and sodium-vapour lamps (high- and low-pressure lamps)
2) High-pressure lamps
3) Blended lamps, containing a mercury high-pressure unit and a tungsten helix in a flourescent glass bulb (daylight lamps)
4) Current inrush approx. 16 x Ie

# Contactors

## Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

| Type | K3-90 | K3-115 | K3-151 | K3-176 | K3-210 | K3-260 | K3-316 | K3-450 | K3-550 | K3-700 | K3-860 | K3-1000 | K3-1200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |
| A | 85 | 98 | 55 | 63 | 85 | 100 | 120 | 150 | 180 | 230 | 280 | 340 | 400 |
| A | 85 | 98 | 55 | 63 | 85 | 100 | 120 | 150 | 180 | 230 | 280 | 340 | 400 |
| A | 85 | 98 | 55 | 63 | 85 | 100 | 120 | 150 | 180 | 230 | 280 | 340 | 400 |
| **A** | **85** | **85** | **55** | **63** | **85** | **100** | **120** | **150** | **180** | **230** | **280** | **340** | **400** |
| A | 85 | 85 | 55 | 63 | 85 | 100 | 120 | 150 | 180 | 230 | 280 | 340 | 400 |
| A | 85 | 85 | 55 | 63 | 85 | 100 | 120 | 150 | 180 | 230 | 280 | 340 | 400 |
| A | 85 | 85 | - | - | - | - | - | - | - | - | - | - | - |
| A | 60 | 60 | - | - | - | - | - | - | - | - | - | - | - |
| A | 57,5 | 57,5 | - | - | - | - | - | - | - | - | - | - | - |
| A | - | - | - | - | - | - | - | - | - | - | - | - | - |
| kW | 25 | 30 | 15 | 18,5 | 25 | 30 | 37 | 45 | 51 | 68 | 80 | 110 | 132 |
| kW | 27 | 32 | 15,5 | 19 | 26 | 31 | 38 | 47 | 53 | 71 | 83 | 115 | 137 |
| **kW** | **45** | **45** | **25** | **30** | **45** | **55** | **63** | **75** | **90** | **120** | **150** | **185** | **220** |
| kW | 49 | 49 | 25 | 33 | 45 | 55 | 65 | 80 | 100 | 132 | 160 | 200 | 230 |
| kW | 49 | 49 | 30 | 34 | 48 | 55 | 67 | 85 | 100 | 132 | 160 | 200 | 230 |
| kW | 55 | 55 | 25 | 30 | 55 | 65 | 75 | 100 | 110 | 150 | 185 | 220 | 257 |
| kW | 55 | 55 | 25 | 30 | 55 | 65 | 75 | 100 | 110 | 150 | 185 | 220 | 257 |
| kW | - | - | - | - | - | - | - | - | - | - | - | - | - |
| | | | | | | | | | | | | | |
| A | 100 | 120 | 120 | 140 | 180 | 220 | 280 | 360 | 450 | 570 | 700 | 850 | 1000 |
| A | 55 | 70 | 85 | 100 | 130 | 160 | 200 | 300 | 360 | 460 | 550 | 660 | 800 |
| A | 112 | 144 | 120 | 140 | 180 | 220 | 280 | 360 | 450 | 570 | 700 | 850 | 1000 |
| A | 85 | 90 | 95 | 110 | 140 | 180 | 230 | 300 | 380 | 490 | 610 | 750 | 890 |
| A | 55 | 70 | 75 | 85 | 110 | 140 | 170 | 260 | 300 | 400 | 480 | 580 | 700 |
| A | 112 | 144 | 120 | 140 | 180 | 220 | 280 | 360 | 450 | 570 | 700 | 850 | 1000 |
| A | 55 | 70 | 75 | 85 | 110 | 140 | 170 | 260 | 300 | 400 | 480 | 580 | 700 |
| A | 100 | 120 | 100 | 120 | 160 | 200 | 250 | 320 | 400 | 500 | 600 | 700 | 800 |
| | | | | | | | | | | | | | |
| A | 69 | 75 | 100 | 120 | 160 | 190 | 220 | 260 | 315 | 440 | 500 | 560 | 630 |

# Contactors

## Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

| Main Contacts | | Type | K(G)3-10 | K(G)3-14 | K(G)3-18 | K(G)3-22 | K(G)3-24 | K(G)3-32 | K(G)3-40 | K3-50 | K3-62 | K3-74 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Utilization category AC6a** | | | | | | | | | | | | |
| **Transformer primary switching** | | | | | | | | | | | | |
| at inrush | | n | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Rated operational current $I_e$ | 400V | A | 4,5 | 5,5 | 7,5 | 7,5 | 10,5 | 13,5 | 13,5 | 20 | 27 | 33 |
| Rated operational power | 220-230V | kVA | 1,8 | 2,2 | 3 | 3 | 4,2 | 5,4 | 5,4 | 8 | 10,7 | 13 |
| dependent on inrush n | 240V | kVA | 1,9 | 2,3 | 3,1 | 3,1 | 4,3 | 5,6 | 5,6 | 8,3 | 11,2 | 13,5 |
| | 380-400V | kVA | 3,1 | 3,8 | 5,2 | 5,2 | 7,3 | 9,3 | 9,3 | 13,5 | 18,5 | 22,5 |
| For different inrush-factors x | 415-440V | kVA | 3,4 | 4,2 | 5,7 | 5,7 | 8 | 10,2 | 10,2 | 15 | 20,5 | 25 |
| use the following formula: | 500V | kVA | 3,9 | 4,8 | 6,5 | 6,5 | 9 | 11,5 | 11,5 | 17 | 23 | 28 |
| Px=Pn*(n/x) | 660-690V | kVA | 5,4 | 6,5 | 9 | 9 | 12,5 | 16 | 16 | 24 | 32 | 39 |
| **Utilization category AC6b** | | | | | | | | | | | | |
| **Switching of three-phase capacitors** | | | | | | | | | | | | |
| Maximum inrush current (peak value) as multiple k of the | | | | | | | | | | | | |
| capacitor rated current | | k | 35 | 25 | 20 | 20 | 25 | 25 | 25 | 25 | 25 | 20 |
| Rated operational current $I_e$ | 500V | A | 8 | 12 | 15,5 | 15,5 | 23 | 32 | 32 | 45 | 60 | 70 |
| Rated operational power | 220-230V | kVAr | 3 | 4,5 | 6 | 6 | 8,5 | 12 | 12 | 17 | 24 | 28 |
| (sinφ→1) | 240V | kVAr | 3,5 | 5 | 6,5 | 6,5 | 9,5 | 13 | 13 | 18,5 | 25 | 29 |
| | 380-400V | kVAr | 5 | 7,5 | 10 | 10 | 15 | 20 | 20 | 29 | 39 | 46 |
| For different multiples x | 415-440V | kVAr | 5,5 | 8 | 11 | 11 | 16 | 22 | 22 | 32 | 43 | 50 |
| use the following formula: | 500V | kVAr | 7 | 10 | 13 | 13 | 20 | 26 | 26 | 39 | 50 | 58 |
| Px=Pk*(k/x) | 660-690V | kVAr | 7 | 10 | 13 | 13 | 20 | 26 | 26 | 40 | 50 | 58 |
| **Switching of** | | | | | | | | | | | | |
| **reactive capacitor banks** | | | | | | | | | | | | |
| Rated operational current $I_e$ | 690V | A | 8 | 13 | 18 | 20 | 28 | 36 | 42 | 48 | 72 | 108 [1] |
| Rated operational power | 220-230V | kVAr | 2,9 | 5 | 7 | 7,5 | 11 | 14 | 16 | 20 | 28 | 33 |
| | 240V | kVAr | 3,1 | 5,4 | 7 | 8 | 11 | 14 | 17 | 20 | 28 | 36 |
| | 380-400V | kVAr | 5 | 9 | 12,5 | 13 | 20 | 25 | 27,5 | 33,3 | 50 | 75 [1] |
| | 415-440V | kVAr | 5,5 | 9,5 | 13 | 14 | 22 | 27 | 30 | 36 | 53 | 75 [1] |
| | 500V | kVAr | 6 | 11 | 15 | 17 | 25 | 30 | 36 | 40 | 60 | 75 |
| | 660-690V | kVAr | 8 | 15 | 20 | 22 | 33 | 41 | 48 | 55 | 82 | 100 |
| | 1000V | kVAr | - | - | - | - | - | - | - | - | - | - |
| **Utilization category DC1** | | | | | | | | | | | | |
| **Switching of resistive load** | | | | | | | | | | | | |
| Time constant L/R ≤1ms | | | | | | | | | | | | |
| Rated operational current $I_e$ | 1 pole 24V | A | 20 | 25 | 32 | 32 | 50 | 65 | 80 | 110 | 120 | 130 |
| | 60V | A | 20 | 25 | 32 | 32 | 50 | 65 | 80 | 110 | 120 | 130 |
| | 110V | A | 6 | 6 | 6 | 6 | 10 | 10 | 10 | 12 | 12 | 12 |
| | 220V | A | 0,8 | 0,8 | 0,8 | 0,8 | 1,4 | 1,4 | 1,4 | 1,4 | 1,4 | 1,4 |
| | 3 poles in series 24V | A | 20 | 25 | 32 | 32 | 50 | 65 | 80 | 110 | 120 | 130 |
| | 60V | A | 20 | 25 | 32 | 32 | 50 | 65 | 80 | 110 | 120 | 130 |
| | 110V | A | 20 | 25 | 32 | 32 | 50 | 65 | 80 | 110 | 120 | 130 |
| | 220V | A | 16 | 20 | 20 | 20 | 30 | 35 | 35 | 63 | 80 | 80 |
| **Utilization category DC3 and DC5** | | | | | | | | | | | | |
| **Switching of shunt motors** | | | | | | | | | | | | |
| **and series motors** | | | | | | | | | | | | |
| Time constant L/R ≤15ms | | | | | | | | | | | | |
| Rated operational current $I_e$ | 1 pole 24V | A | 20 | 25 | 32 | 32 | 50 | 65 | 80 | 110 | 120 | 130 |
| | 60V | A | 6 | 6 | 6 | 6 | 30 | 30 | 30 | 60 | 60 | 60 |
| | 110V | A | 1,2 | 1,2 | 1,2 | 1,2 | 1,8 | 1,8 | 1,8 | 1,8 | 1,8 | 1,8 |
| | 220V | A | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,2 | 0,25 | 0,25 | 0,25 |
| | 3 poles in series 24V | A | 20 | 25 | 32 | 32 | 50 | 65 | 80 | 110 | 120 | 130 |
| | 60V | A | 20 | 25 | 32 | 32 | 40 | 40 | 40 | 80 | 80 | 80 |
| | 110V | A | 20 | 20 | 20 | 20 | 40 | 40 | 40 | 80 | 80 | 80 |
| | 220V | A | 2,5 | 2,5 | 2,5 | 2,5 | 4 | 4 | 4 | 5 | 5 | 5 |

1) Consider resistive load ($I_{th}$). see page 44

# Contactors

## Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

| Type | K3-90 | K3-115 | K3-151 | K3-176 | K3-210 | K3-260 | K3-316 | K3-450 | K3-550 | K3-700 | K3-860 | K3-1000 | K3-1200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| n | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| A | 38 | 50 | 65 | 80 | 90 | 120 | 142 | 203 | 248 | 315 | 390 | 450 | 540 |
| kVA | 15 | 20 | 25 | 30 | 34 | 45 | 54 | 77 | 95 | 120 | 148 | 170 | 200 |
| kVA | 15,5 | 20,5 | 27 | 33 | 37 | 50 | 59 | 80 | 100 | 130 | 160 | 185 | 220 |
| kVA | 26 | 34 | 45 | 55 | 60 | 80 | 95 | 140 | 170 | 210 | 270 | 310 | 370 |
| kVA | 29 | 38 | 46 | 57 | 63 | 85 | 100 | 145 | 175 | 220 | 280 | 320 | 380 |
| kVA | 33 | 43 | 55 | 69 | 75 | 100 | 120 | 170 | 210 | 270 | 330 | 380 | 460 |
| kVA | 45 | 60 | 56 | 69 | 100 | 135 | 160 | 200 | 250 | 320 | 350 | 500 | 600 |
| k | 20 | 20 | 20 | 20 | 25 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| A | 87 | 100 | 120 | 155 | 195 | 225 | 255 | 300 | 370 | 440 | 520 | 680 | 760 |
| kVAr | 33 | 38 | 45 | 60 | 75 | 90 | 100 | 115 | 145 | 170 | 200 | 260 | 290 |
| kVAr | 36 | 42 | 52 | 62 | 78 | 94 | 104 | 120 | 150 | 175 | 205 | 270 | 300 |
| kVAr | 57 | 65 | 80 | 100 | 130 | 155 | 170 | 200 | 250 | 300 | 350 | 450 | 500 |
| kVAr | 60 | 70 | 95 | 110 | 135 | 165 | 175 | 210 | 260 | 310 | 360 | 465 | 520 |
| kVAr | 70 | 80 | 100 | 130 | 170 | 194 | 220 | 260 | 320 | 380 | 450 | 590 | 660 |
| kVAr | 70 | 80 | 100 | 130 | 170 | 194 | 220 | 260 | 320 | 380 | 450 | 590 | 660 |
| A | 115 | 144 | 115 | 140 | 200 | 225 | 250 | 330 | 420 | 550 | 600 | 680 | 760 |
| kVAr | 45 | 55 | 43 | 53 | 76 | 85 | 95 | 125 | 160 | 209 | 228 | 260 | 290 |
| kVAr | 45 | 55 | 45 | 55 | 80 | 90 | 100 | 130 | 170 | 220 | 240 | 280 | 310 |
| kVAr | 80 | 100 | 75 | 90 | 130 | 145 | 160 | 210 | 270 | 350 | 390 | 440 | 480 |
| kVAr | 100 | 120 | 80 | 100 | 140 | 160 | 170 | 230 | 290 | 380 | 420 | 470 | 530 |
| kVAr | 105 | 125 | 95 | 120 | 170 | 190 | 210 | 280 | 350 | 450 | 500 | 570 | 640 |
| kVAr | 120 | 148 | 125 | 150 | 200 | 230 | 260 | 350 | 450 | 600 | 650 | 700 | 800 |
| kVAr | 160 | 200 | 155 | 200 | 300 | 340 | 400 | 500 | 650 | - | - | - | - |
| A | 160 | 200 | - | - | - | - | - | - | - | - | - | - | - |
| A | 160 | 200 | - | - | - | - | - | - | - | - | - | - | - |
| A | 20 | 25 | - | - | - | - | - | - | - | - | - | - | - |
| A | 2 | 2,5 | - | - | - | - | - | - | - | - | - | - | - |
| A | 160 | 200 | 200 | 250 | 350 | 400 | 450 | 600 | 760 | 1000 | 1100 | 1200 | 1350 |
| A | 160 | 200 | 200 | 250 | 350 | 400 | 450 | 600 | 760 | 1000 | 1100 | 1200 | 1350 |
| A | 160 | 200 | 150 | 170 | 250 | 280 | 315 | 400 | 480 | 560 | 630 | 800 | 900 |
| A | 100 | 160 | 80 | 100 | 150 | 180 | 200 | 250 | 315 | 400 | 450 | 500 | 600 |
| A | 160 | 200 | - | - | - | - | - | - | - | - | - | - | - |
| A | 85 | 110 | - | - | - | - | - | - | - | - | - | - | - |
| A | 2 | 2,5 | - | - | - | - | - | - | - | - | - | - | - |
| A | 0,5 | 0,5 | - | - | - | - | - | - | - | - | - | - | - |
| A | 160 | 200 | - | - | - | - | - | - | - | - | - | - | - |
| A | 100 | 110 | - | - | - | - | - | - | - | - | - | - | - |
| A | 100 | 110 | - | - | - | - | - | - | - | - | - | - | - |
| A | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - |

# Contactors

## Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

| Main Contacts | | Type | K(G)3-10 | K(G)3-14 | K(G)3-18 | K(G)3-22 | K(G)3-24 | K(G)3-32 | K(G)3-40 | K3-50 | K3-62 | K3-74 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Maximum ambient temperature** | | | | | | | | | | | | |
| Operation | open | °C | | | | | -40 to +60 (+90) [1] | | | | | |
| | enclosed | °C | | | | | -40 to +40 | | | | | |
| with thermal overload relay | open | °C | | | | | -25 to +60 | | | | | |
| enclosed | | °C | | | | | -25 to +40 | | | | | |
| Storage | | °C | | | | | -50 to +90 | | | | | |
| **Short circuit protection** | | | | | | | | | | | | |
| for contactors without thermal overload relay | | | | | | | | | | | | |
| Coordination-type "1" according to IEC 947-4-1 | | | | | | | | | | | | |
| Contact welding without hazard of persons | | | | | | | | | | | | |
| max. fuse size | gL (gG) | A | 63 | 63 | 63 | 63 | 80 | 80 | 80 | 160 | 160 | 160 |
| Coordination-type "2" according to IEC 947-4-1 | | | | | | | | | | | | |
| Light contact welding accepted | | | | | | | | | | | | |
| max. fuse size | gL (gG) | A | 25 | 35 | 35 | 35 | 50 | 50 | 50 | 100 | 125 | 125 |
| Contact welding not accepted | | | | | | | | | | | | |
| max. fuse size | gL (gG) | A | 16 | 16 | 16 | 16 | 25 | 35 | 35 | 50 | 63 | 63 |
| For contactors with thermal overload relay the device with the smaller admissible backup fuse (contactor or thermal overload relay) determines the fuse size. | | | | | | | | | | | | |
| **Cable cross-sections** | | | | | | | | | | | | |
| for contactors without thermal overload relay | | | | | | | | | | | | |
| 1 cable per clamp | | | | | | | | | | | | |
| main connector | solid or stranded | mm² | 0,75 - 6 | | | | 1,5 - 25 | | | 4 - 50 | | |
| | flexible | mm² | 1 - 4 | | | | 2,5 - 16 | | | 10 - 35 | | |
| | flexible with multicore cable end | mm² | 0,75 - 4 | | | | 1,5 - 16 | | | 6 - 35 | | |
| 2 cables per clamp | | | | | | | | | | | | |
| | solid or stranded | mm² | 6+(1-6) / 4+(0,75-4) | | | | 16+(2,5-16) / 10+(4-16) | | | 50+4 / 35+6 / 25+(6-16) | | |
| | | | 2,5+(0,75-2,5) / 1,5+(0,75-1,5) | | | | 6+(4-16) / 4+(2,5-16) | | | 16+(6-16) / 10+(6-16) | | |
| | flexible | mm² | 6+(1,5-4) / 4+(1-4) | | | | 16+(2,5-6) / 10+(4-10) | | | 50+(4-10) / 35+(4-16) | | |
| | | | 2,5+(0,75-2,5) / 1,5+(0,75-1,5) | | | | 6+(4-16) / 4+(2,5-16) | | | 25+(4-25) / 16+(4-16) | | |
| 1 cable per clamp | | | | | | | | | | | | |
| main connector | solid | AWG | 18 - 10 | | | | 16 - 10 | | | 12 - 10 | | |
| | flexible | AWG | 18 - 10 | | | | 14 - 4 | | | 10 - 0 | | |
| 2 cables per clamp | | | | | | | | | | | | |
| | solid | AWG | 10+(16-10) / 12+(18-12) | | | | 10+(16-10) / 12+(18-12) | | | 10+(12-10) / 12+12 | | |
| | | | 14+(18-14) / 16+(18-16) | | | | 14+(18-14) / 16+(18-16) | | | | | |
| | flexible | AWG | 10+(14-10) / 12+(18-12) | | | | 4+(18-12) / 6+(18-8) | | | 1+(12-10) / 2+(8-12) | | |
| | | | 14+(18-14) / 16+(18-16) | | | | 8+(18-8) / 10+(18-12) | | | 3+(12-8) / 4+(10-6) | | |
| **Frequency of operations z** | | | | | | | | | | | | |
| Contactors without thermal overload relay | | | | | | | | | | | | |
| | without load | 1/h | 10000 | | | | 7000 | | | 7000 | | |
| | AC3, $I_e$ | 1/h | 600 | | | | 600 | | | 400 | | |
| | AC4, $I_e$ | 1/h | 120 | | | | 120 | | | 120 | | |
| | DC3, $I_e$ | 1/h | 600 | | | | 600 | | | 400 | | |
| **Mechanical life** | | | | | | | | | | | | |
| AC operated | S x $10^6$ | | 10 | | | | 10 | | | 10 | | |
| DC operated | S x $10^6$ | | 10 | | | | 10 | | | 10 | | |
| DC-solenoid operated (KG3) | S x $10^6$ | | 50 | | | | 50 | | | - | | |
| **Short time current** | 10s-current | A | 96 | 120 | 144 | 176 | 184 | 240 | 296 | 450 | 504 | 592 |
| | 120s-current | A | 42 | 52 | 58 | 66 | 80 | 97 | 110 | 195 | 203 | 222 |
| **Power loss** per pole | at $I_e$/AC3 400V | W | 0,21 | 0,35 | 0,5 | 0,75 | 0,7 | 1,3 | 2 | 2,2 | 3,9 | 5,5 |
| contact resistance | | mOhm | 2,1 | 1,8 | 1,5 | 1,5 | 1,2 | 1,2 | 1,2 | 1 | 1 | 1 |
| **Resistance to shock acc. to IEC 68-2-27** | | | | | | | | | | | | |
| Shock time 20ms sine-wave | NO | g | 10 | 10 | 10 | 10 | 8 | 8 | 8 | 8 | 8 | 8 |
| | NC | g | 6 | 6 | 6 | 6 | - | - | - | - | - | - |

1) With reduced control voltage range 0,9 up to 1,0 x $U_s$ and with reduced rated current $I_e$ /AC1according to $I_e$ /AC3

# Contactors

## Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

| Type | K3-90 | K3-115 | K3-116 | K3-151 | K3-176 | K3-210 | K3-260 | K3-316 | K3-450 | K3-550 | K3-700 | K3-860 | K3-1000 | K3-1200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| °C | -40 to +60 (+90)[1] | | -25 to +55 (+70)[2] | | | | | | | | | | | |
| °C | -40 to +40 | | -25 to +40 | | | | | | | | | | | |
| °C | -25 to +60 | | -25 to +55 | | | | | | | | | | | |
| °C | -25 to +40 | | -25 to +40 | | | | | | | | | | | |
| °C | -50 to +90 | | -55 to +80 | | | | | | | | | | | |
| A | 250 | 250 | 200 | 250 | 315 | 400 | 450 | 500 | 630 | 630 | 800 | 1000 | 1000 | 1250 |
| A | 160 | 200 | 160 | 200 | 250 | 315 | 400 | 400 | 500 | 560 | - | - | - | - |
| A | 100 | 125 | 125 | 160 | 200 | 250 | 315 | - | - | - | - | - | - | - |
| mm² | 0,5 - 95 | 10 - 120 | busbar 18 x 4 screw M8 | | | busbar 25 x 6 screw M10 | | | busbar 30 x 5 screw M12 | busbar 40 x 6 screw M12 | busbar 50 x 8 screw M12 | busbar 50 x 8 screw M14 | busbar 50 x 10 screw 2 x M12 | |
| mm² | 0,5 - 70 | 25 - 95 | | | | | | | | | | | | |
| mm² | 0,5 - 70 | 10 - 95 | | | | | | | | | | | | |
| mm² | 0,5 - 95 + 10 - 120 | | | | | | | | | | | | | |
| mm² | | | | | | | | | | | | | | |
| mm² | 0,5 - 70 + 25 - 95 | | | | | | | | | | | | | |
| AWG | 18 - 10 | - | | | | | | | | | | | | |
| AWG | 18 - 3/0 | 8 - 4/0 | | | | | | | | | | | | |
| AWG | - | | | | | | | | | | | | | |
| AWG | 18 - 3/0 + 8 - 4/0 | | | | | | | | | | | | | |
| 1/h | 3000 | | 1200 | | | 1200 | | | 1200 | | | | 300 | |
| 1/h | 300 | | - | | | - | | | - | | | | - | |
| 1/h | 120 | | - | | | - | | | - | | | | - | |
| 1/h | 300 | | - | | | - | | | - | | | | - | |
| S x 10⁶ | 5 | | 10 | | | 5 | | | 5 | | | | 5 [3] | |
| S x 10⁶ | 5 | | 10 | | | 5 | | | 5 | | | | 5 [3] | |
| S x 10⁶ | - | | - | | | - | | | - | | | | - | |
| A | 680 | 880 | 920 | 1200 | 1400 | 1800 | 2200 | 2600 | 3600 | 4400 | 5600 | 6900 | 8000 | 9600 |
| A | 275 | 330 | 410 | 500 | 575 | 800 | 900 | 1000 | 1400 | 1750 | 2200 | 2600 | 3000 | 3600 |
| W | 4,8 | 7,9 | 7,9 | 9 | 11 | 8 | 11 | 14,9 | 26,3 | 33,3 | 49 | 59,2 | 60 | 72 |
| mOhm | 0,6 | 0,5 | 0,5 | 0,4 | 0,35 | 0,18 | 0,16 | 0,15 | | | | | | |
| g | 7 | 7 | - | - | - | - | - | - | - | - | - | - | - | - |
| g | 5 | 5 | - | - | - | - | - | - | - | - | - | - | - | - |

1) With reduced control voltage range 0,9 up to 1,0 x $U_s$ and with reduced rated current $I_e$ /AC1according to $I_e$ /AC3
2) With reduced control voltage range 1,0 x $U_s$ and with reduced rated current $I_e$ /AC1according to $I_e$ /AC3
3) After each 1x10⁶ operations magnetic core and built-in auxiliary contact block must be changed

# Contactors

## Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

| Auxiliary Contacts | | Type | K(G)3-10 K(G)3-14 K(G)3-18 K(G)3-22 | K(G)3-24 K(G)3-32 K(G)3-40 | K3-50 K3-62 K3-74 |
|---|---|---|---|---|---|
| **Rated insulation voltage $U_i$** [1] | | V~ | 690 | - | - |
| **Thermal rated current $I_{th}$** to 690V | | | | | |
| Ambient temperature | 40°C | A | 16 | - | - |
| | 60°C | A | 12 | - | - |
| **Utilization category AC15** | | | | | |
| Rated operational current $I_e$ | 220-240V | A | 12 | - | - |
| | 380-415V | A | 4 | - | - |
| | 440V | A | 4 | - | - |
| | 500V | A | 3 | - | - |
| | 660-690V | A | 1 | - | - |
| **Utilization category DC13** | | | | | |
| Rated operational current $I_e$ | 60V | A | 8 | - | - |
| | 110V | A | 1 | - | - |
| | 220V | A | 0,1 | - | - |
| **Short circuit protection** short-circuit current 1kA, contact welding not accepted | | | For contactors with thermal overload relay the device with the smaller admissible control fuse (contactor or thermal overload relay) determines the fuse. | | |
| max. fuse size | gL (gG) | A | 25 | - | - |
| **Control Circuit** | | | | | |
| **Power consumption of coils** | | | | | |
| AC operated | inrush | VA | 33-45 | 90-115 | 140-165 |
| | sealed | VA | 7-10 | 9-13 | 13-18 |
| | | W | 2,6-3 | 2,7-4 | 5,4-7 |
| DC operated | inrush | W | 75 | 140 | 200 |
| double winding coil | sealed | W | 2 | 2 | 6 |
| DC solenoid operated | inrush | W | 3 | 4 | - |
| (KG3) | sealed | W | 3 | 4 | - |
| **Operation range of coils** in multiples of control voltage $U_s$ | | | | | |
| AC operated | | | 0,85-1,1 | 0,85-1,1 | 0,85-1,1 |
| DC operated | | | 0,8-1,1 | 0,8-1,1 | 0,8-1,1 |
| **Switching time** at control voltage $U_s$ ±10% [2] [3] | | | | | |
| AC operated | make time | ms | 8-16 | 10-25 | 12-28 |
| | release time | ms | 5-13 | 8-15 | 8-15 |
| | arc duration | ms | 10-15 | 10-15 | 10-15 |
| DC operated | make time | ms | 8-12 | 10-20 | 12-23 |
| double winding coil | release time | ms | 8-13 | 10-15 | 10-18 |
| | arc duration | ms | 10-15 | 10-15 | 10-15 |
| DC solenoid operated | make time | ms | 65 - 85 | 65 - 85 | - |
| (KG3) | release time | ms | 20 - 30 [4] | 20 - 30 [4] | - |
| | arc duration | ms | 10-15 | 10-15 | - |
| **Cable cross-section** | | | | | |
| Auxiliary connector | solid | mm² | 0,75-6 | - | - |
| | flexible | mm² | 1-4 | - | - |
| | flexible with multicore cable end | mm² | 0,75-4 | - | - |
| Magnet coil | solid | mm² | 0,75-2,5 | 0,75-2,5 | 0,75-2,5 |
| | flexible | mm² | 0,5-2,5 | 0,5-2,5 | 0,5-2,5 |
| | flexible with multicore cable end | mm² | 0,5-1,5 | 0,5-1,5 | 0,5-1,5 |
| Clamps per pole | | | 2 | 2 | 2 |
| Auxiliary connector | solid | AWG | 18 - 10 | - | - |
| | flexible | AWG | 18 - 10 | - | - |
| Magnet coil | solid | AWG | 14 - 12 | 14 - 12 | 14 - 12 |
| | flexible | AWG | 18 - 12 | 18 - 12 | 18 - 12 |
| Clamps per pole | | | 2 | 2 | 2 |

1) Suitable for: earthed-neutral systems, overvoltage category I to IV, pollution degree 3 (standard-industry): Uimp = 8kV. Data for other conditions on request
2) Total breaking time = release time + arc duration
3) Values for delay of the release time of the make contact and the make time of the break contact will be increased, if magnet coils are protected against voltage peaks (varistor, RC-unit, diode-unit)
4) with built-in coil suppressor

# Contactors

## Data according to IEC 947-4-1, EN 60947-4-1, VDE 0660

| Type | K3-90 | K3-115 | K3-116 | K3-151 | K3-176 | K3-210 | K3-260 | K3-316 | K3-450 | K3-550 | K3-700 | K3-860 | K3-1000 | K3-1200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V~ | - | | - | | | - | | | 690 | | 690 | | 690 | |
| A | - | | - | | | - | | | 10 | | 10 | | 10 | |
| A | - | | - | | | - | | | - | | - | | - | - |
| - | - | | - | | | - | | | - | | - | | | |
| A | - | | - | | | - | | | 3 | | 3 | | 3 | |
| A | - | | - | | | - | | | 2 | | 2 | | 2 | |
| A | - | | - | | | - | | | 1,5 | | 1,5 | | 1,5 | |
| A | - | | - | | | - | | | 1,5 | | 1,5 | | 1,5 | |
| A | - | | - | | | - | | | 1 | | 1 | | 1 | |
| A | - | | - | | | - | | | - | | - | | - | |
| A | - | | - | | | - | | | 1 | | 1 | | 1 | |
| A | - | | - | | | - | | | 0,5 | | 0,5 | | 0,5 | |
| A | - | | - | | | - | | | 10 | | 10 | | 10 | |
| VA | 165-220 | | 350 | | | 360 | | | 800-950 | | 1350-1600 | | 2400 | |
| VA | 2,5-5 | | 5 | | | 5 | | | 9-11 | | 21-25 | | 70 | |
| W | 2,5-5 | | 5 | | | 5 | | | 9-11 | | 21-25 | | 70 | |
| W | 250 | | 350 | | | 360 | | | 700-850 | | 1300-1550 | | 2100 | |
| W | 5 | | 5 | | | 5 | | | 8-10 | | 18-22 | | 60 | |
| W | - | | - | | | - | | | - | | - | | - | |
| W | - | | - | | | - | | | - | | - | | - | |
| | 0,85-1,1 | | 0,85-1,1 | | | 0,85-1,1 | | | 0,85-1,1 | | | | 0,85-1,1 | |
| | 0,8-1,1 | | 0,85-1,1 | | | 0,85-1,1 | | | 0,85-1,1 | | | | 0,85-1,1 | |
| ms | 20-35 | | 30-60 | | | 40-60 | | | 50-100 | | | | 50-100 | |
| ms | 35-50 | | 30-80 | | | 15-45 | | | 150-200 / 500-1000[1] | | | | 25-50 | |
| ms | 10-15 | | | | | - | | | - | | | | - | |
| ms | 20-35 | | 30-60 | | | 40-60 | | | - | | | | - | |
| ms | 35-50 | | 30-80 | | | 15-45 | | | - | | | | - | |
| ms | 10-15 | | - | | | - | | | - | | | | - | |
| ms | - | | - | | | - | | | - | | | | - | |
| ms | - | | - | | | - | | | - | | | | - | |
| ms | - | | - | | | - | | | - | | | | - | |
| mm² | - | | - | | | - | | | 0,75-2,5 | | | | 0,75-2,5 | |
| mm² | - | | - | | | - | | | 0,75-2,5 | | | | 0,75-2,5 | |
| mm² | - | | - | | | - | | | - | | | | - | |
| mm² | 0,75-2,5 | | 1-2,5 | | | 1-2,5 | | | 1-2,5 | | | | 1-2,5 | |
| mm² | 0,5-2,5 | | 1-2,5 | | | 1-2,5 | | | 1-2,5 | | | | 1-2,5 | |
| mm² | 0,5-1,5 | | - | | | - | | | - | | | | - | |
| | 2 | | 2 | | | 2 | | | 2 | | | | 2 | |
| AWG | - | | - | | | - | | | 16 - 12 | | | | 16 - 12 | |
| AWG | - | | - | | | - | | | 16 - 12 | | | | 16 - 12 | |
| AWG | 14 - 12 | | 16 - 12 | | | 16 - 12 | | | 16 - 12 | | | | 16 - 12 | |
| AWG | 18 - 12 | | 16 - 12 | | | 16 - 12 | | | 16 - 12 | | | | 16 - 12 | |
| | 2 | | 2 | | | 2 | | | 2 | | | | 2 | |

1) Normal or delayed drop is adjustable