Table 130. Technical data

| Parameter | | | Switch type | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 4G10 | 4G16 | 4G25 | 4G40 | 4G63 | 4G80 | 4G100 | 4G200 | 4G400 | 4G630 | 4G800 | 4G1200 |
| Rated insulation voltage $U_i$ | | V | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 | 690 |
| Rated impulse withstand voltage $U_{imp}$ | | kV | 4 | 4 | 4 | 6 | 6 | 6 | 6 | 8 | 8 | 8 | 8 | 8 |
| Rated thermal current $I_{th}$ | | A | 16 | 20 | 25 | 50 | 63 | 80 | 125 | 200 | 400 | 630 | 800 | 1200 |
| Short-circuit protection Rated breaking capacity of fuse links with high breaking capacity | 10 $kA_{sk}$ | A | – | 25 | 25 | 50 | 63 | 80 | 125 | 200 | 400 | 630 | 2x400 | 2x630 |
| | 25 $kA_{sk}$ | A | – | 25 | 25 | 50 | 63 | 80 | 125 | 160 | 315 | 500 | 2x400 | 2x630 |
| | 40 $kA_{sk}$ | A | – | 25 | 25 | 50 | 63 | 80 | 125 | 160 | 315 | 400 | 500 | 2x400 |
| | 63 $kA_{sk}$ | A | – | 25 | 25 | 36 | 50 | 63 | 100 | 160 | 250 | 355 | 400 | 630 |
| | 75 $kA_{sk}$ | A | – | 25 | 25 | 36 | 50 | 63 | 100 | | | | | |
| Mechanical durability (number of cycles) | | | $3x10^6$ | $3x10^6$ | $3x10^6$ | $3x10^6$ | $3x10^6$ | $3x10^6$ | $3x10^6$ | $2x10^5$ | $2x10^5$ | $2x10^5$ | $2x10^5$ | $2x10^5$ |
| Terminal bolts Maximum cross-section of connecting conductors | | $mm^2$ | M3 2 x 2,5 | M4 2 x 4 | M4 2 x 6 | M5 2 x 10 | M5 2 x 10 | M6 25 | 2 x M6 50 | M6 – | M10 – | M12 – | M16 – | M16 – |
| Short duration load capacity | 1 s | A | 220 | 430 | 690 | 920 | 1600 | 1600 | 2600 | 3300 | 6500 | 9500 | 12000 | 18000 |
| | 10 s | A | 70 | 145 | 240 | 290 | 600 | 650 | 850 | 1100 | 2000 | 3000 | 4000 | 6100 |
| | 30 s | A | 40 | 90 | 160 | 200 | 375 | 400 | 500 | 640 | 1200 | 1800 | 2400 | 3500 |
| | 60 s | A | 30 | 75 | 125 | 155 | 285 | 300 | 360 | 460 | 850 | 1250 | 1600 | 2450 |
| Breaking capacity | 660 V - $\cos\varphi = 0,65$ | A | – | 190 | – | – | – | – | – | 640 | – | – | – | – |
| | 660 V - $\cos\varphi = 0,35$ | A | – | – | 250 | 490 | 500 | 500 | 650 | – | – | – | – | – |
| | 600 V - $\cos\varphi = 0,35$ | A | – | 200 | 260 | 500 | 610 | 610 | – | – | – | – | – | – |
| | 500 V - $\cos\varphi = 0,35$ | A | 100[1)] | – | – | – | – | – | 900 | 900 | – | – | – | – |
| | 500 V - $\cos\varphi = 0,75$ | A | – | – | – | – | – | – | – | – | 1100 | 1100 | 1200 | 1800 |
| Switch disconnectors Utilization category AC2 Rated power of three-phase loads | 3 x 220 V~ | kW | 5,2 | 7 | 9 | 14 | 23 | 29 | 37 | 72 | 150 | 150 | 150 | 150 |
| | 3 x 380 V~ | kW | 9 | 12,5 | 15,5 | 24 | 39 | 50 | 63 | 125 | 260 | 260 | 260 | 260 |
| | 3 x 500 V~ | kW | 11,8 | 17 | 20 | 33 | 52 | 66 | 84 | 165 | 340 | 340 | 340 | 340 |
| | 3 x 660 V~ | kW | 15,5 | 22 | 27 | 43 | 69 | 86 | 110 | 210 | 400 | 400 | 400 | 400 |
| Switch disconnectors for motors Utilization category AC3, AC23 Rated power of three-phase motors | 3 x 220 V~ | kW | 3 | 4,5 | 7,5 | 12,5 | 18,5 | 21 | – | 27,5 | 27,5 | 27,5 | 27,5 | 27,5 |
| | 3 x 380 V~ | kW | 5 | 8 | 13 | 21 | 32 | 37 | – | 47 | 47 | 47 | 47 | 47 |
| | 3 x 500 V~ | kW | 6 | 11 | 17 | 27 | 42 | 48 | – | 62 | 62 | 62 | 62 | 62 |
| | 3 x 660 V~ | kW | 6 | 11 | 17 | 27 | 55 | 60 | – | 80 | 80 | 80 | 80 | 80 |
| Switch disconnectors for motors Utilization category AC23 Rated power of three-phase motors | 3 x 220 V~ | kW | – | – | – | – | – | – | 27,5 | 27,5 | 27,5 | 27,5 | 27,5 | 27,5 |
| | 3 x 380 V~ | kW | – | – | – | – | – | – | 47 | 47 | 47 | 47 | 47 | 47 |
| | 3 x 500 V~ | kW | – | – | – | – | – | – | 62 | 62 | 62 | 62 | 62 | 62 |
| | 3 x 660 V~ | kW | – | – | – | – | – | – | 80 | 80 | 80 | 80 | 80 | 80 |
| Switch disconnector for motors, category of utility AC3, AC23 (30 connections/h). Rated power of one-phase (dipolar) motors. | 110 V~ | kW | 0,8 | 1,3 | 2,1 | 3,6 | 5,3 | 6 | – | – | – | – | – | – |
| | 220 V~ | kW | 1,7 | 2,6 | 4,3 | 7,2 | 10,6 | 12,1 | – | – | – | – | – | – |
| | 380 V~ | kW | 2,8 | 4,6 | 7,5 | 12 | 18,5 | 21,1 | – | – | – | – | – | – |
| Auxiliary switch disconnectors Utilization category AC14 Rated switching current $I_e$ (1 pole) | 110 V~ | A | 11 | 20 | 25 | 50 | 63 | 72 | – | – | – | – | – | – |
| | 220 V~ | A | 8 | 20 | 25 | 40 | 50 | 50 | – | – | – | – | – | – |
| | 380 V~ | A | 3,5 | 16 | 20 | 40 | 45 | 45 | – | – | – | – | – | – |
| | 660 V~ | A | 2,5 | 8 | 8,5 | 10 | 10 | 10 | – | – | – | – | – | – |
| Type of operation | | – | Continuous duty | | | | | | | | | | | |

1) - $\cos\varphi = 0,65$

## BREAKING CAPACITY FOR DIRECT CURRENT

Breaking capacity for direct current operation depends on current intensity, voltage and inductance.
Time constant T = L/R represents inductance values in a current circuit.
T = 1 ms – active power or lightly inductive power predominates, for example resistance furnaces.
T = 15 ms – inductive power predominates, for example relay coils. For direct current and voltage above 60 V, switch contacts must be connected in parallel to obtain higher breaking capacity.

Table 131. Rated breaking capacity of one contact

| Switch type | Rated breaking capacity of one contact | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 24 V | | 60 V | | 110 V | | 220 V | | 440 V | | 600 V | |
| | T=1ms | T=15ms | T=1ms | T=15ms | T=1ms | T=15ms | T=1ms | T=15ms | T=1ms | T=15ms | T=1ms | T=15ms |
| 4G10 | 40 | 40 | 40 | 20 | 17 | 3 | 1,1 | 0,5 | 0,5 | 0,2 | 0,5 | 0,1 |
| 4G16 | 100 | 100 | 38 | 18 | 5,5 | 3 | 0,95 | 0,4 | 0,5 | 0,25 | 0,3 | 0,2 |
| 4G25 | 100 | 100 | 38 | 18 | 5,5 | 3 | 0,95 | 0,4 | 0,5 | 0,25 | 0,3 | 0,2 |
| 4G40 | 252 | 252 | 95 | 40 | 15 | 3,5 | 1,2 | 0,4 | 0,6 | 0,25 | 0,45 | 0,2 |
| 4G63 | 252 | 252 | 95 | 40 | 15 | 3,5 | 1,2 | 0,4 | 0,6 | 0,25 | 0,45 | 0,2 |
| 4G100 | 800 | 800 | 400 | 400 | 35 | 7,5 | 2,5 | 0,75 | 0,9 | 0,3 | 0,5 | 0,25 |

Table 136 shows a number of contacts which can be connected in series for rated making currents at specific constant voltages for category of utility DC 1.

Table 132. Number of contacts connected in series

| Switch type | Number of contacts connected in series | | | |
|---|---|---|---|---|
| | 110 V | 220 V | 440 V | 600 V |
| 4G10 | 1 | 3 | 6 | 8 |
| 4G16 | 2 | 4 | 6 | 9 |
| 4G25 | 2 | 4 | 6 | 9 |
| 4G40 | 2 | 3 | 6 | 9 |
| 4G63 | 2 | 4 | 6 | 9 |
| 4G100 | 2 | 3 | 6 | – |

DC1 - main noninductive or low voltage load
T = 1 ms breaking capacity I = 1,5 $I_e$

Note: Breaking capacity for a 4G25 switch with two contacts connected in series is 2A at 220V; T = 15 ms.
In table 137 the rated making current values (Ie) for category of utility DC 11 (according to EC 337-1, 337-1A) have been shown.

Table 133. Rated switching current

| Switch type | Rated switching current $I_e$ [A] | | | | | |
|---|---|---|---|---|---|---|
| | 24 V | 60 V | 110 V | 220 V | 440 V | 600 V |
| 4G10 | 10 | 2 | 1 | 0,27 | 0,16 | 0,14 |
| 4G16 | 20 | 2,2 | 1 | 0,3 | 0,22 | 0,16 |
| 4G25 | 25 | 2,2 | 1 | 0,3 | 0,22 | 0,16 |
| 4G40 | 50 | 5 | 2 | 0,4 | 0,23 | 0,2 |
| 4G63 | 63 | 5 | 2 | 0,4 | 0,23 | 0,2 |

## AN ORDER EXAMPLE

**4G25 - 10 - U S5 R112**

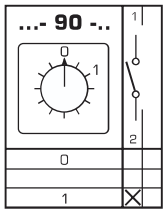
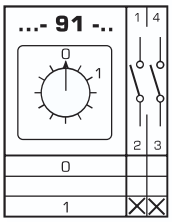
- **4G25** – switch type determined according to the rated current, selection in accordance with table 1
- **10** – diagram number specified in the switching program
- **U** – version: U- switch to be built-in; OU- switch to be mounted in a housing; PK - switch in a plastic case
- **S5** – special version, its symbol can be added to the description of type
- **R112** – knob and handle version and colour according to table 3

**NOTES:**

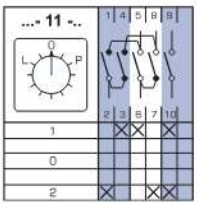
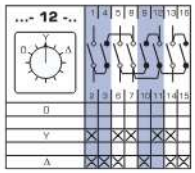
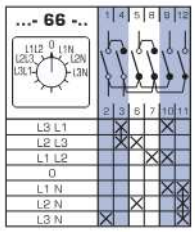
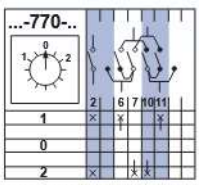
1. every order on devices for rated current 100A requires arrangements with the manufacturer related to the technical details and delivery date.
2. devices in PK housings can be made only for those switching programs which require not more than four segments (protection class IP55/IP65).

EXPRES SERVICE 24 h or 48 h - There is the ability to perform cam switches in 24 or 48 h (additional fee)

## STANDARD CONNECTION DIAGRAMS

| Diagram number | Number of poles | Rated switching current | Rated voltage | Number of packs | Symbol Article No. | Handle | Protection degree IP from the front | Maximum conductor cross-section [mm²] | Installation |
|---|---|---|---|---|---|---|---|---|---|
| **Switch disconnector with "0" (0-1) position** | | | | | | | | | |
|  | 1 | 10 | 690 | 1 | 4G10-90-U 63-840390-011 | R014 | IP40 | 2 x 2,5 | to be mounted behind the panel |
| | 1 | 16 | 690 | 1 | 4G16-90-U 63-840390-021 | R114 | IP40 | 2 x 4 | to be mounted behind the panel |
| | 1 | 25 | 690 | 1 | 4G25-90-U 63-840390-031 | R114 | IP40 | 2 x 6 | to be mounted behind the panel |
| | 1 | 10 | 690 | 1 | 4G10-90-PK 63-840392-011 | R014 | IP55 | 2 x 2,5 | in a housing |
| | 1 | 25 | 690 | 1 | 4G10-90-PK IP65 63-840392-111 | R114 | IP65 | 2 x 6 | in a housing |
| | 1 | 16 | 690 | 1 | 4G16-90-PK 63-840392-021 | R114 | IP55 | 2 x 4 | in a housing |
| | 1 | 25 | 690 | 1 | 4G25-90-PK 63-840392-031 | R114 | IP55 | 2 x 6 | in a housing |
|  | 2 | 10 | 690 | 1 | 4G10-91-U 63-840393-011 | R014 | IP40 | 2 x 2,5 | to be mounted behind the panel |
| | 2 | 16 | 690 | 1 | 4G16-91-U 63-840393-021 | R114 | IP40 | 2 x 4 | to be mounted behind the panel |
| | 2 | 10 | 690 | 1 | 4G10-91-PK 63-840395-011 | R014 | IP55 | 2 x 2,5 | in a housing |
| | 2 | 25 | 690 | 1 | 4G10-91-PK IP65 63-840395-111 | R114 | IP65 | 2 x 6 | in a housing |
| | 2 | 16 | 690 | 1 | 4G16-91-PK 63-840395-021 | R114 | IP55 | 2 x 4 | in a housing |
| | 2 | 25 | 690 | 1 | 4G25-91-PK 63-840395-031 | R114 | IP55 | 2 x 6 | in a housing |

* See dimensions on pages 185-188

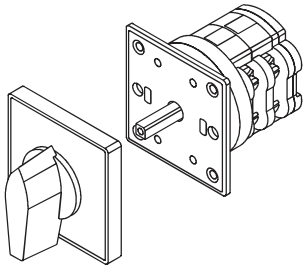
| Diagram number | Number of poles | Rated switching current | Rated voltage | Number of packs | Symbol Article No. | Handle | Protection degree IP from the front | Maximum conductor cross-section [mm²] | Installation |
|---|---|---|---|---|---|---|---|---|---|
| **„Rotation direction change" switch (L-0-P)** | | | | | | | | | |
|  | 3 | 10 | 690 | 3 | 4G10-11-PK 63-840309-011 | R014 | IP55 | 2 x 2,5 | in a housing |
| | 3 | 10 | 690 | 3 | 4G10-11-PK IP65 63-840309-111 | R014 | IP65 | 2 x 2,5 | in a housing |
| | 3 | 16 | 690 | 3 | 4G16-11-PK 63-840309-021 | R114 | IP55 | 2 x 4 | in a housing |
| | 3 | 25 | 690 | 3 | 4G25-11-PK 63-840309-031 | R114 | IP55 | 2 x 6 | in a housing |
| | 3 | 40 | 690 | 3 | 4G40-11-PK 63-840309-041 | R214 | IP55 | 2 x 10 | in a housing |
| | 3 | 63 | 690 | 3 | 4G63-11-PK 63-840309-051 | R214 | IP55 | 2 x 10 | in a housing |
| | 3 | 80 | 690 | 3 | 4G80-11-PK 63-840309-06 | R214 | IP55 | 25 | in a housing |
| **„Star-delta" (Y-0-Δ) motor control switch** | | | | | | | | | |
|  | 3 | 10 | 690 | 4 | 4G10-12-U 63-840310-011 | R014 | IP40 | 2 x 2,5 | to be mounted behind the panel |
| | 3 | 16 | 690 | 4 | 4G16-12-U 63-840310-021 | R114 | IP40 | 2 x 4 | to be mounted behind the panel |
| | 3 | 25 | 690 | 4 | 4G25-12-U 63-840310-031 | R114 | IP40 | 2 x 6 | to be mounted behind the panel |
| | 3 | 40 | 690 | 4 | 4G40-12-U 63-840310-041 | R214 | IP40 | 2 x 10 | to be mounted behind the panel |
| | 3 | 63 | 690 | 4 | 4G63-12-U 63-840310-051 | R214 | IP40 | 2 x 10 | to be mounted behind the panel |
| | 3 | 80 | 690 | 4 | 4G80-12-U 63-840310-061 | R214 | IP40 | 25 | to be mounted behind the panel |
| | 3 | 10 | 690 | 4 | 4G10-12-PK 63-840591-011 | R014 | IP55 | 2 x 2,5 | in a housing |
| | 3 | 10 | 690 | 4 | 4G10-12-PK IP65 63-840591-111 | R014 | IP65 | 2 x 2,5 | in a housing |
| | 3 | 16 | 690 | 4 | 4G16-12-PK 63-840591-021 | R114 | IP55 | 2 x 4 | in a housing |
| | 3 | 25 | 690 | 4 | 4G25-12-PK 63-840591-031 | R114 | IP55 | 2 x 6 | in a housing |
| | 3 | 40 | 690 | 4 | 4G40-12-PK 63-840591-041 | R214 | IP55 | 2 x 10 | in a housing |
| | 3 | 63 | 690 | 4 | 4G63-12-PK 63-840591-051 | R214 | IP55 | 2 x 10 | in a housing |
| | 3 | 80 | 690 | 4 | 4G80-12-PK 63-840591-061 | R214 | IP55 | 25 | in a housing |
| **Voltmeter switch (L3L1, L2L3, L1L2 - 0 - L1N, L2N, L3N)** | | | | | | | | | |
|  | 4 | 10 | 690 | 3 | 4G10-66-U 63-840360-011 | R014 | IP40 | 2 x 2,5 | to be mounted behind the panel |
| **Switch for forklift trucks(1-0-2)** | | | | | | | | | |
|  | 5 | 80 | 690 | 6 | 4G80-770-U 63-841838-061 | R214 | IP40 | 25 | to be mounted behind the panel |

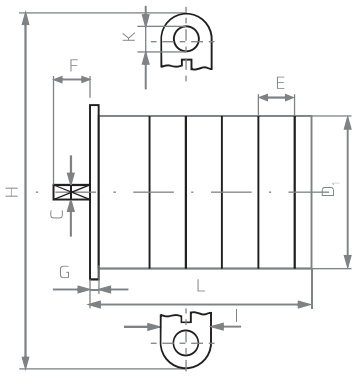
the contact (terminal 1-2) should be switched on in the control circuit coil of the contactor relay

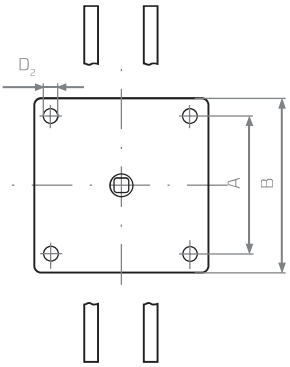
* See dimensions on pages 185-188

# OVERALL DIMENSIONS

## **U** switches to be built-in






| Group | Switch type | $D_1$ | $D_2$ | A | B | C | E | F | G | H | I | K |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ø | ø | ф | ф | ф | | | | | | |
| A0 | 4G 10 | 38 | 4,3 | 36 | 48 | 6 | 9,6 | 22 | 4 | – | – | – |
| A1 | 4G 16 | 57 | 4,3 | 48 | 65 | 6 | 13,5 | 26 | 3 | – | – | – |
| | 4G 25 | 57 | 4,3 | 48 | 65 | 6 | 13,5 | 26 | 3 | – | – | – |
| A2 | 4G 40 | 80 | 5,3 | 72 | 90 | 8 | 18 | 31 | 5 | – | – | – |
| | 4G 63, 80 | 80 | 5,3 | 72 | 90 | 8 | 18 | 31 | 5 | – | – | – |
| A3 | 4G 100 | 120 | 5,3 | 104 | 132 | 10 | 29 | 37,5 | 6 | – | – | – |
| | 4G 200 | 120 | 5,3 | 104 | 132 | 10 | 29 | 37,5 | 6 | 145 | 20 | 10,5 |
| | 4G 400 | 120 | 5,3 | 104 | 132 | 10 | 29 | 37,5 | 6 | 170 | 45 | 13 |
| | 4G 630 | 120 | 5,3 | 104 | 132 | 10 | 29 | 37,5 | 6 | 190 | 74 | 17,5 |
| | 4G 800 | 120 | 5,3 | 104 | 132 | 10 | 29 | 37,5 | 6 | 260 | 50 | 17,5 |
| | 4G 1200 | 120 | 5,3 | 104 | 132 | 10 | 29 | 37,5 | 6 | 260 | 80 | 17,5 |

| Group | Switch type | L (depending on the number of switching elements) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| A0 | 4G 10 | 33 | 42,5 | 52 | 61,5 | 71 | 81 | 90,5 | 100 | 109,5 | 119 | 129 | 138,5 |
| A1 | 4G 16 | 46,5 | 60 | 73,5 | 87,5 | 101 | 114,5 | 128,5 | 143 | 156 | 169,5 | 183 | 196,5 |
| | 4G 25 | 46,5 | 60 | 73,5 | 87,5 | 101 | 114,5 | 128,5 | 143 | 156 | 169,5 | 183 | 196,5 |
| A2 | 4G 40 | 56,5 | 74,5 | 92,5 | 110,5 | 128,5 | 146,5 | 164,5 | 182,5 | 200,5 | 218,5 | 236,5 | 254,5 |
| | 4G 63, 80 | 56,5 | 74,5 | 92,5 | 110,5 | 128,5 | 146,5 | 164,5 | 182,5 | 200,5 | 218,5 | 236,5 | 254,5 |
| A3 | 4G 100 | 77 | 107 | 136 | 166 | 196 | 226 | 284 | 314 | 343 | 373 | 402 | 432 |
| | 4G 200 | 77 | 107 | 136 | 166 | 196 | 226 | 284 | 314 | 343 | 373 | 402 | 432 |
| | 4G 400 | – | 107 | – | 166 | – | 226 | – | 314 | – | 373 | – | 432 |
| | 4G 630 | – | – | 136 | – | – | 226 | – | – | 343 | – | – | 432 |
| | 4G 800 | – | 107 | – | 166 | – | 226 | – | 314 | – | 373 | – | 432 |
| | 4G 1200 | – | – | 136 | – | – | 226 | – | – | 343 | – | – | 432 |

protection degree IP40 (from the front plate side), IP55 in a special version – S1