

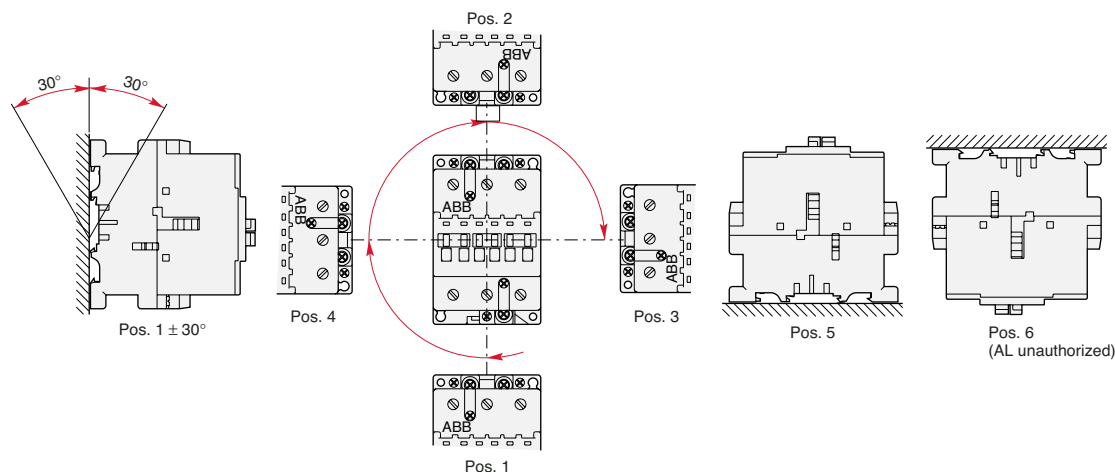
UL & CSA Technical data

A/AE9 – A/AE/AF110, AL9 – AL40

AC & DC operated

| ABB contactor frame size | | A/AE/AL 9 | A/AE/AL 12 | A/AE/AL 16 | A/AE/AL 26 | A/AE/AL 30 | A/AE/AL 40 | A/AE/AF 45 | A/AE/AF 50 | A/AE/AF 63 | A/AE/AF 75 | A/AE/AF 95 | A/AE/AF 110 |
|--|--|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|
| NEMA size | | 00 | — | 0 | 1 | 1P | — | — | 2 | — | 3 | — | — |
| Number of poles | | 3 OR 4 | 3 | 3 OR 4 | 3 OR 4 | 3 | 3 | 4 | 3 OR 4 | 3 | 3 OR 4 | 3 | 3 |
| AC rating information | | | | | | | | | | | | | |
| NEMA cont. amp rating thermal current | | 9 | — | 18 | 27 | 36 | — | — | 45 | — | 90 | — | — |
| NEMA maximum H.P. ratings 1 phase | | | | | | | | | | | | | |
| 115 VAC | | 1/3 | — | 1 | 2 | 3 | — | — | 3 | — | — | — | — |
| 230 VAC | | 1 | — | 2 | 3 | 5 | — | — | 7.5 | — | — | — | — |
| NEMA maximum H.P. ratings 3 phase | | | | | | | | | | | | | |
| 200 VAC | | 1.5 | — | 3 | 7.5 | — | — | — | 10 | — | 25 | — | — |
| 230 VAC | | 1.5 | — | 3 | 7.5 | — | — | — | 15 | — | 30 | — | — |
| 460/575 VAC | | 2 | — | 5 | 10 | — | — | — | 25 | — | 50 | — | — |
| U.L. general purpose current 40°C | | 21 | 25 | 30 | 40 | 50 | 60 | 65 | 80 | 90 | 105 | 125 | 140 |
| Max. 3 Ph Switching motor loads A | | 9 | 11 | 17 | 28 | 34 | 42 | — | 54 | 65 | 80 | 95 | 110 |
| U.L. maximum H.P. ratings 1 phase | | | | | | | | | | | | | |
| 115 VAC | | 1/2 | 3/4 | 1.5 | 2 | 3 | 3 | — | 3 | 5 | 7.5 | 7.5 | 10 |
| 230 VAC | | 2 | 2 | 3 | 5 | 7.5 | 7.5 | — | 7.5 | 10 | 15 | 20 | 25 |
| U.L. maximum H.P. ratings 3 phase | | | | | | | | | | | | | |
| 200-208 VAC | | 2 | 3 | 5 | 7.5 | 10 | 10 | — | 15 | 20 | 25 | 30 | 30 |
| 220-240 VAC | | 2 | 3 | 5 | 10 | 10 | 15 | — | 20 | 25 | 30 | 30 | 40 |
| 440-480 VAC | | 5 | 7.5 | 10 | 20 | 25 | 30 | — | 40 | 50 | 60 | 60 | 75 |
| 550-600 VAC | | 7.5 | 10 | 15 | 25 | 30 | 40 | — | 50 | 60 | 75 | 75 | 100 |
| U.L. maximum H.P. ratings VDC | | | | | | | | | | | | | |
| 120 VDC | | 1 | 1.5 | 2 | 3 | 3 | 5 | — | 7.5 | 10 | 10 | — | — |
| 240 VDC | | 2 | 3 | 3 | 5 | 7.5 | 10 | — | 15 | 20 | 25 | — | — |
| Lighting — ballast and incandescent 600VAC | | 15 | 15 | 20 | 35 | 50 | 60 | 65 | 65 | 85 | 105 | — | — |
| Resistive heating applications 600VAC | | 15 | 15 | 20 | 35 | 50 | 60 | 65 | 65 | 85 | 105 | — | — |
| CSA Elevator ratings | | | | | | | | | | | | | |
| 220 – 240VAC 3 phase | | — | — | 5 | — | — | 10 | — | 15 | — | 20 | — | — |
| 440 – 480VAC 3 phase | | — | — | 10 | — | — | 20 | — | 30 | — | 30 | — | — |
| 550 – 600VAC 3 phase | | — | — | 10 | — | — | 20 | — | 30 | — | 40 | — | — |
| 230VAC 1 phase | | — | — | 2 | — | — | 5 | — | 7.5 | — | 10 | — | — |
| Auxiliary contacts | | | | | | | | | | | | | |
| NEMA rating AC | | A600 | A600 | A600 | A600 | A600 | A600 | — | A600 | A600 | A600 | A600 | A600 |
| AC rated voltage VAC | | 600 | 600 | 600 | 600 | 600 | 600 | — | 600 | 600 | 600 | 600 | 600 |
| AC thermal rated current A | | 10 | 10 | 10 | 10 | 10 | 10 | — | 10 | 10 | 10 | 10 | 10 |
| AC maximum volt-ampere making VA | | 7200 | 7200 | 7200 | 7200 | 7200 | 7200 | — | 7200 | 7200 | 7200 | 7200 | 7200 |
| AC maximum volt-ampere breaking VA | | 720 | 720 | 720 | 720 | 720 | 720 | — | 720 | 720 | 720 | 720 | 720 |
| NEMA rating DC | | P600 | P600 | P600 | P600 | P600 | P600 | — | P600 | P600 | P600 | P600 | P600 |
| DC rated voltage VDC | | 600 | 600 | 600 | 600 | 600 | 600 | — | 600 | 600 | 600 | 600 | 600 |
| DC thermal rated current A | | 5 | 5 | 5 | 5 | 5 | 5 | — | 5 | 5 | 5 | 5 | 5 |
| DC Maximum make-break A | | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | — | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Approximate weight | | | | | | | | | | | | | |
| Contactor lbs. | | 0.7 | 0.7 | 0.7 | 1.01 | 1.2 | 2.25 | 2.25 | 2.25 | 2.25 | 2.25 | 3.5 | 5 |
| Starter lbs. | | 1.04 | 1.04 | 1.04 | 1.35 | 1.54 | 3 | 3 | 3 | 3 | 3 | 6 | 7 |
| Terminal wire range | | | | | | | | | | | | | |
| Number of wires per phase AWG | | 18-10 | 18-10 | 18-10 | 12-8 | 8-4 | 8-4 | 8-1 | 8-1 | 8-1 | 8-1 | 6-2/0 | 6-2/0 |
| Number of wires per phase | | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| Maximum short circuit ratings | | | | | | | | | | | | | |
| MCCB, MCP, Amps/kA 480VAC | | 50/35 | 50/35 | 50/35 | 100/35 | 150/65 | 150/65 | — | 150/85 | 250/85 | 250/85 | 250/85 | 250/85 |
| MCCB, MCP, Amps/kA 600VAC | | 10/35 | 10/35 | 10/35 | 100/35 | 150/25 | 150/25 | — | — | — | — | 250/35 | 250/35 |
| Fuse, Amps — type/kA 600VAC | | 30J/200 | 30J/200 | 30J/200 | 60J/200 | 60J/200 | 100J/200 | — | 100J/200 | 200J/200 | 200J/200 | 200J/200 | 200J/200 |

Mounting positions





IEC Technical data

AL9 — AL40

Across the line
contactors

1

Main Pole - Utilization Characteristics

| Contactor types: | AL | AL9 | AL12 | AL16 | AL26 | AL30 | AL40 | |
|--|---------------------------------------|-----------------|------|------|------|------|------|------|
| Rated operational voltage U_e max. | V | 690 | | | | | | |
| Rated frequency limits | Hz | 25-400 | | | | | | |
| Conventional free-air thermal current I_{th} acc. to IEC 60947-4-1, open contactors $\varnothing \leq 40$ °C | | | | | | | | |
| with conductor cross-sectional area mm ² | A | 26 | 28 | 30 | 45 | 65 | 65 | |
| | 4 | 4 | 4 | 6 | 16 | 16 | 35 | |
| Rated operational current I_e / AC-1 for air temperature close to contactor | | | | | | | | |
| U_e max. 690 V | $\varnothing \leq 40$ °C | A | 25 | 27 | 30 | 45 | 55 | 60 |
| | $\varnothing \leq 55$ °C | A | 22 | 25 | 27 | 40 | 55 | 60 |
| | $\varnothing \leq 70$ °C ^③ | A | 18 | 20 | 23 | 32 | 39 | 42 |
| with conductor cross-sectional area mm ² | | 2.5 | 4 | 4 | 6 | 10 | 16 | |
| Utilization categorie AC-3 for air temperature close to contactor ≤ 55 °C | | | | | | | | |
| Rated operational current I_e AC-3 ^① | | | | | | | | |
| 3-phase motors  | 220-230-240 V | A | 9 | 12 | 17 | 26 | 33 | 40 |
| | 380-400 V | A | 9 | 12 | 17 | 26 | 32 | 37 |
| | 415 V | A | 9 | 12 | 17 | 26 | 32 | 37 |
| | 440 V | A | 9 | 12 | 16 | 26 | 32 | 37 |
| | 500 V | A | 9 | 12 | 14 | 22 | 28 | 33 |
| | 690 V | A | 7 | 9 | 10 | 17 | 21 | 25 |
| | 1000 V | A | — | — | — | — | — | — |
| Rated operational power AC-3 ^① | | | | | | | | |
| 1500 r.p.m. 50 Hz 1800 r.p.m. 60 Hz 3-phase motors  | 220-230-240 V | kW | 2.2 | 3 | 4 | 6.5 | 9 | 11 |
| | 380-400 V | kW | 4 | 5.5 | 7.5 | 11 | 15 | 18.5 |
| | 415 V | kW | 4 | 5.5 | 9 | 11 | 15 | 18.5 |
| | 440 V | kW | 4 | 5.5 | 9 | 15 | 18.5 | 22 |
| | 500 V | kW | 5.5 | 7.5 | 9 | 15 | 18.5 | 22 |
| | 690 V | kW | 5.5 | 7.5 | 9 | 15 | 18.5 | 22 |
| | 1000 V | kW | — | — | — | — | — | — |
| Rated making capacity AC-3 according to IEC 60947-4-1 | | | | | | | | |
| | | 10 x I_e AC-3 | | | | | | |
| Rated breaking capacity AC-3 according to IEC 60947-4-1 | | | | | | | | |
| | | 8 x I_e AC-3 | | | | | | |
| Short-circuit protection for contactors without thermal O/L relay - Motor protection excluded $U_e \leq 500$ V a.c. - gG type fuse | | | | | | | | |
| | A | 25 | 32 | 32 | 50 | 63 | | |
| Rated short-time withstand current I_{cw} at 40 °C ambient temp., in free air, from a cold state | | | | | | | | |
| | 1 s | A | 250 | 280 | 300 | 400 | 600 | |
| | 10 s | A | 100 | 120 | 140 | 210 | 400 | |
| | 30 s | A | 60 | 70 | 80 | 110 | 225 | |
| | 1 min | A | 50 | 55 | 60 | 90 | 150 | |
| | 15 min | A | 26 | 28 | 30 | 45 | 65 | |
| Maximum breaking capacity $\cos \varnothing = 0.45$ ($\cos \varnothing = 0.35$ for $I_e > 100$ A) | | | | | | | | |
| | at 440 V | A | 250 | | | 420 | 820 | |
| | at 690 V | A | 90 | | | 170 | 340 | |
| Heat dissipation per pole | | | | | | | | |
| | I_e / AC-1 | W | 0.8 | 1 | 1.2 | 1.8 | 2.5 | |
| | I_e / AC-3 | W | 0.1 | 0.2 | 0.35 | 0.6 | 0.9 | |
| Max. electrical switching frequency | | | | | | | | |
| – for AC-1 | | cycles/h | 600 | | | | | |
| – for AC-3 | | cycles/h | 1200 | | | | | |
| – for AC-2, AC-4 | | cycles/h | 300 | | | | | |
| Mechanical durability | | | | | | | | |
| – millions of operating cycles | | | 10 | | | | | |
| – max. mechanical switching frequency | | cycles/h | 3600 | | | | | |

IEC Technical data

AL9 — AL40, TAL9 – TAL40

Magnet system characteristics for AL contactors

| Contactor types: AL | AL9 | AL12 | 16 | 26 | 30 | 40 |
|--|---|--------------------------|----|----|-----|----|
| Rated control circuit voltage U_c | V d.c. 12 ... 240 (24V & 48V for AL...Z) | | | | | |
| Coil operating limits according to IEC 60947-4-1 | $\varnothing \leq 55^\circ\text{C}$ 0.85 ... 1.1 x U_c | | | | | |
| Drop-out voltage in % of U_c | roughly 15 ... 30 % | | | | | |
| Coil consumption - Average values | | | | | | |
| – pull-in value | W | 3 (2.4 for AL9Z - AL16Z) | | | 3.5 | |
| – holding value | W | 3 (2.4 for AL9Z - AL16Z) | | | 3.5 | |
| Coil time constant | | | | | | |
| – open | L/R | ms | 40 | | | |
| – closed | L/R | ms | 90 | | | |
| Operating time between coil energization and: | | | | | | |
| – N.O. contact closing | ms | 50 ... 75 | | | | |
| – N.C. contact opening | ms | 45 ... 70 | | | | |
| between coil de-energization and | | | | | | |
| – N.O. contact opening | ms | 15 ... 30 | | | | |
| – N.C. contact closing | ms | 17 ... 32 | | | | |

Magnet System Characteristics for TAL... Contactors

| Contactor types: TAL | TAL9 | TAL12 | TAL16 | TAL26 | TAL30 | TAL40 |
|--|---|-------------|-------|-------|-------------|-------|
| Rated control circuit voltage U_c | V d.c. 9 ... 264 | | | | | |
| Coil operating limits according to IEC 60947-4-1 | $\varnothing \leq 55^\circ\text{C}$ 0.85 ... 1.1 x U_c | | | | | |
| Drop-out voltage in % of U_c max. | roughly 20... 35 % | | | | | |
| Coil consumption values for U_c max. and 20 °C | | | | | | |
| – U_c max. DC | W | 8.5 | | | 9 | |
| – U_c min. DC | W | 2.5 | | | 2.7 | |
| – U_c DC | W | 5 | | | 5.4 | |
| Operating time between coil energization and: | | | | | | |
| – N.O. contact closing | ms | 50 ... 100 | | | 55 ... 110 | |
| – N.C. contact opening | ms | 20 ... 70 | | | 25 ... 75 | |
| between coil de-energization and | | | | | | |
| – N.O. contact opening | ms | 10 ... 17 ① | | | 12 ... 18 ① | |
| – N.C. contact closing | ms | 16 ... 27 ① | | | 18 ... 28 ① | |

① The use of surge suppressors increases the opening time on a scale of 1.1 to 1.5 for a varistor suppressor and on a scale of 4 to 8 for a diode suppressor.