

# AF09(Z)B..RT ... AF38(Z)B..RT 4-pole contactors

## Technical data

### Main pole - Utilization characteristics according to IEC

| Contactor types   | AF09(Z)B..RT  | AF16(Z)B..RT                   | AF26(Z)B..RT                   | AF38(Z)B..RT       |
|---|---|--------------------------------|--------------------------------|--------------------|
| Standards   | IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1    |                                |                                |                    |
| Fire and smoke  | IEC 60077-1, IEC 60077-2, EN 50155 (applicable parts) |                                |                                |                    |
| Rated operational voltage $U_e$ max.  | 690 V   |                                |                                |                    |
| Rated frequency (without derating)  | 50 / 60 Hz  |                                |                                |                    |
| Conventional free-air thermal current $I_{th}$ acc. to IEC 60947-4-1, open contactors, $\theta \leq 40^\circ\text{C}$ | 35 A  | 35 A                           | 55 A                           | 55 A               |
| With conductor cross-sectional area   | 6 mm <sup>2</sup>                                     | 6 mm <sup>2</sup>              | 16 mm <sup>2</sup>             | 16 mm <sup>2</sup> |
| AC-1 Utilization category   |   |                                |                                |                    |
| For air temperature close to contactor  |   |                                |                                |                    |
| $I_e$ / Rated operational current AC-1  |   |                                |                                |                    |
| $U_e$ max. $\leq 690$ V, 50/60 Hz   | $\theta \leq 40^\circ\text{C}$                        | $\theta \leq 60^\circ\text{C}$ | $\theta \leq 70^\circ\text{C}$ |                    |
|   | 25 A  | 30 A                           | 45 A                           | 55 A               |
|   | 25 A  | 30 A                           | 40 A                           | 45 A               |
|   | 22 A  | 26 A                           | 32 A                           | 37 A               |
| With conductor cross-sectional area   | 4 mm <sup>2</sup>                                     | 6 mm <sup>2</sup>              | 10 mm <sup>2</sup>             | 16 mm <sup>2</sup> |
| AC-3 Utilization category   |   |                                |                                |                    |
| For air temperature close to contactor $\theta \leq 60^\circ\text{C}$   |   |                                |                                |                    |
| $I_e$ / Max. rated operational current AC-3 (1)   |   |                                |                                |                    |
|   | 220-230-240 V   | 380-400 V                      | 415 V                          | 440 V              |
|   | 9 A   | 9 A                            | 9 A                            | 9 A                |
|   | 18 A  | 18 A                           | 18 A                           | 18 A               |
|   | 23.2 A  | 22 A                           | 21.2 A                         | 20 A               |
|   | 23.2 A  | 22 A                           | 21.2 A                         | 20 A               |
|   | 9.5 A   | 9.5 A                          | 9.5 A                          | 9.5 A              |
|   | 15 A  | 15 A                           | 15 A                           | 15 A               |
|   | 17.6 A  | 17.6 A                         | 17.6 A                         | 17.6 A             |
|   | 7 A   | 7 A                            | 7 A                            | 7 A                |
|   | 10.5 A  | 10.5 A                         | 10.5 A                         | 10.5 A             |
|   | 10.5 A  | 10.5 A                         | 10.5 A                         | 10.5 A             |
| Rated operational power AC-3 (1)  |   |                                |                                |                    |
|   | 220-230-240 V   | 380-400 V                      | 415 V                          | 440 V              |
|   | 2.2 kW  | 4 kW                           | 4 kW                           | 4 kW               |
|   | 4 kW  | 7.5 kW                         | 11 kW (2)                      | 11 kW (2)          |
|   | 4 kW  | 9 kW                           | 11 kW                          | 11 kW              |
|   | 4 kW  | 9 kW                           | 11 kW                          | 11 kW              |
|   | 5.5 kW  | 9 kW                           | 11 kW                          | 11 kW              |
|   | 5.5 kW  | 9 kW                           | 9 kW                           | 9 kW               |
|   | 5.5 kW  | 9 kW                           | 9 kW                           | 9 kW               |
| Rated making capacity AC-3  | 10 x $I_e$ AC-3 acc. to IEC 60947-4-1                 |                                |                                |                    |
| Rated breaking capacity AC-3  | 8 x $I_e$ AC-3 acc. to IEC 60947-4-1                  |                                |                                |                    |
| Short-circuit protection device for contactors without thermal overload relay - Motor protection excluded             |   |                                |                                |                    |
| $U_e \leq 500$ V AC - gG type fuse  | 25 A  | 32 A                           | 50 A                           | 63 A               |
| Rated short-time withstand current $I_{cw}$ at 40 °C ambient temperature, in free air from a cold state               | 1 s   | 300 A                          | 300 A                          | 450 A              |
|   | 10 s  | 150 A                          | 150 A                          | 300 A              |
|   | 30 s  | 80 A                           | 80 A                           | 225 A              |
|   | 1 min   | 60 A                           | 60 A                           | 150 A              |
|   | 15 min  | 35 A                           | 35 A                           | 55 A               |
| Maximum breaking capacity $\cos \theta = 0.45$  | at 440 V  | 250 A                          | 250 A                          | -                  |
|   | at 690 V  | 106 A                          | 106 A                          | -                  |
| Power dissipation per pole  | $I_e$ / AC-1  | 0.8 W                          | 1.2 W                          | 1.6 W              |
|   | $I_e$ / AC-3  | 0.1 W                          | 0.35 W                         | 0.42 W             |
| Max. electrical switching frequency   | AC-1  | 600 cycles/h                   |                                |                    |

(1) For the corresponding kW/A or hp/A values of 1500 r.p.m. 50 Hz or 1800 r.p.m. 60 Hz, 1-phase or 3-phase motors, see "Motor rated operational powers and currents".  
 (2) 400 V 3-phase motor only.

### Main pole - Utilization characteristics according to UL / NEMA / CSA

| Contactor types                        | AF09(Z)B..RT           | AF16(Z)B..RT | AF26(Z)B..RT | AF38(Z)B..RT |
|--|------------------------|--------------|--------------|--------------|
| Standards                              | UL 508, CSA C22.2 N°14 |              |              |              |
| Maximum operational voltage            | 600 V                  |              |              |              |
| UL / CSA general use rating            |                        |              |              |              |
| 600 V AC                               | 25 A                   | 30 A         | 45 A         | 55 A         |
| With conductor cross-sectional area    | AWG 10                 | AWG 10       | AWG 8        | AWG 6        |
| Maximum electrical switching frequency |                        |              |              |              |
| For general use                        | 600                    |              |              |              |

# AF09(Z)B..RT ... AF38(Z)B..RT 4-pole contactors

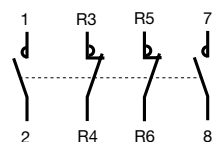
## Technical data

### General technical data

| Contactor types  | AF09(Z)B..RT  | AF16(Z)B..RT | AF26(Z)B..RT | AF38(Z)B..RT |
|--|---|--------------|--------------|--------------|
| Rated insulation voltage $U_i$<br>acc. to IEC 60947-4-1<br>acc. to UL / CSA        | 690 V<br>600 V  |              |              |              |
| Rated impulse withstand voltage $U_{imp}$  | 6 kV  |              |              |              |
| Electromagnetic compatibility  | Devices complying with IEC 60947-1 / EN 60947-1 - Environment A<br>EN 50121-3-2 |              |              |              |
| Ambient air temperature<br>Operation in free air<br>Storage                        | -40...+70 °C<br>-60...+80 °C  |              |              |              |
| Climatic withstand   | Category B according to IEC 60947-1 Annex Q                                     |              |              |              |
| Maximum operating altitude (without derating)                                      | 3000 m  |              |              |              |
| Mechanical durability<br>Number of operating cycles<br>Maximum switching frequency | 10 millions operating cycles<br>3600 cycles/h                                   |              |              |              |
| Shock and vibration withstand<br>acc. to IEC 61373                                 | Category 1, class B   |              |              |              |

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### Remark for 4-pole contactors fitted with 2 N.O. + 2 N.C. main poles



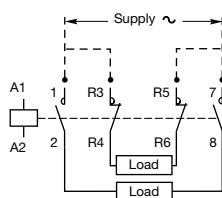
These contactors are suitable for controlling 2 separate circuits, i.e. 2 loads with 2 separate supplies, or 1 circuit comprising 2 separate loads with a single supply (see diagrams below). When the contactor operates there is no mechanical overlapping between the N.O. poles and the N.C. poles: BREAK before MAKE.



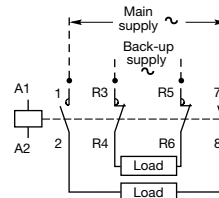
These contactors are not suitable for a reversing starter or for controlling a single load from 2 separate supplies.

### Block diagrams

– Single supply and 2 separate loads



– 2 separate supplies and 2 separate loads



# AF09(Z)B..RT ... AF38(Z)B..RT 4-pole contactors

## Technical data

### Magnet system characteristics

| Contactor types  | AF09(Z)B..RT   | AF16(Z)B..RT | AF26(Z)B..RT | AF38(Z)B..RT |
|--|--|--------------|--------------|--------------|
| Coil operating limits<br>acc. to IEC 60947-4-1   | <b>DC supply</b> (AF..ZB) at $\theta \leq 70^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$   |              |              |              |
|  | <b>AC supply</b> (AF..B) at $\theta \leq 60^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$ ; at $\theta \leq 70^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots U_c \text{ max}$  |              |              |              |
| <b>DC control voltage</b>  |  |              |              |              |
| Rated control circuit voltage $U_c$  | 20...250 V DC  |              |              |              |
| Coil consumption   | <b>Average pull-in value</b> (AF..Z) 12...16 W   |              |              |              |
|  | <b>Average holding value</b> (AF..Z) 1.7 W   |              |              |              |
| <b>PLC-output control</b>  |  |              |              |              |
| <b>AC control voltage 50/60 Hz</b>   |  |              |              |              |
| Rated control circuit voltage $U_c$  | (AF..ZB) 24 ... 250 V AC - (AF..B) 250 ... 500 V AC  |              |              |              |
| Coil consumption   | <b>Average pull-in value</b> (AF..ZB) 16 VA - (AF..B) 50 VA  |              |              |              |
|  | <b>Average holding value</b> (AF..ZB) 1.7 VA / 1.5 W - (AF..B) 2.2 VA / 2 W  |              |              |              |
| Max. permitted control voltage during voltage fluctuation defined acc. to IEC 60077 / EN 50155 | Rated control circuit voltage / Max. permitted control voltage<br>24 ... 60 V AC 50/60 Hz / 75 V AC 50/60 Hz<br>48 ... 130 V AC 50/60 Hz / 150 V AC 50/60 Hz<br>100 ... 250 V AC 50/60 Hz / 275 V AC 50/60 Hz<br>250 ... 500 V AC 50/60 Hz / 550 V AC 50/60 Hz |              |              |              |
| <b>Drop-out voltage</b>  |  |              |              |              |
| $\leq 60\%$ of $U_c \text{ min}$ .   |  |              |              |              |
| <b>Operating time</b>  |  |              |              |              |
| Between coil energization and:   | <b>N.O. contact closing</b>  | 40...95 ms   |              |              |
|  | <b>N.C. contact opening</b>  | 38...90 ms   |              |              |
| Between coil de-energization and:  | <b>N.O. contact opening</b>  | 11...95 ms   |              |              |
|  | <b>N.C. contact closing</b>  | 13...98 ms   |              |              |

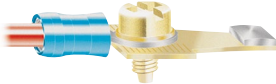
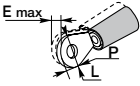
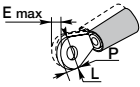
### Mounting characteristics and conditions for use

| Contactor types  | AF09(Z)B..RT                    | AF16(Z)B..RT | AF26(Z)B..RT | AF38(Z)B..RT |
|--|---------------------------------|--------------|--------------|--------------|
| Mounting positions   |                                 |              |              |              |
| Max. add-on N.C. auxiliary contacts:<br>see accessory fitting details for a 4-pole contactor AF09(Z)B ... AF38(Z)B |                                 |              |              |              |
| <b>Mounting distances</b>  |                                 |              |              |              |
| The contactors can be assembled side by side   |                                 |              |              |              |
| <b>Fixing</b>  |                                 |              |              |              |
| On rail according to IEC 60715, EN 60715   | 35 x 7.5 mm or 35 x 15 mm       |              |              |              |
| By screws (not supplied)   | 2 x M4 screws placed diagonally |              |              |              |

# AF09(Z)B..RT ... AF38(Z)B..RT 4-pole contactors

## Technical data

### Connecting characteristics

| Contactor types   | DC operated      | AF09(Z)B..RT  | AF16(Z)B..RT | AF26(Z)B..RT             | AF38(Z)B..RT |
|---|------------------|---|--------------|--------------------------|--------------|
| Main terminals  |                  |  |              |                          |              |
|   |                  | Conductors with insulated ring tongue ferrule                                     |              |                          |              |
| Connection capacity (min. ... max.)   |                  |   |              |                          |              |
| Main conductors (poles)   |                  |   |              |                          |              |
| Flexible with insulated ferrule   | 1 or 2 x         | 0.75...6 mm <sup>2</sup>  |              | 1.5...16 mm <sup>2</sup> |              |
|  | Ø mm >           | 3.5 mm  |              | 9.3 mm                   |              |
|   | L mm <           | 9.6 mm  |              | 5.7 mm                   |              |
|   | P mm <           | 5 mm  |              | 5.7 mm                   |              |
|   | E mm <           | 3.6 mm  |              |                          |              |
| Connection capacity acc. to UL/CSA  | 1 or 2 x         | AWG 16...10   |              | AWG 16...6               |              |
| Tightening torque   |                  | 1.2 Nm / 11 lb.in   |              | 1.2 Nm/11 lb.in          |              |
| Coil conductors   |                  |   |              |                          |              |
| Flexible with insulated ferrule   | 1 or 2 x         | 0.75...2.5 mm <sup>2</sup>  |              |                          |              |
|  | Ø mm >           | 3.5 mm  |              |                          |              |
|   | L mm <           | 8 mm  |              |                          |              |
|   | P mm <           | 4.7 mm  |              |                          |              |
|   | E mm <           | 2.9 mm  |              |                          |              |
| Connection capacity acc. to UL/CSA  | 1 or 2 x         | AWG 18...14   |              |                          |              |
| Tightening torque   |                  | 1.2 Nm / 11 lb.in   |              |                          |              |
| Degree of protection  |                  |   |              |                          |              |
| acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529                         |                  |   |              |                          |              |
| All terminals   |                  | IP10  |              |                          |              |
| Front face  |                  | IP20  |              |                          |              |
| Screw terminals   |                  | Delivered in open position, screws of unused terminals must be tightened          |              |                          |              |
| Main terminals  |                  | M3.5  |              |                          |              |
| Screwdriver type  |                  | Flat Ø 5.5 / Pozidriv 2   |              |                          |              |
| Coil terminals  |                  | M3.5  |              |                          |              |
|   | Screwdriver type | Flat Ø 5.5 / Pozidriv 2   |              |                          |              |