



Power contactor  
BF12

Product designation

Product type designation

**Contact characteristics**

|                                                                                |                                                   |        |
|--------------------------------------------------------------------------------|---------------------------------------------------|--------|
| Number of poles                                                                | Nr.                                               | 3      |
| Rated insulation voltage $U_i$ IEC/EN                                          | V                                                 | 690    |
| Rated impulse withstand voltage $U_{imp}$                                      | kV                                                | 6      |
| Operational frequency                                                          | min                                               | Hz 25  |
|                                                                                | max                                               | Hz 400 |
| IEC Conventional free air thermal current $I_{th}$                             | A                                                 | 28     |
| Operational current $I_e$                                                      | AC-1 ( $\leq 40^\circ\text{C}$ )                  | A 28   |
|                                                                                | AC-1 ( $\leq 55^\circ\text{C}$ )                  | A 23   |
|                                                                                | AC-1 ( $\leq 70^\circ\text{C}$ )                  | A 20   |
|                                                                                | AC-3 ( $\leq 440\text{V} \leq 55^\circ\text{C}$ ) | A 12   |
|                                                                                | AC-4 (400V)                                       | A 7.9  |
| Rated operational power AC-3 ( $T \leq 55^\circ\text{C}$ )                     | 230V                                              | kW 3.2 |
|                                                                                | 400V                                              | kW 5.7 |
|                                                                                | 415V                                              | kW 6.2 |
|                                                                                | 440V                                              | kW 5.5 |
|                                                                                | 500V                                              | kW 5   |
|                                                                                | 690V                                              | kW 5   |
| Rated operational power AC-1 ( $T \leq 40^\circ\text{C}$ )                     | 230V                                              | kW 10  |
|                                                                                | 400V                                              | kW 18  |
|                                                                                | 500V                                              | kW 23  |
|                                                                                | 690V                                              | kW 32  |
| IEC max current $I_e$ in DC1 with $L/R \leq 1\text{ms}$ with 1 poles in series | $\leq 24\text{V}$                                 | A 17   |
|                                                                                | 48V                                               | A 15   |
|                                                                                | 75V                                               | A 13   |
|                                                                                | 110V                                              | A 6    |
|                                                                                | 220V                                              | A –    |
| IEC max current $I_e$ in DC1 with $L/R \leq 1\text{ms}$ with 2 poles in series | $\leq 24\text{V}$                                 | A 20   |
|                                                                                | 48V                                               | A 20   |
|                                                                                | 75V                                               | A 18   |
|                                                                                | 110V                                              | A 13   |
|                                                                                | 220V                                              | A 1    |
| IEC max current $I_e$ in DC1 with $L/R \leq 1\text{ms}$ with 3 poles in series | $\leq 24\text{V}$                                 | A 22   |
|                                                                                | 48V                                               | A 22   |
|                                                                                | 75V                                               | A 20   |
|                                                                                | 110V                                              | A 16   |

|                                                                               |             |            |     |
|-------------------------------------------------------------------------------|-------------|------------|-----|
|                                                                               | 220V        | A          | 11  |
| <hr/>                                                                         |             |            |     |
| IEC max current $I_e$ in DC1 with $L/R \leq 1$ ms with 4 poles in series      |             |            |     |
|                                                                               | $\leq 24$ V | A          | 20  |
|                                                                               | 48V         | A          | 20  |
|                                                                               | 75V         | A          | 20  |
|                                                                               | 110V        | A          | 16  |
|                                                                               | 220V        | A          | 12  |
| <hr/>                                                                         |             |            |     |
| IEC max current $I_e$ in DC3-DC5 with $L/R \leq 15$ ms with 1 poles in series |             |            |     |
|                                                                               | $\leq 24$ V | A          | 12  |
|                                                                               | 48V         | A          | 11  |
|                                                                               | 75V         | A          | 10  |
|                                                                               | 110V        | A          | 2   |
|                                                                               | 220V        | A          | –   |
| <hr/>                                                                         |             |            |     |
| IEC max current $I_e$ in DC3-DC5 with $L/R \leq 15$ ms with 2 poles in series |             |            |     |
|                                                                               | $\leq 24$ V | A          | 15  |
|                                                                               | 48V         | A          | 13  |
|                                                                               | 75V         | A          | 12  |
|                                                                               | 110V        | A          | 8   |
|                                                                               | 220V        | A          | 2   |
| <hr/>                                                                         |             |            |     |
| IEC max current $I_e$ in DC3-DC5 with $L/R \leq 15$ ms with 3 poles in series |             |            |     |
|                                                                               | $\leq 24$ V | A          | 18  |
|                                                                               | 48V         | A          | 18  |
|                                                                               | 75V         | A          | 15  |
|                                                                               | 110V        | A          | 12  |
|                                                                               | 220V        | A          | 6   |
| <hr/>                                                                         |             |            |     |
| IEC max current $I_e$ in DC3-DC5 with $L/R \leq 15$ ms with 4 poles in series |             |            |     |
|                                                                               | $\leq 24$ V | A          | 15  |
|                                                                               | 48V         | A          | 15  |
|                                                                               | 75V         | A          | 15  |
|                                                                               | 110V        | A          | 16  |
|                                                                               | 220V        | A          | 7   |
| <hr/>                                                                         |             |            |     |
| Short-time allowable current for 10s (IEC/EN60947-1)                          |             | A          | 150 |
| <hr/>                                                                         |             |            |     |
| Protection fuse                                                               |             |            |     |
|                                                                               | gG (IEC)    | A          | 32  |
|                                                                               | aM (IEC)    | A          | 12  |
| <hr/>                                                                         |             |            |     |
| Making capacity (RMS value)                                                   |             | A          | 120 |
| <hr/>                                                                         |             |            |     |
| Breaking capacity at voltage                                                  |             |            |     |
|                                                                               | 440V        | A          | 96  |
|                                                                               | 500V        | A          | 96  |
|                                                                               | 690V        | A          | 94  |
| <hr/>                                                                         |             |            |     |
| Resistance per pole (average value)                                           |             | m $\Omega$ | 2.5 |
| <hr/>                                                                         |             |            |     |
| Power dissipation per pole (average value)                                    |             |            |     |
|                                                                               | $I_{th}$    | W          | 2   |
|                                                                               | AC3         | W          | 0.4 |
| <hr/>                                                                         |             |            |     |
| Tightening torque for terminals                                               |             |            |     |
|                                                                               | min         | Nm         | 1.5 |
|                                                                               | max         | Nm         | 1.8 |
|                                                                               | min         | lbin       | 1.1 |
|                                                                               | max         | lbin       | 1.5 |
| <hr/>                                                                         |             |            |     |
| Tightening torque for coil terminal                                           |             |            |     |
|                                                                               | min         | Nm         | 0.8 |
|                                                                               | max         | Nm         | 1   |
|                                                                               | min         | lbin       | 0.8 |

|                                                     |                  |                 |                       |
|-----------------------------------------------------|------------------|-----------------|-----------------------|
|                                                     | max              | lbin            | 0.74                  |
| Max number of wires simultaneously connectable      |                  | Nr.             | 2                     |
| Conductor section                                   |                  |                 |                       |
| AWG/Kcmil                                           | max              |                 | 10                    |
| Flexible w/o lug conductor section                  | min              | mm <sup>2</sup> | 1                     |
|                                                     | max              | mm <sup>2</sup> | 6                     |
| Flexible c/w lug conductor section                  | min              | mm <sup>2</sup> | 1                     |
|                                                     | max              | mm <sup>2</sup> | 4                     |
| Flexible with insulated spade lug conductor section | min              | mm <sup>2</sup> | 1                     |
|                                                     | max              | mm <sup>2</sup> | 4                     |
| Power terminal protection according to IEC/EN 60529 |                  |                 | IP20 when wired       |
| <b>Mechanical features</b>                          |                  |                 |                       |
| Operating position                                  | normal allowable |                 | Vertical plan ±30°    |
| Fixing                                              |                  |                 | Screw / DIN rail 35mm |
| Weight                                              |                  | g               | 356                   |
| Conductor section                                   |                  |                 |                       |
| AWG/kcmil conductor section                         | max              |                 | 10                    |
| <b>Auxiliary contact characteristics</b>            |                  |                 |                       |
| Thermal current I <sub>th</sub>                     |                  | A               | 10                    |
| IEC/EN 60947-5-1 designation                        |                  |                 | A600 - P600           |
| Operating current AC15                              | 230V             | A               | 3                     |
|                                                     | 400V             | A               | 1.9                   |
|                                                     | 500V             | A               | 1.4                   |
| Operating current DC12                              | 110V             | A               | 5.7                   |
| Operating current DC13                              | 24V              | A               | 5.7                   |
|                                                     | 48V              | A               | 2.9                   |
|                                                     | 60V              | A               | 2.3                   |
|                                                     | 110V             | A               | 1.25                  |
|                                                     | 125V             | A               | 1.1                   |
|                                                     | 220V             | A               | 0.55                  |
|                                                     | 600V             | A               | 0.2                   |
| <b>Operations</b>                                   |                  |                 |                       |
| Mechanical life                                     |                  | cycles          | 20000000              |
| Electrical life                                     |                  | cycles          | 2000000               |
| <b>Safety related data</b>                          |                  |                 |                       |
| Performance level B10d according to EN/ISO 13489-1  | rated load       | cycles          | 2000000               |
|                                                     | mechanical load  | cycles          | 20000000              |
| Mirror contacts according to IEC/EN 60947-4-1       |                  |                 | yes                   |
| EMC compatibility                                   |                  |                 | yes                   |
| <b>AC coil operating</b>                            |                  |                 |                       |
| Rated AC voltage at 50/60Hz                         |                  | V               | 230                   |

AC operating voltage

of 50/60Hz coil powered at 50Hz  
pick-up

|     |     |     |
|-----|-----|-----|
| min | %Us | 80  |
| max | %Us | 110 |

drop-out

|     |     |    |
|-----|-----|----|
| min | %Us | 20 |
| max | %Us | 55 |

of 50/60Hz coil powered at 60Hz  
pick-up

|     |     |     |
|-----|-----|-----|
| min | %Us | 85  |
| max | %Us | 110 |

drop-out

|     |     |    |
|-----|-----|----|
| min | %Us | 20 |
| max | %Us | 55 |

AC average coil consumption at 20°C

of 50/60Hz coil powered at 50Hz

|         |    |    |
|---------|----|----|
| in-rush | VA | 75 |
| holding | VA | 9  |

of 50/60Hz coil powered at 60Hz

|         |    |     |
|---------|----|-----|
| in-rush | VA | 70  |
| holding | VA | 6.5 |

of 60Hz coil powered at 60Hz

|         |    |    |
|---------|----|----|
| in-rush | VA | 75 |
| holding | VA | 9  |

Dissipation at holding  $\leq 20^\circ\text{C}$  50Hz

|   |     |
|---|-----|
| W | 2.5 |
|---|-----|

Max cycles frequency

Mechanical operation

|          |      |
|----------|------|
| cycles/h | 3600 |
|----------|------|

Operating times

Average time for  $U_s$  control

in AC

Closing NO

|     |    |    |
|-----|----|----|
| min | ms | 8  |
| max | ms | 24 |

Opening NO

|     |    |    |
|-----|----|----|
| min | ms | 10 |
| max | ms | 20 |

Closing NC

|     |    |    |
|-----|----|----|
| min | ms | 14 |
| max | ms | 28 |

Opening NC

|     |    |    |
|-----|----|----|
| min | ms | 7  |
| max | ms | 18 |

UL technical data

Full-load current (FLA) for three-phase AC motor

|         |   |    |
|---------|---|----|
| at 480V | A | 11 |
| at 600V | A | 11 |

Yielded mechanical performance

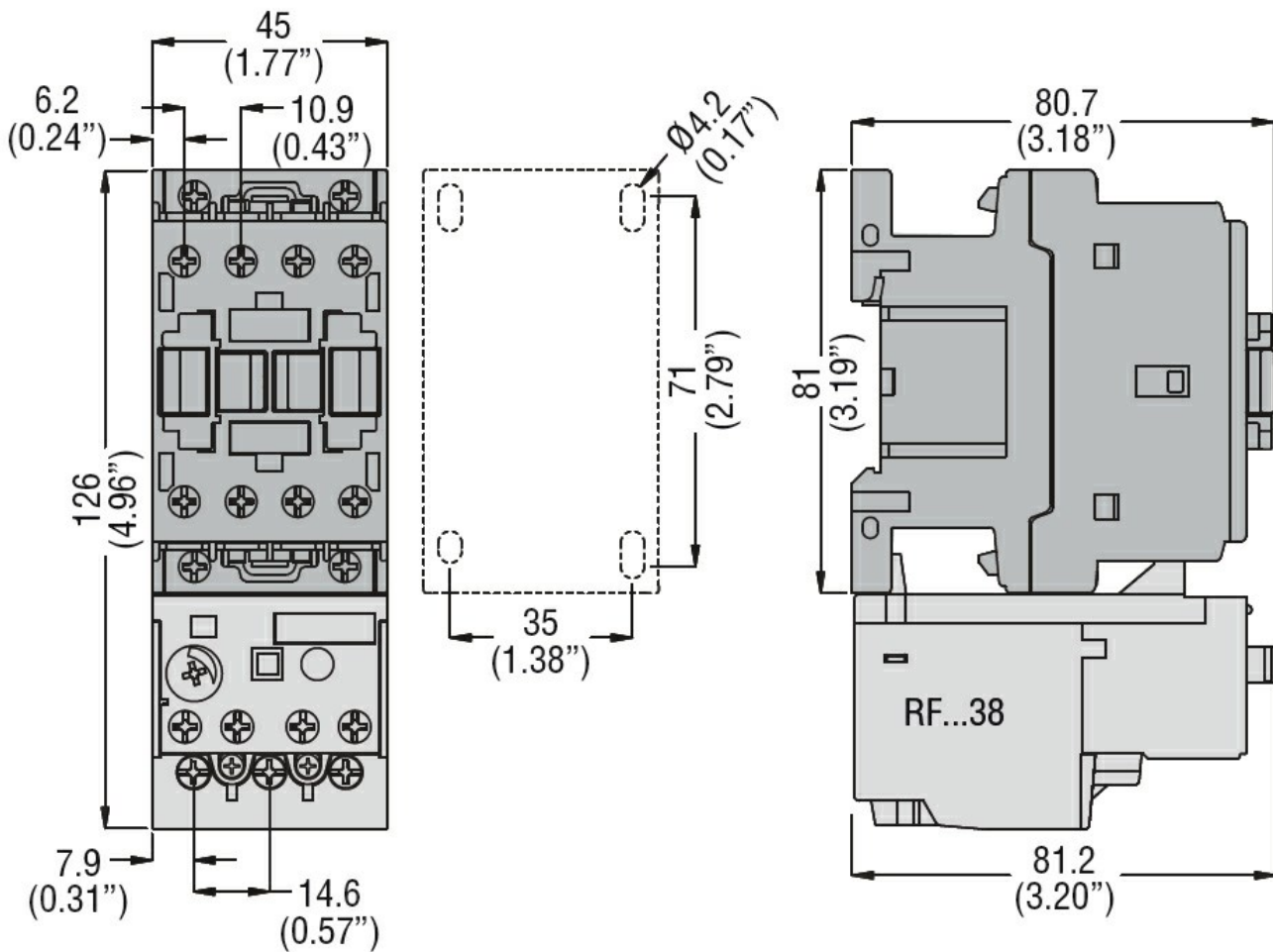
for single-phase AC motor

|          |    |   |
|----------|----|---|
| 110/120V | HP | 1 |
| 230V     | HP | 2 |

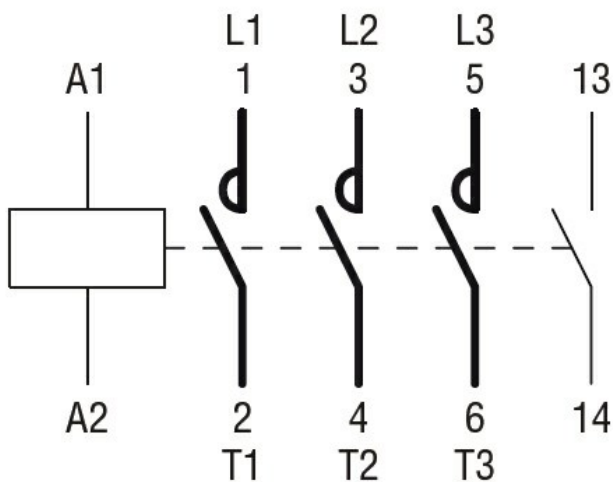
for three-phase AC motor

|          |    |   |
|----------|----|---|
| 200/208V | HP | 5 |
| 220/230V | HP | 5 |

|                                                      |                       |                       |    |             |
|------------------------------------------------------|-----------------------|-----------------------|----|-------------|
|                                                      |                       | 460/480V              | HP | 7.5         |
|                                                      |                       | 575/600V              | HP | 10          |
| <b>General USE</b>                                   |                       |                       |    |             |
|                                                      | Contactor             | AC current            | A  | 28          |
|                                                      | Auxiliary contacts    | AC voltage            | V  | 600         |
|                                                      |                       | AC current            | A  | 10          |
|                                                      |                       | DC voltage            | V  | 250         |
|                                                      |                       | DC current            | A  | 1           |
| <b>Short-circuit protection fuse, 600V</b>           |                       |                       |    |             |
|                                                      | High fault            | Short circuit current | kA | 100         |
|                                                      |                       | Fuse rating           | A  | 30          |
|                                                      |                       | Fuse class            |    | J           |
|                                                      | Standard fault        | Short circuit current | kA | 5           |
|                                                      |                       | Fuse rating           | A  | 70          |
| Contact rating of auxiliary contacts according to UL |                       |                       |    | A600 - P600 |
| <b>Ambient conditions</b>                            |                       |                       |    |             |
| <b>Temperature</b>                                   |                       |                       |    |             |
|                                                      | Operating temperature | min                   | °C | -50         |
|                                                      |                       | max                   | °C | 70          |
|                                                      | Storage temperature   | min                   | °C | -60         |
|                                                      |                       | max                   | °C | 80          |
| Max altitude                                         |                       |                       |    | m 3000      |
| <b>Resistance &amp; Protection</b>                   |                       |                       |    |             |
| Pollution degree                                     |                       |                       |    | 3           |
| <b>Dimensions</b>                                    |                       |                       |    |             |



### Wiring diagrams



### Certifications and compliance

#### Compliance

CSA C22.2 n° 60947-1  
 CSA C22.2 n° 60947-4-1  
 IEC/EN 60947-1  
 IEC/EN 60947-4-1  
 UL 60947-1  
 UL 60947-4-1

#### Certificates

CCC

---

cULus

---

EAC

ETIM classification

ETIM 8.0

EC000066 -  
Power contactor,  
AC switching