



|  |   |    |     |                 |
|--|---|----|-----|-----------------|
| Product designation  |   |    |     | Power contactor |
| Product type designation   |   |    |     | BF12            |
| <b>Contact characteristics</b>   |   |    |     |                 |
| 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  |
| IEC max current I <sub>e</sub> in DC1 with L/R ≤ 1ms with 4 poles in series      | ≤24V            | A                | 20  |
|  | 48V             | A                | 20  |
|  | 75V             | A                | 20  |
|  | 110V            | A                | 16  |
|  | 220V            | A                | 12  |
| IEC max current I <sub>e</sub> in DC3-DC5 with L/R ≤ 15ms with 1 poles in series | ≤24V            | A                | 12  |
|  | 48V             | A                | 11  |
|  | 75V             | A                | 10  |
|  | 110V            | A                | 2   |
|  | 220V            | A                | –   |
| IEC max current I <sub>e</sub> in DC3-DC5 with L/R ≤ 15ms with 2 poles in series | ≤24V            | A                | 15  |
|  | 48V             | A                | 13  |
|  | 75V             | A                | 12  |
|  | 110V            | A                | 8   |
|  | 220V            | A                | 2   |
| IEC max current I <sub>e</sub> in DC3-DC5 with L/R ≤ 15ms with 3 poles in series | ≤24V            | A                | 18  |
|  | 48V             | A                | 18  |
|  | 75V             | A                | 15  |
|  | 110V            | A                | 12  |
|  | 220V            | A                | 6   |
| IEC max current I <sub>e</sub> in DC3-DC5 with L/R ≤ 15ms with 4 poles in series | ≤24V            | A                | 15  |
|  | 48V             | A                | 15  |
|  | 75V             | A                | 15  |
|  | 110V            | A                | 16  |
|  | 220V            | A                | 7   |
| Short-time allowable current for 10s (IEC/EN60947-1)                             |                 | A                | 150 |
| Protection fuse  | gG (IEC)        | A                | 32  |
|  | aM (IEC)        | A                | 12  |
| Making capacity (RMS value)  |                 | A                | 120 |
| Breaking capacity at voltage   | 440V            | A                | 96  |
|  | 500V            | A                | 96  |
|  | 690V            | A                | 94  |
| Resistance per pole (average value)  |                 | mΩ               | 2.5 |
| Power dissipation per pole (average value)                                       | I <sub>th</sub> | W                | 2   |
|  | AC-3            | W                | 0.4 |
| Tightening torque for terminals  | min             | Nm               | 1.5 |
|  | max             | Nm               | 1.8 |
|  | min             | I <sub>bin</sub> | 1.1 |
|  | max             | I <sub>bin</sub> | 1.5 |
| Tightening torque for coil terminal  | min             | Nm               | 0.8 |
|  | max             | Nm               | 1   |
|  | min             | I <sub>bin</sub> | 0.8 |

|   |           |     |                  |                          |
|---|-----------|-----|------------------|--------------------------|
|   |           | max | I <sub>bin</sub> | 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 properly wired |

### Mechanical features

|                    |                             |                  |   |                       |
|--------------------|-----------------------------|------------------|---|-----------------------|
| Operating position |                             | normal allowable |   | Vertical plan ±30°    |
| Fixing             |                             |                  |   | Screw / DIN rail 35mm |
| Weight             |                             |                  | g | 340                   |
| Conductor section  | AWG/kcmil conductor section | max              |   | 10                    |

### Auxiliary contact characteristics

|                                 |  |      |   |             |
|---------------------------------|--|------|---|-------------|
| 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         |

### Operations

|                 |  |        |  |          |
|-----------------|--|--------|--|----------|
| Mechanical life |  | cycles |  | 20000000 |
| Electrical life |  | cycles |  | 2000000  |

### Safety related data

|  |  |                 |        |          |
|--|--|-----------------|--------|----------|
| 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      |

### AC coil operating

|  |              |      |
|--|--------------|------|
| Rated AC voltage at 60Hz                         | V            | 575  |
| AC operating voltage                             |              |      |
| of 60Hz coil powered at 60Hz                     |              |      |
| pick-up  | min %Us      | 80   |
|  | max %Us      | 110  |
| drop-out   | min %Us      | 20   |
|  | max %Us      | 55   |
| AC average coil consumption at 20°C              |              |      |
| of 60Hz coil powered at 60Hz                     |              |      |
|  | in-rush VA   | 75   |
|  | holding VA   | 9    |
| Dissipation at holding ≤20°C 50Hz                | W            | 2.5  |
| <b>Max cycles frequency</b>                      |              |      |
| Mechanical operation                             | cycles/h     | 3600 |
| <b>Operating times</b>                           |              |      |
| Average time for Us 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   |
| <b>UL technical data</b>                         |              |      |
| 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   |
| General USE                                      |              |      |
| Contactor  | AC current A | 28   |
| Auxiliary contacts                               |              |      |
|  | AC voltage V | 600  |
|  | AC current A | 10   |
|  | DC voltage V | 250  |
|  | DC current A | 1    |
| Short-circuit protection fuse, 600V              |              |      |
| 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

Ambient conditions

Temperature

Operating temperature

|     |    |     |
|-----|----|-----|
| min | °C | -50 |
| max | °C | 70  |

Storage temperature

|     |    |     |
|-----|----|-----|
| min | °C | -60 |
| max | °C | 80  |

Max altitude

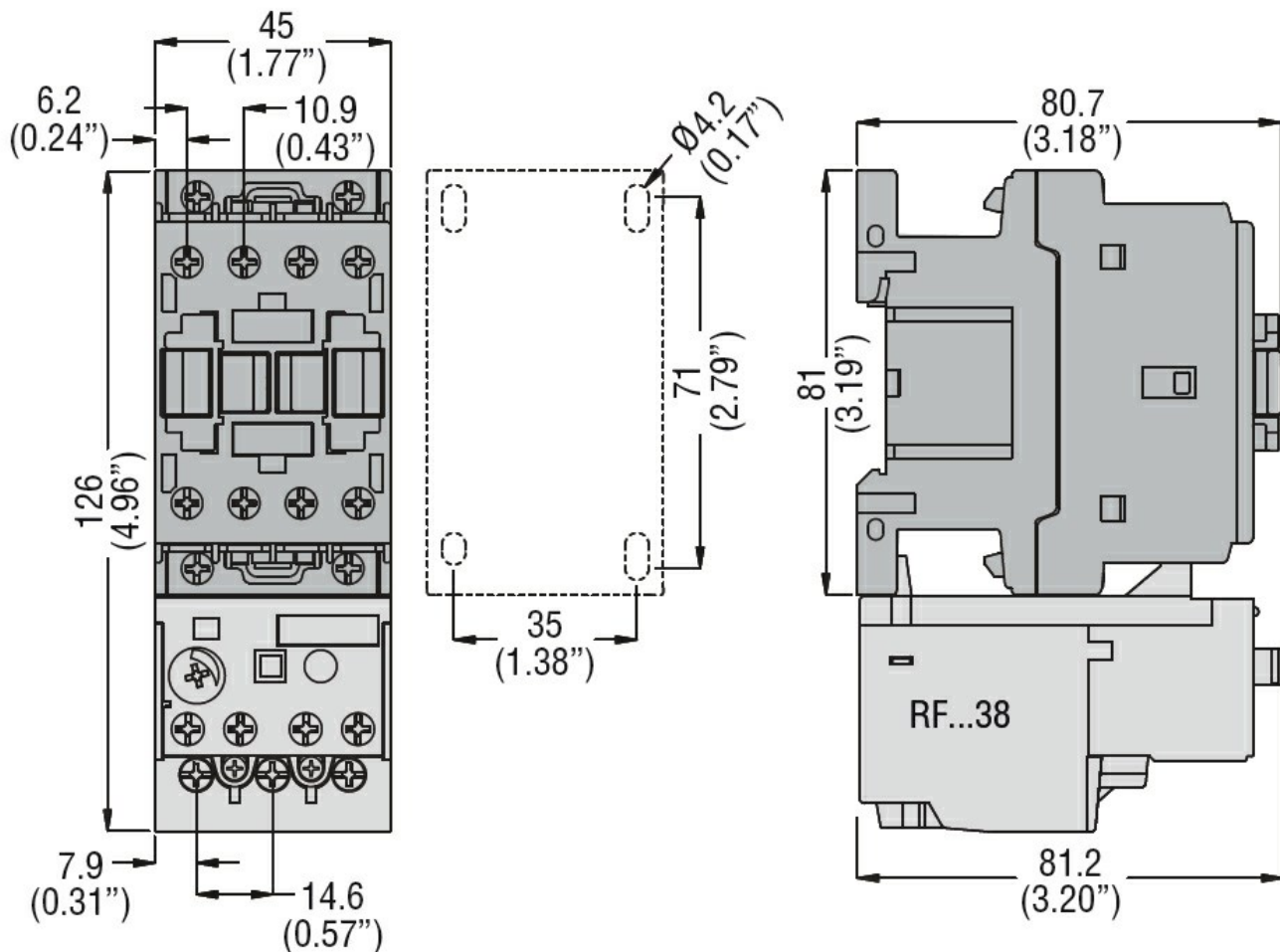
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Resistance & Protection

Pollution degree

3

Dimensions



Wiring diagrams



### Certifications and compliance

#### Compliance

CSA C22.2 n° 60947-1

CSA C22.2 n° 60947-4-1

IEC/EN/BS 60947-1

IEC/EN/BS 60947-4-1

UL 60947-1

UL 60947-4-1

#### Certificates

CCC

cULus

EAC

### ETIM classification

ETIM 8.0

EC000066 -  
Power contactor,  
AC switching