



Product designation

Power contactor

Product type designation

BF12

**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  |
| IEC max current Ie 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 Ie 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 Ie 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 Ie 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 Ie 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)                           |          |      |     |
|                                                                      | Ith      | W    | 2   |
|                                                                      | AC-3     | W    | 0.4 |
| Tightening torque for terminals                                      |          |      |     |
|                                                                      | min      | Nm   | 1.5 |
|                                                                      | max      | Nm   | 1.8 |
|                                                                      | min      | Ibin | 1.1 |
|                                                                      | max      | Ibin | 1.5 |
| Tightening torque for coil terminal                                  |          |      |     |
|                                                                      | min      | Nm   | 0.8 |
|                                                                      | max      | Nm   | 1   |
|                                                                      | min      | Ibin | 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 |
| <b>Mechanical features</b>                          |                                      |                  |                          |
| Operating position                                  | normal allowable                     |                  | Vertical plan ±30°       |
| Fixing                                              |                                      |                  | Screw / DIN rail 35mm    |
| Weight                                              |                                      | g                | 359                      |
| <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                 |
| EMC compatibility                                   |                                      |                  | yes                      |
| <b>AC coil operating</b>                            |                                      |                  |                          |
| Rated AC voltage at 60Hz                            |                                      | V                | 120                      |
| AC operating voltage                                |                                      |                  |                          |
|                                                     | of 60Hz coil powered at 60Hz pick-up |                  |                          |

|                                                                     |                       |          |      |
|---------------------------------------------------------------------|-----------------------|----------|------|
| drop-out                                                            | min                   | %Us      | 80   |
|                                                                     | max                   | %Us      | 110  |
|                                                                     | min                   | %Us      | 20   |
|                                                                     | max                   | %Us      | 55   |
| AC average coil consumption at 20°C<br>of 60Hz coil powered at 60Hz |                       |          |      |
|                                                                     | in-rush               | VA       | 75   |
|                                                                     | holding               | VA       | 9    |
| Dissipation at holding ≤20°C 50Hz                                   |                       | W        | 2.5  |
| Max cycles frequency                                                |                       |          |      |
| Mechanical operation                                                |                       | cycles/h | 3600 |
| Operating times                                                     |                       |          |      |
| Average time for Us control<br>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                                                   |                       |          |      |
| Rated operational voltage AC (UL)                                   |                       | V        | 600  |
| 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                                                           |                       |          |      |
| Auxiliary contacts                                                  | AC current            | A        | 28   |
|                                                                     | 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

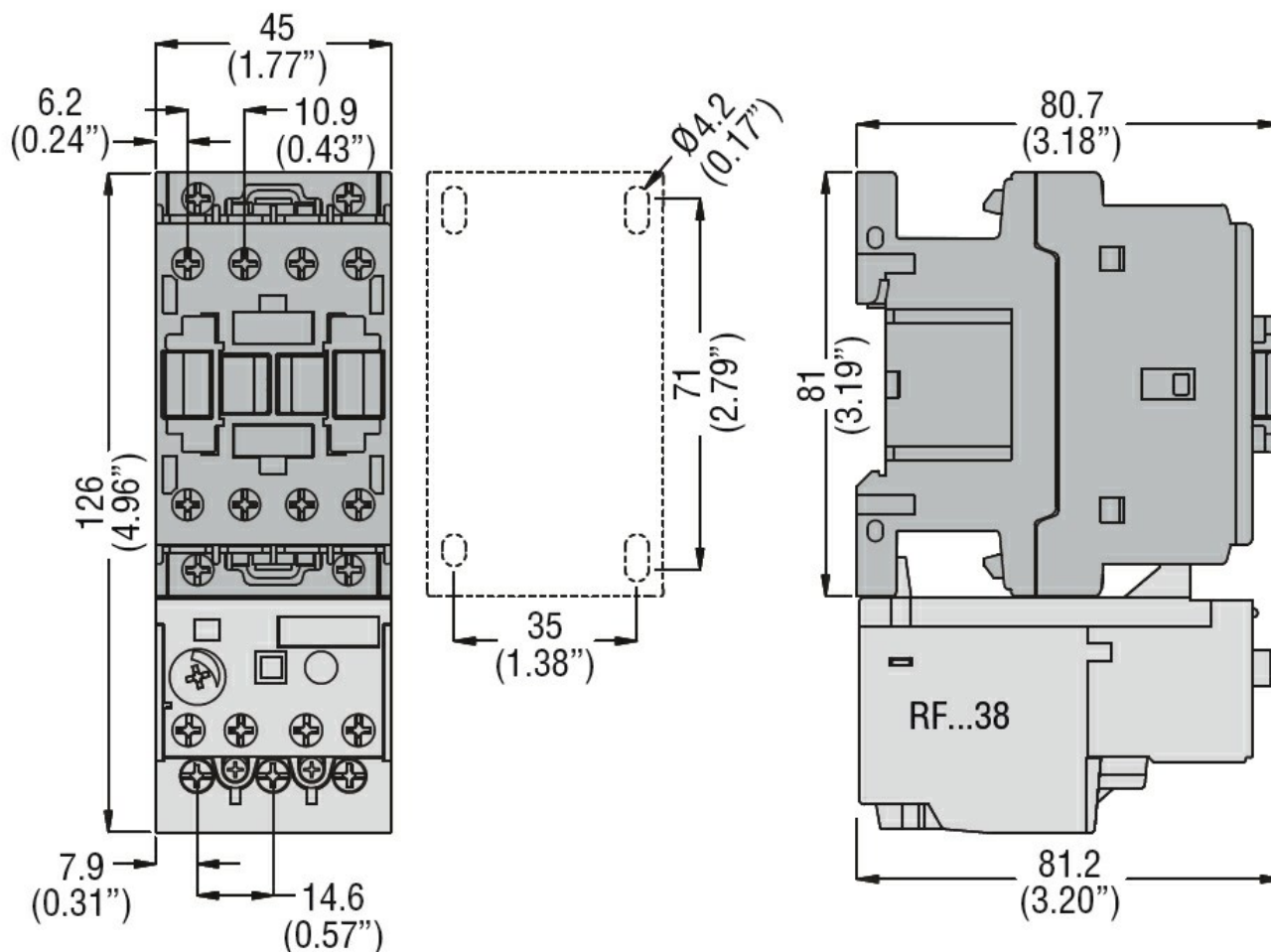
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#### Resistance & Protection

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