



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)                                  |          | m?   | 2.5 |
| Power dissipation per pole (average value)                           | Ith      | W    | 2   |
|                                                                      | AC3      | W    | 0.4 |
| Tightening torque for terminals                                      | min      | Nm   | 1.5 |
|                                                                      | max      | Nm   | 1.8 |
|                                                                      | min      | lbin | 1.1 |
|                                                                      | max      | lbin | 1.5 |
| Tightening torque for coil terminal                                  | min      | Nm   | 0.8 |
|                                                                      | max      | Nm   | 1   |
|                                                                      | min      | lbin | 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 wired          |
| <b>Mechanical features</b>                          |                     |                  |                          |
| Operating position                                  | normal<br>allowable |                  | Vertical plan<br>±30°    |
| Fixing                                              |                     |                  | Screw / DIN rail<br>35mm |
| Weight                                              |                     | g                | 364                      |
| 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 60Hz                            |                     | V                | 48                       |

## 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 |
|---|-----|

## Max cycles frequency

## Mechanical operation

cycles/h 3600

## Operating times

### 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 |

## 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  |

## General USE

Contactor

|            |   |    |
|------------|---|----|
| AC current | A | 28 |
|------------|---|----|

Auxiliary contacts

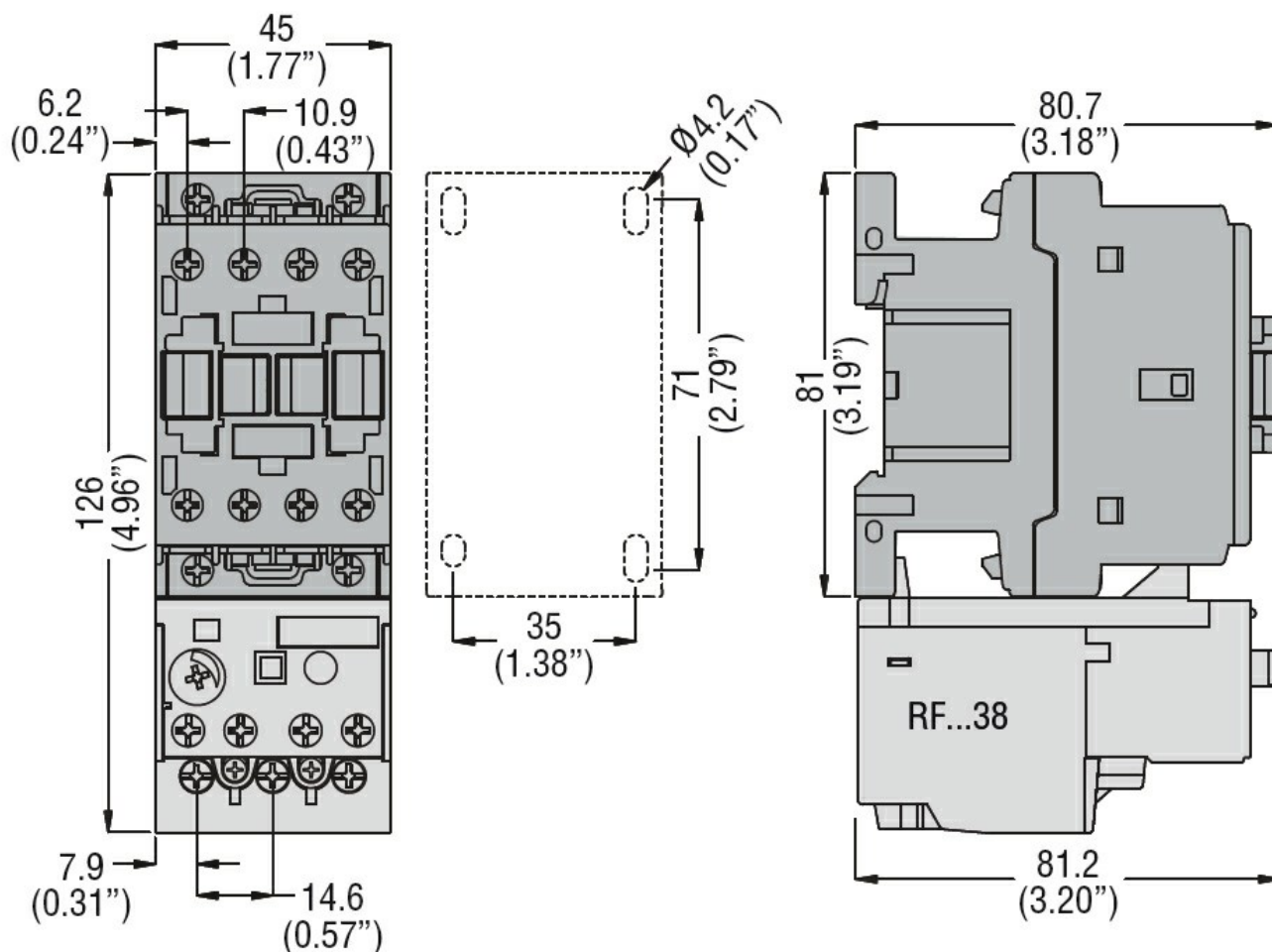
|            |   |     |
|------------|---|-----|
| AC voltage | V | 600 |
| AC current | A | 10  |
| DC voltage | V | 250 |
| DC current | A | 1   |

## Short-circuit protection fuse, 600V

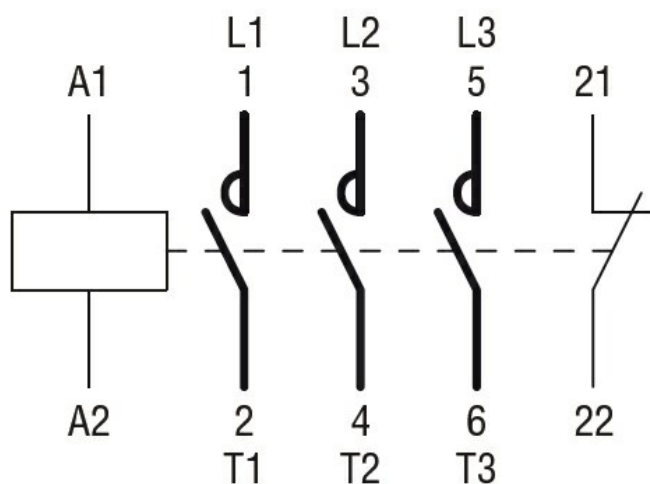
High fault

|                       |    |     |
|-----------------------|----|-----|
| Short circuit current | kA | 100 |
|-----------------------|----|-----|

|                                                      |                       |                       |    |             |
|------------------------------------------------------|-----------------------|-----------------------|----|-------------|
|                                                      | Standard fault        | Fuse rating           | A  | 30          |
|                                                      |                       | Fuse class            |    | J           |
|                                                      |                       | 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                                         |                       |                       | m  | 3000        |
| 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 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