



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 $I_e$ in DC1 with $L/R \leq 1\text{ms}$ with 4 poles in series      |                   |      |     |
|                                                                                     | $\leq 24\text{V}$ | A    | 20  |
|                                                                                     | 48V               | A    | 20  |
|                                                                                     | 75V               | A    | 20  |
|                                                                                     | 110V              | A    | 16  |
|                                                                                     | 220V              | A    | 12  |
| IEC max current $I_e$ in DC3-DC5 with $L/R \leq 15\text{ms}$ with 1 poles in series |                   |      |     |
|                                                                                     | $\leq 24\text{V}$ | A    | 12  |
|                                                                                     | 48V               | A    | 11  |
|                                                                                     | 75V               | A    | 10  |
|                                                                                     | 110V              | A    | 2   |
|                                                                                     | 220V              | A    | –   |
| IEC max current $I_e$ in DC3-DC5 with $L/R \leq 15\text{ms}$ with 2 poles in series |                   |      |     |
|                                                                                     | $\leq 24\text{V}$ | A    | 15  |
|                                                                                     | 48V               | A    | 13  |
|                                                                                     | 75V               | A    | 12  |
|                                                                                     | 110V              | A    | 8   |
|                                                                                     | 220V              | A    | 2   |
| IEC max current $I_e$ in DC3-DC5 with $L/R \leq 15\text{ms}$ with 3 poles in series |                   |      |     |
|                                                                                     | $\leq 24\text{V}$ | A    | 18  |
|                                                                                     | 48V               | A    | 18  |
|                                                                                     | 75V               | A    | 15  |
|                                                                                     | 110V              | A    | 12  |
|                                                                                     | 220V              | A    | 6   |
| IEC max current $I_e$ in DC3-DC5 with $L/R \leq 15\text{ms}$ with 4 poles in series |                   |      |     |
|                                                                                     | $\leq 24\text{V}$ | 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)                                          |                   |      |     |
|                                                                                     | $I_{th}$          | W    | 2   |
|                                                                                     | AC-3              | 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 properly wired |

### Mechanical features

|                    |                  |                       |
|--------------------|------------------|-----------------------|
| Operating position | normal allowable | Vertical plan ±30°    |
| Fixing             |                  | Screw / DIN rail 35mm |
| Weight             | g                | 356                   |

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

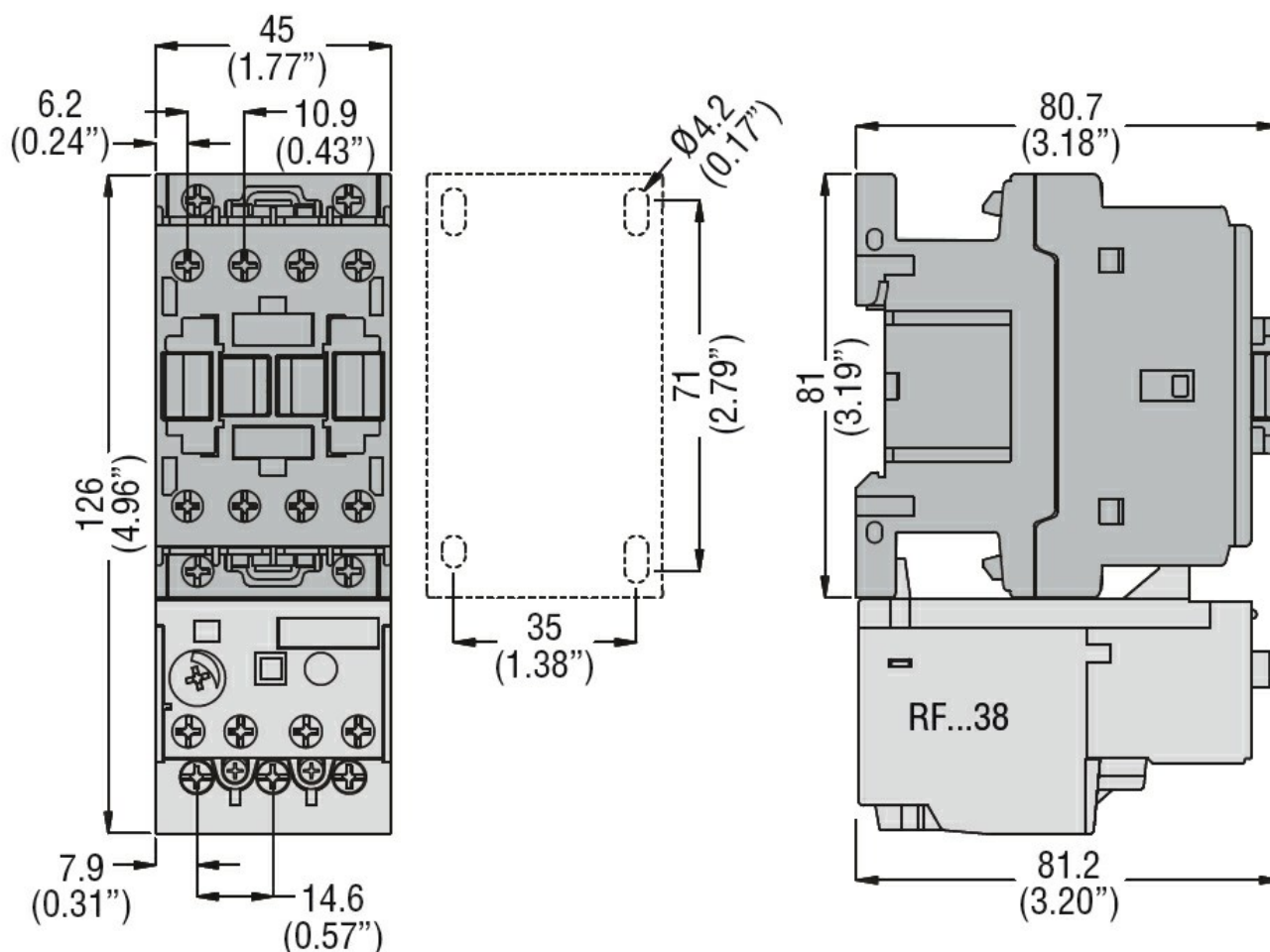
### Safety related data

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

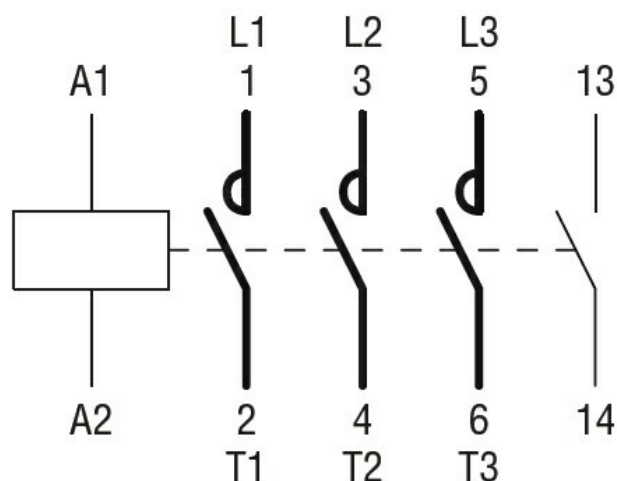
### AC coil operating

|                                                  |             |      |
|--------------------------------------------------|-------------|------|
| Rated AC voltage at 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 ≤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          |
| <hr/>                                                |  |                       |    |             |
| General USE                                          |  |                       |    |             |
| Contactor                                            |  | AC current            | A  | 28          |
| <hr/>                                                |  |                       |    |             |
| Auxiliary contacts                                   |  | AC voltage            | V  | 600         |
|                                                      |  | AC current            | A  | 10          |
|                                                      |  | DC voltage            | V  | 250         |
|                                                      |  | DC current            | A  | 1           |
| <hr/>                                                |  |                       |    |             |
| Short-circuit protection fuse, 600V                  |  |                       |    |             |
| High fault                                           |  | Short circuit current | kA | 100         |
|                                                      |  | Fuse rating           | A  | 30          |
|                                                      |  | Fuse class            |    | J           |
| <hr/>                                                |  |                       |    |             |
| Standard fault                                       |  | Short circuit current | kA | 5           |
|                                                      |  | Fuse rating           | A  | 70          |
| <hr/>                                                |  |                       |    |             |
| Contact rating of auxiliary contacts according to UL |  |                       |    | A600 - P600 |
| <b>Ambient conditions</b>                            |  |                       |    |             |
| Temperature                                          |  |                       |    |             |
| Operating temperature                                |  | min                   | °C | -50         |
|                                                      |  | max                   | °C | 70          |
| <hr/>                                                |  |                       |    |             |
| Storage temperature                                  |  | min                   | °C | -60         |
|                                                      |  | max                   | °C | 80          |
| <hr/>                                                |  |                       |    |             |
| 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/BS 60947-1

IEC/EN/BS 60947-4-1

UL 60947-1

UL 60947-4-1

### Certificates

CCC

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cULus

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EAC

ETIM classification

ETIM 8.0

EC000066 -  
Power contactor,  
AC switching