



### Contact characteristics

|                                                                                |                                                     |      |     |
|--------------------------------------------------------------------------------|-----------------------------------------------------|------|-----|
| Number of poles                                                                | Nr.                                                 | 4    |     |
| Rated insulation voltage $U_i$ IEC/EN                                          | V                                                   | 1000 |     |
| Rated impulse withstand voltage $U_{imp}$                                      | kV                                                  | 8    |     |
| Operational frequency                                                          | min                                                 | Hz   | 25  |
|                                                                                | max                                                 | Hz   | 400 |
| IEC Conventional free air thermal current $I_{th} \leq 40^{\circ}\text{C}$     | A                                                   | 90   |     |
| Operational current $I_e$                                                      | AC-1 ( $\leq 40^{\circ}\text{C}$ )                  | A    | 90  |
|                                                                                | AC-1 ( $\leq 55^{\circ}\text{C}$ )                  | A    | 75  |
|                                                                                | AC-1 ( $\leq 70^{\circ}\text{C}$ )                  | A    | 65  |
|                                                                                | AC-3 ( $\leq 440\text{V} \leq 55^{\circ}\text{C}$ ) | A    | 50  |
|                                                                                | AC-4 (400V)                                         | A    | 28  |
| Rated operational current AC-3 ( $T \leq 55^{\circ}\text{C}$ )                 | 230V                                                | A    | 50  |
|                                                                                | 400V                                                | A    | 50  |
|                                                                                | 415V                                                | A    | 50  |
|                                                                                | 440V                                                | A    | 50  |
|                                                                                | 500V                                                | A    | 44  |
|                                                                                | 690V                                                | A    | 39  |
|                                                                                | 1000V                                               | A    | 23  |
| Rated operational power AC-1 ( $T \leq 40^{\circ}\text{C}$ )                   | 230V                                                | kW   | 34  |
|                                                                                | 400V                                                | kW   | 59  |
|                                                                                | 500V                                                | kW   | 74  |
|                                                                                | 690V                                                | kW   | 102 |
| IEC max current $I_e$ in DC1 with $L/R \leq 1\text{ms}$ with 1 poles in series | $\leq 24\text{V}$                                   | A    | 45  |
|                                                                                | 48V                                                 | A    | 40  |
|                                                                                | 75V                                                 | A    | 40  |
|                                                                                | 110V                                                | A    | 8   |
|                                                                                | 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    | 60  |
|                                                                                | 48V                                                 | A    | 60  |
|                                                                                | 75V                                                 | A    | 60  |
|                                                                                | 110V                                                | A    | 50  |
|                                                                                | 220V                                                | A    | 7   |
| IEC max current $I_e$ in DC1 with $L/R \leq 1\text{ms}$ with 3 poles in series | $\leq 24\text{V}$                                   | A    | 60  |
|                                                                                | 48V                                                 | A    | 60  |
|                                                                                | 75V                                                 | A    | 60  |
|                                                                                | 110V                                                | A    | 55  |
|                                                                                | 220V                                                | A    | 75  |

|                                                                      |      |      |     |
|----------------------------------------------------------------------|------|------|-----|
| IEC max current Ie in DC1 with L/R ≤ 1ms with 4 poles in series      |      |      |     |
| ≤24V                                                                 | A    | 60   |     |
| 48V                                                                  | A    | 60   |     |
| 75V                                                                  | A    | 60   |     |
| 110V                                                                 | A    | 60   |     |
| 220V                                                                 | A    | 90   |     |
| IEC max current Ie in DC3-DC5 with L/R ≤ 15ms with 1 poles in series |      |      |     |
| ≤24V                                                                 | A    | 30   |     |
| 48V                                                                  | A    | 25   |     |
| 75V                                                                  | A    | 22   |     |
| 110V                                                                 | A    | 3    |     |
| 220V                                                                 | A    | –    |     |
| IEC max current Ie in DC3-DC5 with L/R ≤ 15ms with 2 poles in series |      |      |     |
| ≤24V                                                                 | A    | 35   |     |
| 48V                                                                  | A    | 35   |     |
| 75V                                                                  | A    | 30   |     |
| 110V                                                                 | A    | 25   |     |
| 220V                                                                 | A    | 5    |     |
| IEC max current Ie in DC3-DC5 with L/R ≤ 15ms with 3 poles in series |      |      |     |
| ≤24V                                                                 | A    | 50   |     |
| 48V                                                                  | A    | 50   |     |
| 75V                                                                  | A    | 45   |     |
| 110V                                                                 | A    | 30   |     |
| 220V                                                                 | A    | 40   |     |
| IEC max current Ie in DC3-DC5 with L/R ≤ 15ms with 4 poles in series |      |      |     |
| ≤24V                                                                 | A    | 55   |     |
| 48V                                                                  | A    | 55   |     |
| 75V                                                                  | A    | 55   |     |
| 110V                                                                 | A    | 45   |     |
| 220V                                                                 | A    | 50   |     |
| Short-time allowable current for 10s (IEC/EN60947-1)                 |      | A    | 400 |
| Protection fuse                                                      |      |      |     |
| gG (IEC)                                                             |      | A    | 100 |
| aM (IEC)                                                             |      | A    | 50  |
| Making capacity (RMS value)                                          |      | A    | 500 |
| Breaking capacity at voltage                                         |      |      |     |
| 440V                                                                 | A    | 400  |     |
| 500V                                                                 | A    | 352  |     |
| 690V                                                                 | A    | 312  |     |
| Resistance per pole (average value)                                  |      | mΩ   | 0.8 |
| Power dissipation per pole (average value)                           |      |      |     |
| Ith                                                                  | W    | 6.5  |     |
| AC-3                                                                 | W    | 2    |     |
| Tightening torque for terminals                                      |      |      |     |
| min                                                                  | Nm   | 4    |     |
| max                                                                  | Nm   | 5    |     |
| min                                                                  | Ibin | 2.95 |     |
| max                                                                  | Ibin | 3.69 |     |
| Tightening torque for coil terminal                                  |      |      |     |
| min                                                                  | Nm   | 0.8  |     |
| max                                                                  | Nm   | 1    |     |
| min                                                                  | Ibin | 0.8  |     |
| max                                                                  | Ibin | 0.74 |     |

|                                                     |  |         |                            |                       |
|-----------------------------------------------------|--|---------|----------------------------|-----------------------|
| Max number of wires simultaneously connectable      |  |         | Nr.                        | 2                     |
| Conductor section                                   |  |         |                            |                       |
| AWG/Kcmil                                           |  |         |                            |                       |
|                                                     |  | max     | 2                          |                       |
| Flexible w/o lug conductor section                  |  |         |                            |                       |
|                                                     |  | min     | mm <sup>2</sup>            | 1.5                   |
|                                                     |  | max     | mm <sup>2</sup>            | 35                    |
| Flexible c/w lug conductor section                  |  |         |                            |                       |
|                                                     |  | min     | mm <sup>2</sup>            | 1.5                   |
|                                                     |  | max     | mm <sup>2</sup>            | 35                    |
| Power terminal protection according to IEC/EN 60529 |  |         |                            | IP20 front            |
| Mechanical features                                 |  |         |                            |                       |
| Operating position                                  |  |         |                            |                       |
|                                                     |  |         | normal allowable           | Vertical plan ±30°    |
| Fixing                                              |  |         |                            | Screw / DIN rail 35mm |
| Weight                                              |  |         | g                          | 1240                  |
| Operations                                          |  |         |                            |                       |
| Mechanical life                                     |  |         | cycles                     | 15000000              |
| Electrical life                                     |  |         | cycles                     | 1400000               |
| Safety related data                                 |  |         |                            |                       |
| Performance level B10d according to EN/ISO 13489-1  |  |         |                            |                       |
|                                                     |  |         | rated load mechanical load | cycles 1400000        |
|                                                     |  |         |                            | cycles 15000000       |
| EMC compatibility                                   |  |         |                            | yes                   |
| AC coil operating                                   |  |         |                            |                       |
| Rated AC voltage at 50/60Hz                         |  |         | V                          | 110                   |
| 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                        | 40                    |
|                                                     |  | max     | %Us                        | 55                    |
| AC average coil consumption at 20°C                 |  |         |                            |                       |
| of 50/60Hz coil powered at 50Hz                     |  |         |                            |                       |
|                                                     |  | in-rush | VA                         | 210                   |
|                                                     |  | holding | VA                         | 15                    |
| of 50/60Hz coil powered at 60Hz                     |  |         |                            |                       |
|                                                     |  | in-rush | VA                         | 195                   |
|                                                     |  | holding | VA                         | 13                    |
| of 60Hz coil powered at 60Hz                        |  |         |                            |                       |
|                                                     |  | in-rush | VA                         | 210                   |
|                                                     |  | holding | VA                         | 15                    |
| Dissipation at holding ≤20°C 50Hz                   |  |         | W                          | 5                     |

### Max cycles frequency

Mechanical operation cycles/h 3600

### Operating times

Average time for Us control

in AC

Closing NO

|     |    |    |
|-----|----|----|
| min | ms | 12 |
| max | ms | 28 |

Opening NO

|     |    |    |
|-----|----|----|
| min | ms | 8  |
| max | ms | 22 |

in DC

Closing NO

|     |    |    |
|-----|----|----|
| min | ms | 40 |
| max | ms | 85 |

Opening NO

|     |    |    |
|-----|----|----|
| min | ms | 20 |
| max | ms | 55 |

### UL technical data

Rated operational voltage AC (UL) V 600

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

|         |   |    |
|---------|---|----|
| at 480V | A | 52 |
| at 600V | A | 41 |

Yielded mechanical performance

for single-phase AC motor

|          |    |    |
|----------|----|----|
| 110/120V | HP | 5  |
| 230V     | HP | 10 |

for three-phase AC motor

|          |    |    |
|----------|----|----|
| 200/208V | HP | 15 |
| 220/240V | HP | 20 |
| 460/480V | HP | 40 |
| 575/600V | HP | 40 |

### General USE

Contactor

|            |   |    |
|------------|---|----|
| AC current | A | 90 |
|------------|---|----|

Short-circuit protection fuse, 600V

High fault

|                       |    |     |
|-----------------------|----|-----|
| Short circuit current | kA | 100 |
| Fuse rating           | A  | 150 |
| Fuse class            |    | J   |

Standard fault

|                       |    |     |
|-----------------------|----|-----|
| Short circuit current | kA | 5   |
| Fuse rating           | A  | 150 |
| Fuse class            |    | RK5 |

### Ambient conditions

Temperature

Operating temperature

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

Storage temperature

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

Max altitude

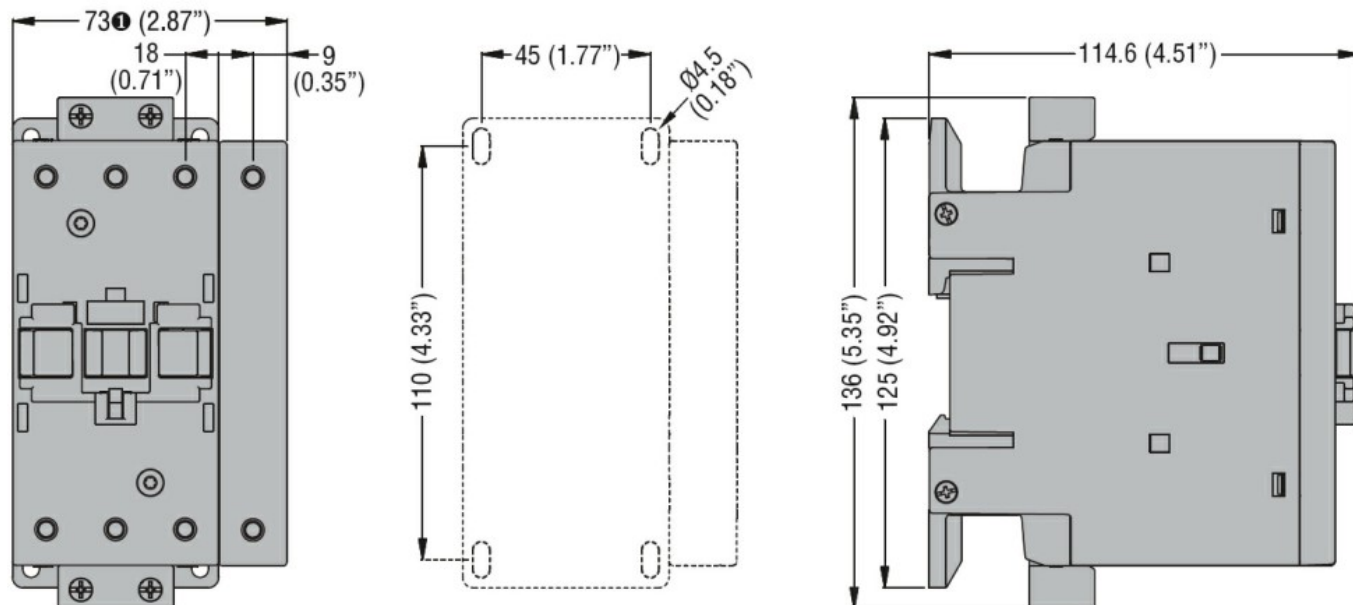
|   |      |
|---|------|
| m | 3000 |
|---|------|

### Resistance & Protection

Pollution degree

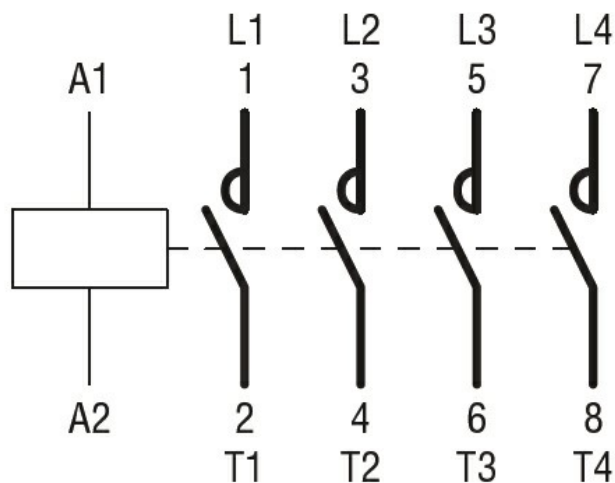
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## Dimensions



① BF80T2 82mm/3.23"

## Wiring diagrams



## Certifications and compliance

### Compliance

CSA C22.2 n° 60947-1

CSA C22.2 n° 60947-4-1

IEC/EN 60335-2-89

IEC/EN/BS 60947-1

IEC/EN/BS 60947-4-1

UL 60947-1

UL 60947-4-1

### Certificates

CCC

CSA C22.2 n. 60335-2-40:22 LZGH A2L

CSA C22.2 No. 60335-2-89:21 LZGH A2L

cULus

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UL 60335-2-40 LZGH A2L

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UL 60335-2-89 LZGH A2L

ETIM classification

ETIM 8.0

EC000066 -  
Power contactor,  
AC switching