



Power contactor  
BF160

Product designation

Product type designation

**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 $I_{th}$                             | A   | 250    |
| Operational current $I_e$  |   |        |
|  | AC-1 ( $\leq 40^\circ\text{C}$ )                  | A 250  |
|  | AC-1 ( $\leq 55^\circ\text{C}$ )                  | A 210  |
|  | AC-1 ( $\leq 70^\circ\text{C}$ )                  | A 180  |
|  | AC-3 ( $\leq 440\text{V} \leq 55^\circ\text{C}$ ) | A 160  |
|  | AC-4 (400V)                                       | A 75   |
| Rated operational current AC-3 ( $T \leq 55^\circ\text{C}$ )                   |   |        |
|  | 230V  | A 160  |
|  | 400V  | A 160  |
|  | 415V  | A 160  |
|  | 440V  | A 160  |
|  | 500V  | A 150  |
|  | 690V  | A 135  |
|  | 1000V   | A 60   |
| Rated operational power AC-1 ( $T \leq 40^\circ\text{C}$ )                     |   |        |
|  | 230V  | kW 95  |
|  | 400V  | kW 165 |
|  | 500V  | kW 181 |
|  | 690V  | kW 284 |
| IEC max current $I_e$ in DC1 with $L/R \leq 1\text{ms}$ with 1 poles in series |   |        |
|  | $\leq 24\text{V}$                                 | A 250  |
|  | 48V   | A 250  |
|  | 75V   | A 250  |
|  | 110V  | A 110  |
|  | 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 250  |
|  | 48V   | A 250  |
|  | 75V   | A 250  |
|  | 110V  | A 150  |
|  | 220V  | A 130  |
| IEC max current $I_e$ in DC1 with $L/R \leq 1\text{ms}$ with 3 poles in series |   |        |
|  | $\leq 24\text{V}$                                 | A 250  |
|  | 48V   | A 250  |
|  | 75V   | A 250  |

|  |                 |                  |      |
|--|-----------------|------------------|------|
|  | 110V            | A                | 160  |
|  | 220V            | A                | 150  |
|  | 330V            | A                | 130  |
| IEC max current I <sub>e</sub> in DC1 with L/R ≤ 1ms with 4 poles in series      |                 |                  |      |
|  | ≤24V            | A                | 250  |
|  | 48V             | A                | 250  |
|  | 75V             | A                | 250  |
|  | 110V            | A                | 250  |
|  | 220V            | A                | 250  |
| IEC max current I <sub>e</sub> in DC3-DC5 with L/R ≤ 15ms with 1 poles in series |                 |                  |      |
|  | ≤24V            | A                | 250  |
|  | 48V             | A                | 250  |
|  | 75V             | A                | 160  |
|  | 110V            | A                | 80   |
|  | 220V            | A                | –    |
| IEC max current I <sub>e</sub> in DC3-DC5 with L/R ≤ 15ms with 2 poles in series |                 |                  |      |
|  | ≤24V            | A                | 250  |
|  | 48V             | A                | 250  |
|  | 75V             | A                | 160  |
|  | 110V            | A                | 120  |
|  | 220V            | A                | 90   |
| IEC max current I <sub>e</sub> in DC3-DC5 with L/R ≤ 15ms with 3 poles in series |                 |                  |      |
|  | ≤24V            | A                | 250  |
|  | 48V             | A                | 250  |
|  | 75V             | A                | 160  |
|  | 110V            | A                | 140  |
|  | 220V            | A                | 120  |
|  | 330V            | A                | 90   |
| IEC max current I <sub>e</sub> in DC3-DC5 with L/R ≤ 15ms with 4 poles in series |                 |                  |      |
|  | ≤24V            | A                | 250  |
|  | 48V             | A                | 250  |
|  | 75V             | A                | 160  |
|  | 110V            | A                | 140  |
|  | 220V            | A                | 140  |
|  | 330V            | A                | 140  |
|  | 460V            | A                | 90   |
| Short-time allowable current for 10s (IEC/EN60947-1)                             |                 | A                | 1280 |
| Protection fuse  |                 |                  |      |
|  | gG (IEC)        | A                | 315  |
|  | aM (IEC)        | A                | 200  |
| Making capacity (RMS value)  |                 | A                | 1360 |
| Breaking capacity at voltage   |                 |                  |      |
|  | 440V            | A                | 1360 |
|  | 500V            | A                | 1326 |
|  | 690V            | A                | 1139 |
| Resistance per pole (average value)  |                 | mΩ               | 0.18 |
| Power dissipation per pole (average value)                                       |                 |                  |      |
|  | I <sub>th</sub> | W                | 11   |
|  | AC-3            | W                | 4.5  |
| Tightening torque for terminals  |                 |                  |      |
|  | min             | Nm               | 18   |
|  | max             | Nm               | 18   |
|  | min             | I <sub>bin</sub> | 159  |
|  | max             | I <sub>bin</sub> | 159  |

Tightening torque for coil terminal

|     |    |     |
|-----|----|-----|
| min | Nm | 0.8 |
| max | Nm | 1   |

Power terminal protection according to IEC/EN 60529

IP00

### Mechanical features

Operating position

|                     |                       |
|---------------------|-----------------------|
| normal<br>allowable | Vertical plan<br>±30° |
|---------------------|-----------------------|

Fixing

Screw

Weight

|   |      |
|---|------|
| g | 4000 |
|---|------|

### Operations

Mechanical life

|        |          |
|--------|----------|
| cycles | 10000000 |
|--------|----------|

Electrical life

|        |         |
|--------|---------|
| cycles | 1000000 |
|--------|---------|

### Safety related data

Performance level B10d according to EN/ISO 13489-1

|            |        |         |
|------------|--------|---------|
| rated load | cycles | 1000000 |
|------------|--------|---------|

EMC compatibility

yes

### AC coil operating

Rated AC voltage at 50/60Hz, 60Hz

|     |   |    |
|-----|---|----|
| min | V | 24 |
| max | V | 60 |

AC operating voltage

of 50/60Hz coil powered at 50Hz  
pick-up

|     |     |            |
|-----|-----|------------|
| min | %Us | 80 Us min  |
| max | %Us | 110 Us max |

drop-out

|     |     |            |
|-----|-----|------------|
| max | %Us | ≤70 Us min |
|-----|-----|------------|

of 50/60Hz coil powered at 60Hz  
pick-up

|     |     |            |
|-----|-----|------------|
| min | %Us | 80 Us min  |
| max | %Us | 110 Us max |

drop-out

|     |     |            |
|-----|-----|------------|
| max | %Us | ≤70 Us min |
|-----|-----|------------|

AC average coil consumption at 20°C

of 50/60Hz coil powered at 50Hz

|         |    |           |
|---------|----|-----------|
| in-rush | VA | 160...230 |
| holding | VA | 1.5...3.0 |

of 50/60Hz coil powered at 60Hz

|         |    |           |
|---------|----|-----------|
| in-rush | VA | 160...230 |
| holding | VA | 1.5...3.0 |

of 60Hz coil powered at 60Hz

|         |    |           |
|---------|----|-----------|
| in-rush | VA | 160...230 |
| holding | VA | 1.5...3.0 |

Dissipation at holding ≤20°C 50Hz

|   |           |
|---|-----------|
| W | 1.5...3.0 |
|---|-----------|

### DC coil operating

DC rated control voltage

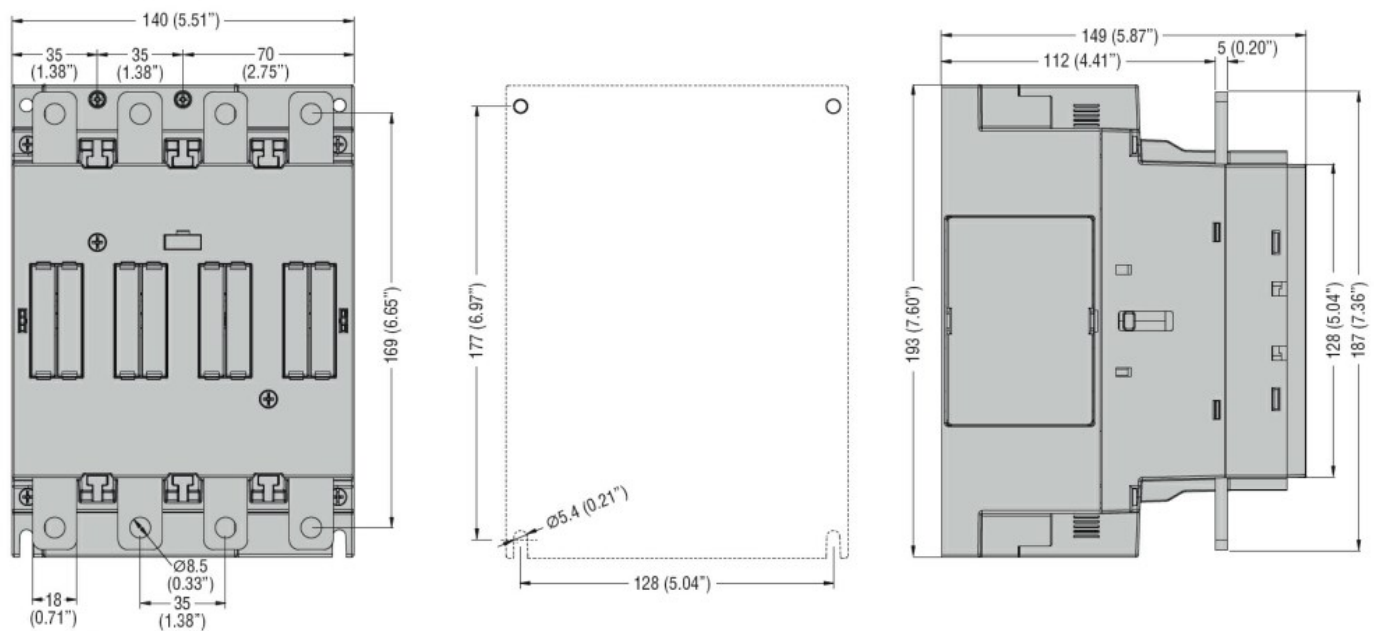
|     |   |    |
|-----|---|----|
| min | V | 20 |
| max | V | 60 |

DC operating voltage

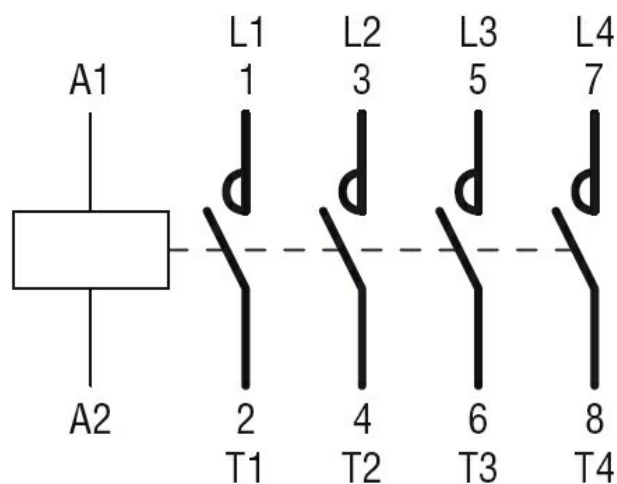
pick-up

|     |     |            |
|-----|-----|------------|
| min | %Us | 85 Us min  |
| max | %Us | 110 Us max |

|   |  |  |                      |                        |           |
|---|--|--|----------------------|------------------------|-----------|
| drop-out  |  | max  | %Us                  | ≤70 Us min             |           |
| Average coil consumption ≤20°C                          |  | in-rush holding                                    | W<br>W               | 160...230<br>1.5...3.0 |           |
| Max cycles frequency                                    |  |  |                      |                        |           |
| Mechanical operation                                    |  |  | cycles/h             | 1000                   |           |
| Operating times   |  |  |                      |                        |           |
| Average time for Us control in AC                       |  | Closing NO   | min<br>max           | ms<br>ms               | 50<br>100 |
|   |  | Opening NO   | min<br>max           | ms<br>ms               | 35<br>75  |
| UL technical data                                       |  |  |                      |                        |           |
| Yielded mechanical performance for three-phase AC motor |  | 200/208V<br>220/230V<br>460/480V<br>575/600V       | HP<br>HP<br>HP<br>HP | 50<br>60<br>125<br>150 |           |
| General USE   |  |  |                      |                        |           |
| Contactor   |  | AC current   | A                    | 250                    |           |
| Short-circuit protection fuse, 600V High fault          |  | Short circuit current<br>Fuse rating<br>Fuse class | kA<br>A<br>J         | 100<br>400<br>J        |           |
| Standard fault  |  | Short circuit current<br>Fuse rating<br>Fuse class | kA<br>A<br>RK5       | 10<br>400<br>RK5       |           |
| Ambient conditions                                      |  |  |                      |                        |           |
| Temperature   |  | Operating temperature                              | min<br>max           | °C<br>°C               | -40<br>70 |
|   |  | Storage temperature                                | min<br>max           | °C<br>°C               | -50<br>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/BS 60947-1

IEC/EN/BS 60947-4-1

UL 60947-1

UL 60947-4-1

### Certificates

cULus

## ETIM classification

ETIM 8.0

EC000066 -  
Power contactor,  
AC switching