



Product designation

Power contactor

Product type designation

BF94

**Contact characteristics**

|                                                                                |                                                    |        |
|--------------------------------------------------------------------------------|----------------------------------------------------|--------|
| Number of poles                                                                | Nr.                                                | 3      |
| 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                                                  | 115    |
| Operational current $I_e$                                                      | AC-1 ( $\leq 40^\circ\text{C}$ )                   | A 115  |
|                                                                                | AC-1 ( $\leq 55^\circ\text{C}$ )                   | A 95   |
|                                                                                | AC-1 ( $\leq 70^\circ\text{C}$ )                   | A 80   |
|                                                                                | AC-3 ( $\leq 440\text{V } \leq 55^\circ\text{C}$ ) | A 95   |
|                                                                                | AC-4 (400V)                                        | A 45   |
| Rated operational power AC-3 ( $T \leq 55^\circ\text{C}$ )                     | 230V                                               | kW 30  |
|                                                                                | 400V                                               | kW 55  |
|                                                                                | 415V                                               | kW 55  |
|                                                                                | 440V                                               | kW 55  |
|                                                                                | 500V                                               | kW 55  |
|                                                                                | 690V                                               | kW 55  |
|                                                                                | 1000V                                              | kW 37  |
| Rated operational current AC-3 ( $T \leq 55^\circ\text{C}$ )                   | 230V                                               | A 94   |
|                                                                                | 400V                                               | A 94   |
|                                                                                | 415V                                               | A 94   |
|                                                                                | 440V                                               | A 94   |
|                                                                                | 500V                                               | A 78   |
|                                                                                | 690V                                               | A 57   |
|                                                                                | 1000V                                              | A 28   |
| IEC max current $I_e$ in DC1 with $L/R \leq 1\text{ms}$ with 1 poles in series | $\leq 24\text{V}$                                  | A 77   |
|                                                                                | 48V                                                | A 66   |
|                                                                                | 75V                                                | A 66   |
|                                                                                | 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 110  |
|                                                                                | 48V                                                | A 110  |
|                                                                                | 75V                                                | A 110  |
|                                                                                | 110V                                               | A 90   |
|                                                                                | 220V                                               | A 9    |
| IEC max current $I_e$ in DC1 with $L/R \leq 1\text{ms}$ with 3 poles in series |                                                    |        |

|                                                                                  |                 |      |     |
|----------------------------------------------------------------------------------|-----------------|------|-----|
|                                                                                  | ≤24V            | A    | 110 |
|                                                                                  | 48V             | A    | 110 |
|                                                                                  | 75V             | A    | 110 |
|                                                                                  | 110V            | A    | 93  |
|                                                                                  | 220V            | A    | 95  |
| IEC max current I <sub>e</sub> in DC1 with L/R ≤ 1ms with 4 poles in series      |                 |      |     |
|                                                                                  | ≤24V            | A    | 115 |
|                                                                                  | 48V             | A    | 115 |
|                                                                                  | 75V             | A    | 115 |
|                                                                                  | 110V            | A    | 110 |
|                                                                                  | 220V            | A    | 115 |
| IEC max current I <sub>e</sub> in DC3-DC5 with L/R ≤ 15ms with 1 poles in series |                 |      |     |
|                                                                                  | ≤24V            | A    | 45  |
|                                                                                  | 48V             | A    | 33  |
|                                                                                  | 75V             | A    | 33  |
|                                                                                  | 110V            | A    | 3   |
|                                                                                  | 220V            | A    | –   |
| IEC max current I <sub>e</sub> in DC3-DC5 with L/R ≤ 15ms with 2 poles in series |                 |      |     |
|                                                                                  | ≤24V            | A    | 65  |
|                                                                                  | 48V             | A    | 55  |
|                                                                                  | 75V             | A    | 55  |
|                                                                                  | 110V            | A    | 43  |
|                                                                                  | 220V            | A    | 5   |
| IEC max current I <sub>e</sub> in DC3-DC5 with L/R ≤ 15ms with 3 poles in series |                 |      |     |
|                                                                                  | ≤24V            | A    | 86  |
|                                                                                  | 48V             | A    | 75  |
|                                                                                  | 75V             | A    | 75  |
|                                                                                  | 110V            | A    | 64  |
|                                                                                  | 220V            | A    | 64  |
| IEC max current I <sub>e</sub> in DC3-DC5 with L/R ≤ 15ms with 4 poles in series |                 |      |     |
|                                                                                  | ≤24V            | A    | 96  |
|                                                                                  | 48V             | A    | 95  |
|                                                                                  | 75V             | A    | 95  |
|                                                                                  | 110V            | A    | 80  |
|                                                                                  | 220V            | A    | 80  |
| Short-time allowable current for 10s (IEC/EN60947-1)                             |                 | A    | 640 |
| Protection fuse                                                                  |                 |      |     |
|                                                                                  | gG (IEC)        | A    | 125 |
|                                                                                  | aM (IEC)        | A    | 100 |
| Making capacity (RMS value)                                                      |                 | A    | 950 |
| Breaking capacity at voltage                                                     |                 |      |     |
|                                                                                  | 440V            | A    | 640 |
|                                                                                  | 500V            | A    | 625 |
|                                                                                  | 690V            | A    | 456 |
| Resistance per pole (average value)                                              |                 | mΩ   | 0.6 |
| Power dissipation per pole (average value)                                       |                 |      |     |
|                                                                                  | I <sub>th</sub> | W    | 7.9 |
|                                                                                  | AC-3            | W    | 5.4 |
| Tightening torque for terminals                                                  |                 |      |     |
|                                                                                  | min             | Nm   | 4   |
|                                                                                  | max             | Nm   | 5   |
|                                                                                  | min             | lbin | 3   |
|                                                                                  | max             | lbin | 3.7 |

Tightening torque for coil terminal

|     |      |      |
|-----|------|------|
| min | Nm   | 0.8  |
| max | Nm   | 1    |
| min | lbin | 0.59 |
| max | lbin | 0.74 |

Max number of wires simultaneously connectable

Nr. 2

Conductor section

Flexible w/o 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

### Mechanical features

Operating position

normal  
allowable

Vertical plan  
±30°

Fixing

Screw / DIN rail  
35mm

Weight

g 1

### Operations

Mechanical life

cycles 15000000

Electrical life

cycles 1100000

### Safety related data

Performance level B10d according to EN/ISO 13489-1

|                 |        |          |
|-----------------|--------|----------|
| rated load      | cycles | 1100000  |
| mechanical load | cycles | 15000000 |

EMC compatibility

yes

### AC coil operating

Rated AC voltage at 50/60Hz, 60Hz

|     |   |    |
|-----|---|----|
| min | V | 20 |
| max | V | 48 |

AC operating voltage

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

|     |     |            |
|-----|-----|------------|
| min | %Us | 85 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 | 85 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 | 35...120  |
| holding | VA | 1.5...3.7 |

of 50/60Hz coil powered at 60Hz

|         |    |           |
|---------|----|-----------|
| in-rush | VA | 35...120  |
| holding | VA | 1.5...3.7 |

Dissipation at holding ≤20°C 50Hz

W 1...2.5

### DC coil operating

DC rated control voltage

|                                                  |  |                       |          |            |
|--------------------------------------------------|--|-----------------------|----------|------------|
|                                                  |  | min                   | V        | 20         |
|                                                  |  | max                   | V        | 48         |
| DC operating voltage                             |  |                       |          |            |
| pick-up                                          |  | min                   | %Us      | 80 Us min  |
|                                                  |  | max                   | %Us      | 110 Us max |
| drop-out                                         |  |                       |          |            |
|                                                  |  | max                   | %Us      | ≤70 Us min |
| Average coil consumption ≤20°C                   |  |                       |          |            |
|                                                  |  | in-rush               | W        | 23...68    |
|                                                  |  | holding               | W        | 1.2...1,9  |
| 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        | 77         |
|                                                  |  | at 600V               | A        | 77         |
| Yielded mechanical performance                   |  |                       |          |            |
| for three-phase AC motor                         |  |                       |          |            |
|                                                  |  | 200/208V              | HP       | 25         |
|                                                  |  | 220/230V              | HP       | 30         |
|                                                  |  | 460/480V              | HP       | 60         |
|                                                  |  | 575/600V              | HP       | 75         |
| General USE                                      |  |                       |          |            |
| Contactor                                        |  | AC current            |          |            |
|                                                  |  |                       | A        | 115        |
| Short-circuit protection fuse, 600V              |  |                       |          |            |
| High fault                                       |  |                       |          |            |
|                                                  |  | Short circuit current | kA       | 100        |
|                                                  |  | Fuse rating           | A        | 200        |
|                                                  |  | Fuse class            |          | J          |
| Standard fault                                   |  |                       |          |            |
|                                                  |  | Short circuit current | kA       | 10         |
|                                                  |  | Fuse rating           | A        | 200        |
|                                                  |  | Fuse class            |          | RK5        |

### Ambient conditions

#### Temperature

Operating temperature

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

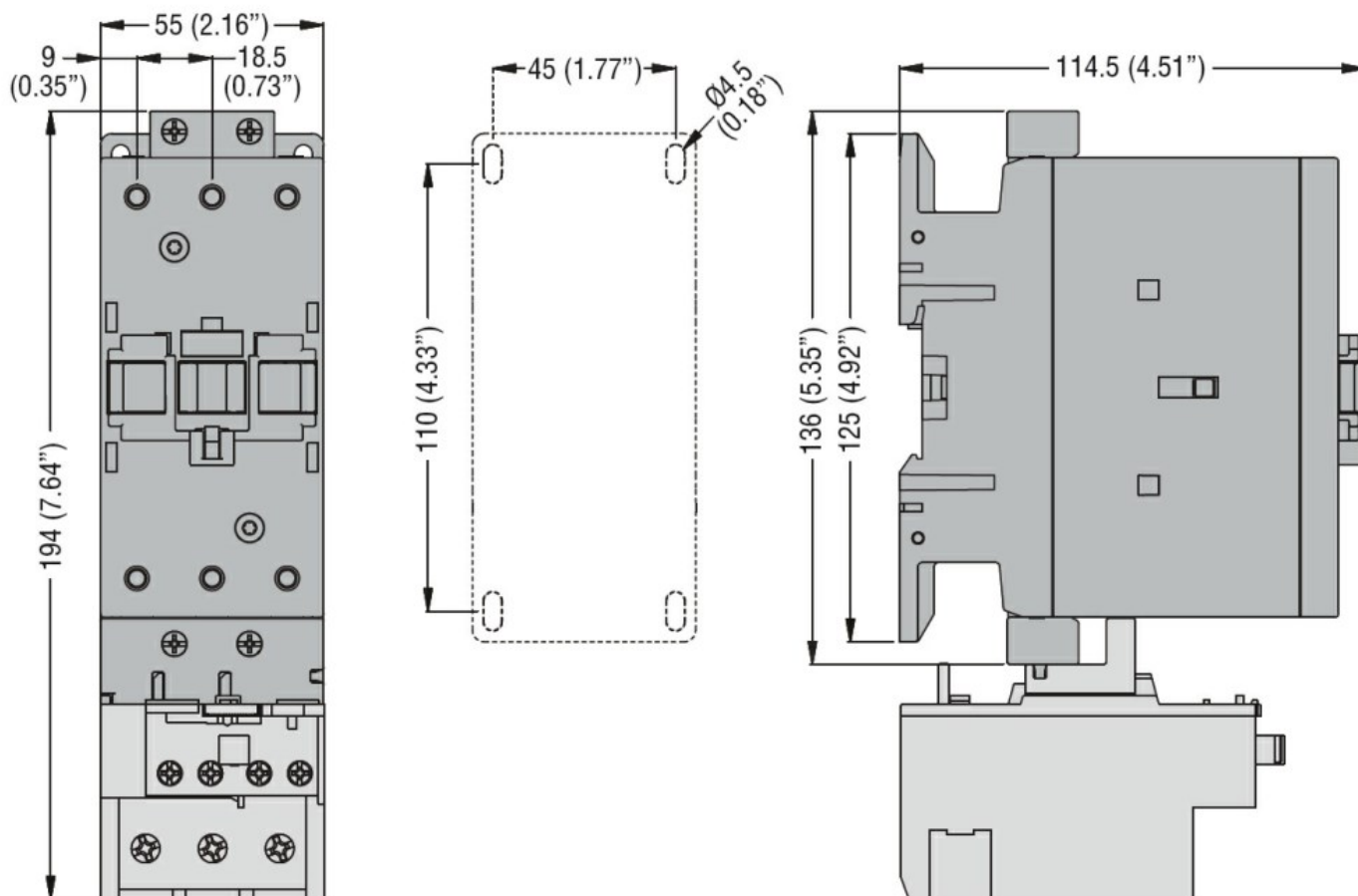
Storage temperature

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

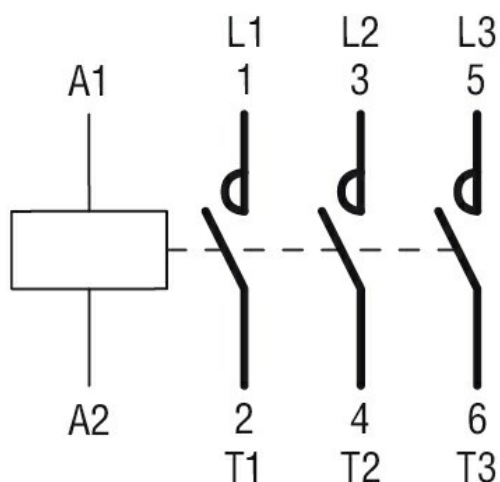
Max altitude

m 3000

## Dimensions



## Wiring diagrams



## Certifications and compliance

Compliance

CSA C22.2 n° 60947-1

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CSA C22.2 n° 60947-4-1

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IEC/EN/BS 60947-1

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IEC/EN/BS 60947-4-1

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UL 60947-1

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UL 60947-4-1

Certificates

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CCC

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cULus

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EAC

ETIM classification

ETIM 8.0

EC000066 -  
Power contactor,  
AC switching