



| Product designation Product type designation         |                    |      | Power contactor<br>BFK50 |
|--|--------------------|------|--------------------------|
| Contact characteristics                              |                    |      |                          |
| Number of poles                                      |                    | nr.  | 3                        |
| Rated insulation voltage Ui IEC/EN                   |                    | V    | 690                      |
| Rated impulse withstand voltage Uimp                 |                    | kV   | 8                        |
| Operational frequency                                |                    |      |                          |
|  | min                | Hz   | 25                       |
|  | max                | Hz   | 400                      |
| IEC Conventional free air thermal current Ith        |                    | Α    | 90                       |
| Operational current le                               |                    |      |                          |
|  | AC-1 (≤55°C)       | Α    | 130                      |
|  | AC-3 (≤440V ≤55°C) | Α    | 50                       |
|  | AC-4 (400V)        | Α    | 28                       |
| Rated operational power AC-6b (T≤40°C)               |                    |      |                          |
|  | 230V               | kvar | 22                       |
|  | 400V               | kvar | 40                       |
|  | 500V               | kvar | 41                       |
|  | 690V               | kvar | 56                       |
| Short-time allowable current for 10s (IEC/EN60947-1) |                    | Α    | 400                      |
| Protection fuse                                      |                    |      |                          |
|  | gG (IEC)           | Α    | 80                       |
|  | aM (IEC)           | Α    | 50                       |
| Making capacity (RMS value)                          |                    | Α    | 500                      |
| Breaking capacity at voltage                         |                    |      |                          |
|  | 440V               | Α    | 400                      |
|  | 500V               | Α    | 352                      |
|  | 690V               | Α    | 312                      |
| Resistance per pole (average value)                  |                    | mΩ   | 0.8                      |
| Power dissipation per pole (average value)           |                    |      |                          |
|  | Ith                | W    | 6.5                      |
|  | AC3                | W    | 2                        |
| Tightening torque for terminals                      |                    |      |                          |
|  | min                | Nm   | 4                        |
|  | max                | Nm   | 5                        |
|  | min                | lbin | 2.95                     |
|  | max                | Ibin | 3.69                     |
| Tightening torque for coil terminal                  |                    |      |                          |
|  | min                | Nm   | 0.8                      |
|  | max                | Nm   | 1                        |
|  | min                | lbft | 0.8                      |
|  | max                | lbft | 0.74                     |
| Max number of wires simultaneously connectable       |                    | nr.  | 2                        |

Conductor section

Flexible w/o lug conductor section



**ENERGY AND AUTOMATION** 

| Flexible c/w lug conductor section   min max mm²   35   |                        |                                    | min             | mm²      | 1.5        |
|---|------------------------|------------------------------------|-----------------|----------|------------|
| Min   |                        |                                    |                 |          |            |
| Max   |                        | Flexible c/w lug conductor section |                 |          |            |
| Power terminal protection according to IEC/EN 60529   IP20 front   Mechanical features   IP20 front   IP20   |                        | -                                  | min             | mm²      | 1.5        |
| Mechanical features           Operating position         normal allowable         vertical plan ±30°           Fixing         Server / DIN rail 35mm           Weight         g 1990           Operations         cycles         15000000           Bectarical life         cycles         15000000           Selectrical life         cycles         400000           Safety related data           Trated load mechanical load         cycles         400000           Trated load cording to IEC/EN 609474-4-1         rated load mechanical load         cycles         400000           Minror contats according to IEC/EN 609474-4-1         rated load mechanical load         cycles         400000           Minror contats according to IEC/EN 609474-4-1         rated load mechanical load         cycles         400000           Minror contats according to IEC/EN 609474-4-1         minror contats according to IEC/EN 609474-4-1         rated load         cycles         400000           Minror contats according to IEC/EN 609474-4-1         minror contats according to IEC/EN 609474-4-1         rated load         cycles         400000           Minror contats according to IEC/EN 609474-4-1         minror contats according to IEC/EN 609474-4-1         minror contats according to IE   |                        |                                    | max             | mm²      | 35         |
| Operating position         normal allowable should be allowable allowable should be allow   |                        | ion according to IEC/EN 60529      |                 |          | IP20 front |
| Priving   Pri   |                        |                                    |                 |          |            |
| Fixing   Screw / DIN rail   35mm   Screw / DIN rail   35mm   35mm   Meight   Screw / DIN rail   35mm   35mm   Meight   Screw / DIN rail   35mm   Meight   Screw / DIN rail   35mm   Mechanical life   Screw / DIN rail   Mechanical life   Mechanical lif   | Operating position     |                                    |                 |          |            |
| Fixing   Screw / DIN rail 35mm  |                        |                                    |                 |          |            |
| Fixing   g   1090   | -                      |                                    | allowable       |          |            |
| Operations           Mechanical life         cycles         15000000           Electrical life         cycles         400000           Safety related data           Performance level B10d according to EN/ISO 13489-1         rated load mechanical load cycles         400000 cycles         45000000           Mirror contats according to IEC/EN 609474-4-1         true         true         15000000           Mirror contats according to IEC/EN 609474-4-1         true         yes           AC operating         True         True         True           AC operating         True         True         True           AC operating voltage         of 50/60Hz coil powered at 50Hz pick-up         min         %Us         55           of 50/60Hz coil powered at 60Hz pick-up         min         %Us         55           of 50/60Hz coil powered at 60Hz pick-up         min         %Us         85           AC operating voltage at 20°C of 50/60Hz coil powered at 50Hz in-rush holding         %Us         55           AC operating voltage at 20°C of 50/60Hz coil powered at 60Hz in-rush holding         VA         115           of 50/60Hz coil powered at 60Hz in-rush holding         VA         195           holding         VA         115           <  | Fixing                 |                                    |                 |          |            |
| Mechanical life   | _                      |                                    |                 | g        | 1090       |
| Electrical life   | •                      |                                    |                 |          |            |
| Performance level B10d according to EN/ISO 13489-1   rated load mechanical mec   |                        |                                    |                 | •        |            |
| Performance level B10d according to EN/ISO 13489-1         rated load rechanical load cycles 400000 cycles 15000000           Mirror contats according to IEC/EN 609474-4-1         true           EMC compatibility         yes           AC coil operating         Rated AC voltage at 50/60Hz, 60Hz           Rated AC voltage at 50/60Hz, 60Hz         min V 12 max           AC operating voltage         min V 2 20 max           AC operating voltage         min V 2 20 max           Max V 30/Us 55         55           of 50/60Hz coil powered at 60Hz pick-up           Min V 30/Us 55         min V 30/Us 85           AC operating voltage at 20°C of 50/60Hz coil powered at 50Hz           Max College of 50/60Hz coil powered at 50Hz         in-rush holding VA 210 holding VA 15           in-rush holding VA 13           of 60Hz coil powered at 60Hz           in-rush holding VA 15  |                        |                                    |                 | cycles   | 400000     |
| Pate   Incompanie   Incompan   | •                      |                                    |                 |          |            |
| Mirror contats according to IEC/EN 609474-4-1   true  | Performance level B10  | d according to EN/ISO 13489-1      |                 |          |            |
| Mirror contats according to IEC/EN 609474-4-1         true           EMC compatibility         yes           AC coil operating         Image: Compatibility of the power of the p   |                        |                                    |                 | -        |            |
| EMC compatibility yes  AC coll operating  Rated AC voltage at 50/60Hz, 60Hz    min   V   12   max   V   600   |                        |                                    | mechanical load | cycles   |            |
| AC coil operating         Rated AC voltage at 50/60Hz, 60Hz       min V 12 max V 600         AC operating voltage   |                        | ng to IEC/EN 609474-4-1            |                 |          |            |
| Rated AC voltage at 50/60Hz, 60Hz    min   V   12   max   V   600     AC operating voltage   of 50/60Hz coil powered at 50Hz   pick-up   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   110     drop-out   min   %Us   20   max   %Us   55    AC operating voltage at 20°C   max   %Us   55    AC operating voltage at 20°C   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   w   5   5    Max cycles frequency   w   5   5    Mechanical operations   cycles/h   3600   w   3600   w |                        |                                    |                 |          | yes        |
| Min   |                        | 2/2011 2011                        |                 |          |            |
| AC operating voltage  of 50/60Hz coil powered at 50Hz pick-up  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 85 max %Us 110  drop-out  min %Us 85 max %Us 110  AC operating voltage at 20°C of 50/60Hz coil powered at 50Hz  in-rush VA 210 holding VA 13  of 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  Max cycles frequency  Mechanical operations  cycles/h 3600   | Rated AC voltage at 50 | 0/60HZ, 60HZ                       |                 | M        | 40         |
| AC operating voltage  of 50/60Hz coil powered at 50Hz pick-up  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 85 max %Us 110  drop-out  min %Us 20 max %Us 55  AC operating voltage 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  Max cycles frequency  Mechanical operations  cycles/h 3600   |                        |                                    |                 |          |            |
| of 50/60Hz coil powered at 50Hz pick-up  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 85 max %Us 110  drop-out  min %Us 20 max %Us 55  AC operating voltage at 20°C of 50/60Hz coil powered at 50Hz  of 50/60Hz coil powered at 50Hz  in-rush VA 210 holding VA 15  of 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  Max cycles frequency  Mechanical operations  cycles/h 3600   | AC operating voltage   |                                    | IIIdX           | V        | 600        |
| Pick-up   max   %Us   110   | AC operating voltage   | of 50/60Hz coil powered at 50Hz    |                 |          |            |
| Max   Mus   110   Min   Mus   20   Max   Mus   55   Mus   55   Mus    |                        | •                                  |                 |          |            |
| drop-out   min   %Us   20   20   20   20   20   20   20   2   |                        | pion up                            | max             | %Us      | 110        |
| min   |                        | drop-out                           |                 | ,,,,,    |            |
| of 50/60Hz coil powered at 60Hz pick-up         min wus wus ses max wus 110         drop-out         min wus wus 110         drop-out         min wus wus 20         max wus 55         AC operating voltage at 20°C         of 50/60Hz coil powered at 50Hz         in-rush vA 210         holding vA 13         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 operations       cycles/h 3600   |                        |                                    | min             | %Us      | 20         |
| Pick-up   min    %Us    85  |                        |                                    | max             | %Us      | 55         |
| Min   WUs   85   max   WUs   110  |                        | of 50/60Hz coil powered at 60Hz    |                 |          |            |
| Max   WUs   110   Min   WUs   20   Min   WUs   55   55   55   55   55   55   55   |                        | pick-up                            |                 |          |            |
| AC operating voltage at 20°C   of 50/60Hz coil powered at 50Hz   in-rush   VA   210   holding   VA   15   VA   13   of 60Hz coil powered at 60Hz   in-rush   VA   210   holding   VA   13   VA   13   of 60Hz coil powered at 60Hz   in-rush   VA   210   holding   VA   13   vA   15   vA    |                        |                                    | min             | %Us      | 85         |
| Minioding       %Us 55         AC operating voltage 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 NA 195 holding VA 13         of 60Hz coil powered at 60Hz       in-rush NA 210 holding VA 15         Dissipation at holding ≤20°C 50Hz       W 5         Max cycles frequency       W 5         Mechanical operations       cycles/h 3600  |                        |                                    | max             | %Us      | 110        |
| max       %Us       55         AC operating voltage at 20°C of 50/60Hz coil powered at 50Hz       in-rush VA 210 holding VA 15         in-rush voltage at 20°C 50Hz       in-rush voltage value       in-rush voltage value         in-rush voltage value       value       in-rush voltage value       value         in-rush voltage value       value       in-rush voltage value       value       value         in-rush voltage value       value       value       value       value         Dissipation at holding ≤20°C 50Hz       value       value       value         Max cycles frequency       walue       5         Mechanical operations       cycles/h 3600  |                        | drop-out                           |                 |          |            |
| AC operating voltage 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 operations  cycles/h 3600  |                        |                                    |                 |          |            |
| 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 operations  cycles/h 3600  |                        | 1.0000                             | max             | %Us      | 55         |
| 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 operations  cycles/h 3600   | AC operating voltage a |                                    |                 |          |            |
| holding   VA   15   |                        | ot 50/60Hz coil powered at 50Hz    | :               | ١/٨      | 210        |
| 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 operations  cycles/h 3600   |                        |                                    |                 |          |            |
| 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  Max cycles frequency  Mechanical operations  cycles/h 3600   |                        | of 50/60Hz coil powered at 60Hz    | riolaing        | VA       | 10         |
| holding         VA         13           of 60Hz coil powered at 60Hz         in-rush VA 210           in-rush holding         VA 15           Dissipation at holding ≤20°C 50Hz         W 5           Max cycles frequency           Mechanical operations         cycles/h 3600  |                        | or 50/00112 con powered at 60HZ    | in-ruch         | \/Δ      | 195        |
| 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 operations  cycles/h 3600   |                        |                                    |                 |          |            |
| in-rush holding         VA V  |                        | of 60Hz coil powered at 60Hz       | Holding         | VA       |            |
| holdingVA15Dissipation at holding ≤20°C 50HzW5Max cycles frequencyStreet of the cycles/h3600  |                        | 5. 55.12 55.1 porrollod de 50112   | in-rush         | VA       | 210        |
| Dissipation at holding ≤20°C 50Hz W 5  Max cycles frequency  Mechanical operations cycles/h 3600  |                        |                                    |                 |          |            |
| Max cycles frequency Mechanical operations  cycles/h 3600   | Dissipation at holding | ≤20°C 50Hz                         |                 |          |            |
| Mechanical operations cycles/h 3600   |                        |                                    |                 |          |            |
| ·   | -                      |                                    |                 | cycles/h | 3600       |
|   |                        |                                    |                 |          |            |



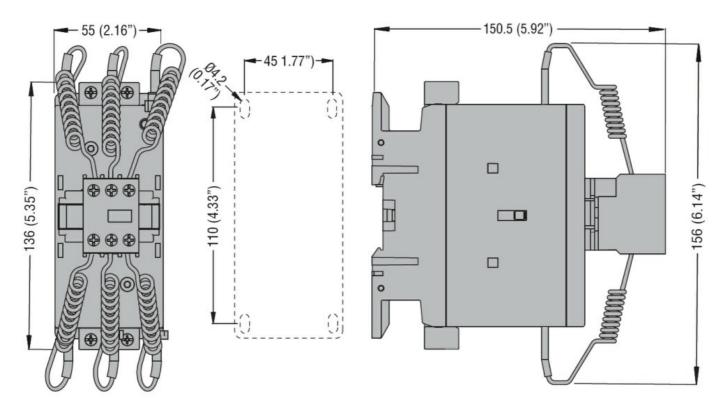
Average time for Us control

|                            | in AC                                 |              |            |      |           |
|----------------------------|---------------------------------------|--------------|------------|------|-----------|
|                            |                                       | Closing NO   |            |      |           |
|                            |                                       | Ü            | min        | ms   | 12        |
|                            |                                       |              | max        | ms   | 28        |
|                            |                                       | Opening NO   |            |      |           |
|                            |                                       | 3 -          | min        | ms   | 8         |
|                            |                                       |              | max        | ms   | 22        |
|                            | in DC                                 |              |            |      |           |
|                            | 20                                    | Closing NO   |            |      |           |
|                            |                                       | Glooming 110 | min        | ms   | 40        |
|                            |                                       |              | max        | ms   | 85        |
|                            |                                       | Opening NO   | max        | 1110 |           |
|                            |                                       | Oponing 110  | min        | ms   | 20        |
|                            |                                       |              | max        | ms   | 55        |
| UL technical data          |                                       |              | IIIdx      | 1113 | 33        |
| Full-load current (FLA)    | for three-phase AC m                  | otor         |            |      |           |
| i dii-load cullelit (i LA) | ioi tillee-pilase AC III              | iotoi        | at 480V    | Α    | 52        |
|                            |                                       |              |            |      |           |
| Wells I and a dealers      | · · · · · · · · · · · · · · · · · · · |              | at 600V    | Α    | 41        |
| Yielded mechanical pe      |                                       |              |            |      |           |
|                            | for single-phase AC                   | motor        |            |      |           |
|                            |                                       |              | 110/120V   | hp   | 5         |
|                            |                                       |              | 230V       | hp   | 10        |
|                            | for three-phase AC r                  | notor        |            |      |           |
|                            |                                       |              | 200/208V   | hp   | 15        |
|                            |                                       |              | 220/230V   | hp   | 20        |
|                            |                                       |              | 460/480V   | hp   | 40        |
|                            |                                       |              | 575/600V   | hp   | 40        |
| Contact rating of auxilia  | ary contacts according                | to UL        |            |      | SI - A600 |
| General USE                |                                       |              |            |      |           |
|                            | Auxiliary contacts                    |              |            |      |           |
|                            |                                       |              | AC voltage | V    | 600       |
|                            |                                       |              | AC current | Α    | 10        |
|                            |                                       |              | DC voltage | V    | 250       |
|                            |                                       |              | DC current | Α    | 1         |
| Ambient conditions         |                                       |              |            |      |           |
| Temperature                |                                       |              |            |      |           |
| •                          | Operating temperatu                   | ıre          |            |      |           |
|                            | -                                     |              | min        | °C   | -50       |
|                            |                                       |              | max        | °C   | 70        |
|                            | Storage temperature                   | <u> </u>     |            |      |           |
|                            | 2.0.ago tomporaturo                   | •            | min        | °C   | -60       |
|                            |                                       |              | max        | °C   | 80        |
| Max altitude               |                                       |              | max        | m    | 3000      |
| Resistance & Protection    | n                                     |              |            | 111  | 3000      |
|                            | лг <u></u> -                          |              |            |      | 3         |
| Pollution degree           |                                       |              |            |      | J         |
| Dimensions                 |                                       |              |            |      |           |

BFK5000A230



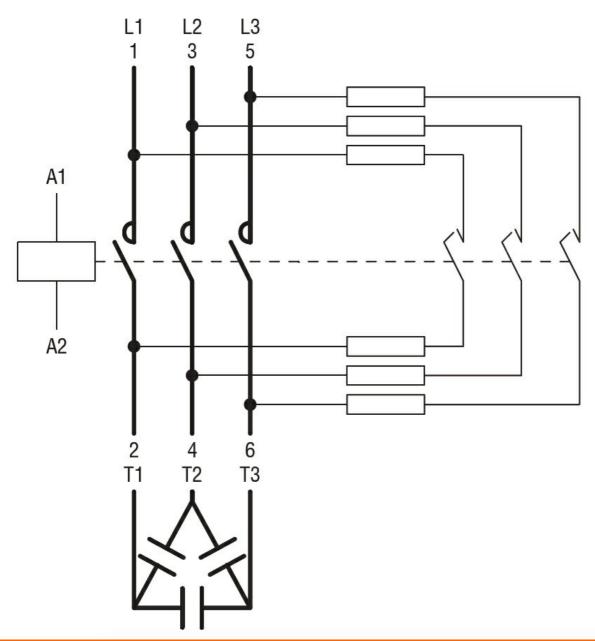
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Wiring diagrams



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## 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

## ETIM 6 classification

EC000066 - Power contactor, AC switching