

Single Pack BD35F 12/24V DC, 100-240V AC 50/60Hz PM

Single pack code number: **195B4550**

| Position | Title | Code | Amount |
|----------|--|----------|--------|
| 1 | Compressor BD35F | 101Z0204 | 1 |
| 2 | Electronic unit 12/24V DC, 100-240V AC 50/60Hz | 101N0511 | 1 |
| 3 | Bolt joint for one compressor M6 ø16mm | 118-1917 | 1 |

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BD35F Direct Current Compressor R134a, R1234yf, 12/24V DC, 10-45V DC Solar & 100-240V AC 50/60Hz



General

| | |
|---|----------------------------|
| Code number (without electronic units) | 101Z0204 |
| Electronic unit 12/24V DC - Standard | 101N0242, 30 pcs: 101N0243 |
| Electronic unit 12/24V DC - AEO | 101N0340, 30 pcs: 101N0341 |
| Electronic unit 10-45V DC - Solar | 101N0420, 30 pcs: 101N0421 |
| Electronic unit 12/24V DC & 100-240V AC 50/60Hz | 101N0510, 28 pcs: 101N0511 |
| Electronic unit 12/24V DC - Automotive | 101N0680, 30 pcs: 101N0681 |
| Compressors on pallet | 150 |

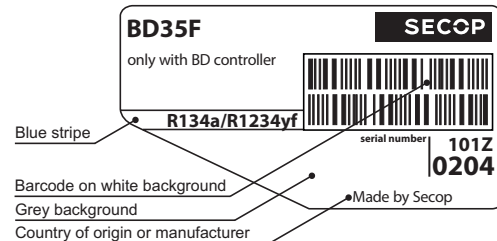
Approvals

| Approvals | Approvals |
|-----------|---------------|
| R134a | R134a/R1234yf |
| – | – |
| VDE | UL |
| VDE | – |
| VDE | UL |
| – | UL / CB |



Application

| | |
|--|----------------------------|
| Application | LBP/MBP/HBP |
| Evaporating temperature | °F -20 to 50 |
| Voltage range DC | VDC 9.6 - 17 / 21.3 - 31.5 |
| Voltage range AC | V/Hz 100 - 240 / 50 - 60 |
| Voltage range for solar applications | VDC 10 - 45 |
| Max. condensing temperature continuous (short) | °F 140 (158) |
| Max. winding temperature continuous (short) | °F 257 (275) |



Cooling requirements

| Application | LBP | MBP | HBP |
|-------------|-----|-----|-----|
| 32°C | S | S | S |
| 38°C | S | S | S |
| 43°C | S | S | S |

Remarks on application: Fan cooling F₁ depending on application and speed.

- S = Static cooling normally sufficient
- O = Oil cooling
- F₁ = Fan cooling 1.5 m/s (compressor compartment temperature equal to ambient temperature)
- F₂ = Fan cooling 3.0 m/s necessary
- SG = Suction gas cooling normally sufficient
- = not applicable in this area

Motor

| | |
|-----------------------------------|----------------|
| Motor type | variable speed |
| Resistance, all 3 windings (25°C) | Ω 2.2 |

Design

| | | |
|-------------------------------------|--------|-----------------------|
| Displacement | cu.in. | 0.12 |
| Oil quantity (type) | fl.oz. | 5.1 (polyolester) |
| Maximum refrigerant charge | oz. | 10.5 |
| Free gas volume in compressor | fl.oz. | 29.6 |
| Weight - Compressor/Electronic unit | lbs. | 9.5 / 0.42 (Standard) |

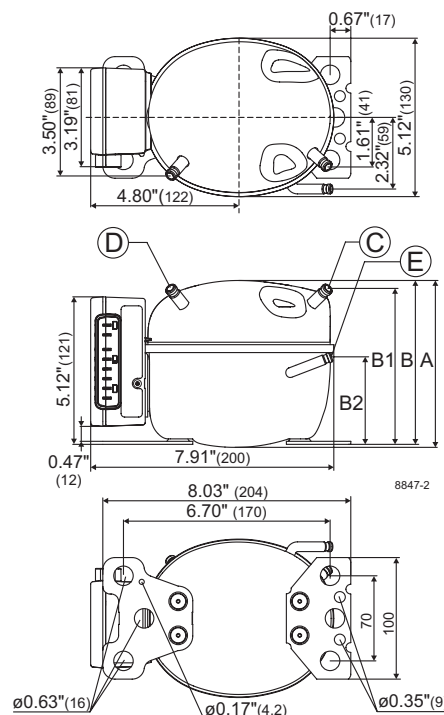
Standard battery protection settings (refer to electronic unit Instructions for optional settings)

| | | |
|---------|----------|------|
| Voltage | 12V | 24V |
| Cut out | VDC 10.4 | 22.8 |
| Cut in | VDC 11.7 | 24.2 |

Dimensions

| | | | |
|---------------------|----------------------------|----|--------------------------|
| Height | inch | A | 5.39 |
| | | B | 5.32 |
| | | B1 | 5.04 |
| | | B2 | 2.87 |
| Suction connector | location/I.D. inch angle | C | 0.252-0259 40° |
| | material comment | | Cu-plated steel Al cap |
| Process connector | location/I.D. inch angle | D | 0.252-0259 45° |
| | material comment | | Cu-plated steel Al cap |
| Discharge connector | location/I.D. inch angle | E | 0.202-0.205 21° |
| | material comment | | Cu-plated steel Al cap |

Remarks: **inch connectors**



Performance Data with Refrigerant R134a

| Capacity (ASHRAE LBP) | | 12V DC, static cooling | | | | | | | | | | BTU/h |
|-----------------------|------|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| rpm \ °F | -20 | -13 | -10 | 0 | 10 | 14 | 20 | 30 | 40 | 41 | 45 | 50 |
| 2,000 | 75.2 | 101 | 114 | 160 | 215 | 241 | 283 | 364 | 462 | 472 | 517 | 577 |
| 2,500 | 90.9 | 128 | 144 | 203 | 272 | 303 | 354 | 455 | 577 | 591 | 649 | |
| 3,000 | 105 | 141 | 158 | 226 | 311 | 350 | 415 | 539 | | | | |
| 3,500 | 122 | 154 | 172 | 249 | 352 | 400 | 479 | 626 | | | | |

| Capacity (EN 12900 Household/CECOMAF) | | 12V DC, static cooling | | | | | | | | | | watt |
|---------------------------------------|------|------------------------|------|------|------|------|------|------|-----|-----|-----|------|
| rpm \ °F | -20 | -13 | -10 | 0 | 10 | 14 | 20 | 30 | 40 | 41 | 45 | 50 |
| 2,000 | 17.7 | 23.8 | 26.7 | 37.4 | 50.5 | 56.5 | 66.4 | 85.5 | 108 | 111 | 121 | 136 |
| 2,500 | 21.3 | 29.9 | 33.8 | 47.6 | 63.8 | 71.1 | 83.2 | 107 | 136 | 139 | 152 | |
| 3,000 | 24.5 | 32.9 | 37.0 | 53.0 | 73.0 | 82.2 | 97.4 | 127 | | | | |
| 3,500 | 28.5 | 35.9 | 40.1 | 58.4 | 82.6 | 93.9 | 112 | 147 | | | | |

| Power consumption | | 12V DC, static cooling | | | | | | | | | | watt |
|-------------------|------|------------------------|------|------|------|------|------|------|------|------|------|------|
| rpm \ °F | -20 | -13 | -10 | 0 | 10 | 14 | 20 | 30 | 40 | 41 | 45 | 50 |
| 2,000 | 19.0 | 22.9 | 24.5 | 29.6 | 34.6 | 36.5 | 39.5 | 44.8 | 50.7 | 51.4 | 54.0 | 57.5 |
| 2,500 | 23.9 | 29.7 | 31.9 | 39.0 | 45.4 | 47.9 | 51.6 | 58.0 | 65.0 | 65.7 | 68.8 | |
| 3,000 | 30.4 | 34.6 | 36.6 | 44.3 | 52.8 | 56.3 | 61.5 | 70.0 | | | | |
| 3,500 | 36.0 | 41.3 | 43.7 | 52.5 | 62.0 | 65.9 | 72.0 | 82.2 | | | | |

| Current consumption (for 24V applications the following must be halved) | | | | | | | | | | | | A |
|---|------|------|------|------|------|------|------|------|------|------|------|------|
| rpm \ °F | -20 | -13 | -10 | 0 | 10 | 14 | 20 | 30 | 40 | 41 | 45 | 50 |
| 2,000 | 1.51 | 1.87 | 2.02 | 2.47 | 2.89 | 3.05 | 3.30 | 3.73 | 4.20 | 4.25 | 4.46 | 4.74 |
| 2,500 | 1.99 | 2.47 | 2.66 | 3.25 | 3.79 | 4.00 | 4.31 | 4.84 | 5.42 | 5.48 | 5.74 | |
| 3,000 | 2.49 | 2.88 | 3.05 | 3.70 | 4.39 | 4.67 | 5.10 | 5.81 | | | | |
| 3,500 | 2.99 | 3.42 | 3.63 | 4.36 | 5.15 | 5.48 | 5.99 | 6.85 | | | | |

| EER (ASHRAE LBP) | | 12V DC, static cooling | | | | | | | | | | BTU/Wh |
|------------------|------|------------------------|------|------|------|------|------|------|------|------|------|--------|
| rpm \ °F | -20 | -13 | -10 | 0 | 10 | 14 | 20 | 30 | 40 | 41 | 45 | 50 |
| 2,000 | 3.97 | 4.42 | 4.63 | 5.38 | 6.23 | 6.59 | 7.15 | 8.12 | 9.10 | 9.20 | 9.58 | 10.05 |
| 2,500 | 3.80 | 4.31 | 4.51 | 5.21 | 5.98 | 6.32 | 6.86 | 7.84 | 8.89 | 9.00 | 9.43 | |
| 3,000 | 3.45 | 4.06 | 4.31 | 5.11 | 5.89 | 6.22 | 6.74 | 7.70 | | | | |
| 3,500 | 3.39 | 3.73 | 3.93 | 4.75 | 5.68 | 6.07 | 6.65 | 7.62 | | | | |

| COP (EN 12900 Household/CECOMAF) | | 12V DC, static cooling | | | | | | | | | | W/W |
|----------------------------------|------|------------------------|------|------|------|------|------|------|------|------|------|------|
| rpm \ °F | -20 | -13 | -10 | 0 | 10 | 14 | 20 | 30 | 40 | 41 | 45 | 50 |
| 2,000 | 0.93 | 1.04 | 1.09 | 1.26 | 1.46 | 1.54 | 1.67 | 1.90 | 2.13 | 2.15 | 2.24 | 2.35 |
| 2,500 | 0.89 | 1.01 | 1.06 | 1.22 | 1.40 | 1.48 | 1.60 | 1.83 | 2.08 | 2.10 | | |
| 3,000 | 0.81 | 0.95 | 1.01 | 1.19 | 1.38 | 1.45 | 1.58 | 1.80 | | | | |
| 3,500 | 0.79 | 0.87 | 0.92 | 1.11 | 1.33 | 1.42 | 1.55 | 1.78 | | | | |

| Test conditions with electronic units | | EN 12900/CECOMAF | ASHRAE LBP |
|---------------------------------------|----------------------|------------------|------------|
| Condensing temperature | 101N0242 101N0680 | 131°F | 130°F |
| Ambient temperature | | 90°F | 90°F |
| Suction gas temperature | | 90°F | 90°F |
| Liquid temperature | | no subcooling | 90°F |

| Accessories for BD35F | | Code number |
|----------------------------|---|----------------------------|
| Bolt joint for one comp. | Ø: 5/8 in. | 118-1917 |
| Bolt joint in quantities | Ø: 5/8 in. | 118-1918 |
| Snap-on in quantities | Ø: 5/8 in. | 118-1919 |
| Remote kit (without cable) | | 105N9210 |
| Secop Gateway | | 105N9518 |
| DC usage: | Automobile fuse, DIN 7258 12V: 15A 24V: 7.5 A Main switch min. 20A | Not deliverable from Secop |
| AC usage: | Fuse, 100-240V Main switch min. 6A | |

Compressor speed

| Electronit unit | Resistor (R1) [Ω] | Motor speed |
|-----------------|-------------------|-------------|
| Code number | calculated values | [rpm] |
| | 0 | 2,000 |
| | 277 | 2,500 |
| 101N0242 | 692 | 3,000 |
| 101N0510 | 1523 | 3,500 |
| 101N0680 | 0 | AEO |
| 101N0340 | 173 | 2,000 |
| 101N0420 | 450 | 2,500 |
| with AEO | 865 | 3,000 |
| | 1696 | 3,500 |

In AEO (Adaptive Energy Optimizing) speed mode the BD compressor will always adapt its speed to the actual cooling demand.

Wire dimensions DC

| Cross section | Size | | Max. length* 12V operation | | Max. length* 24V operation | |
|---------------|------|-------|----------------------------|-------|----------------------------|-------|
| | AWG | [mm²] | [m] | [ft.] | [m] | [ft.] |
| 2.5 | 12 | 2.5 | 8 | 5 | 16 | |
| 4 | 12 | 4 | 13 | 8 | 26 | |
| 6 | 10 | 6 | 20 | 12 | 39 | |
| 10 | 8 | 10 | 33 | 20 | 66 | |

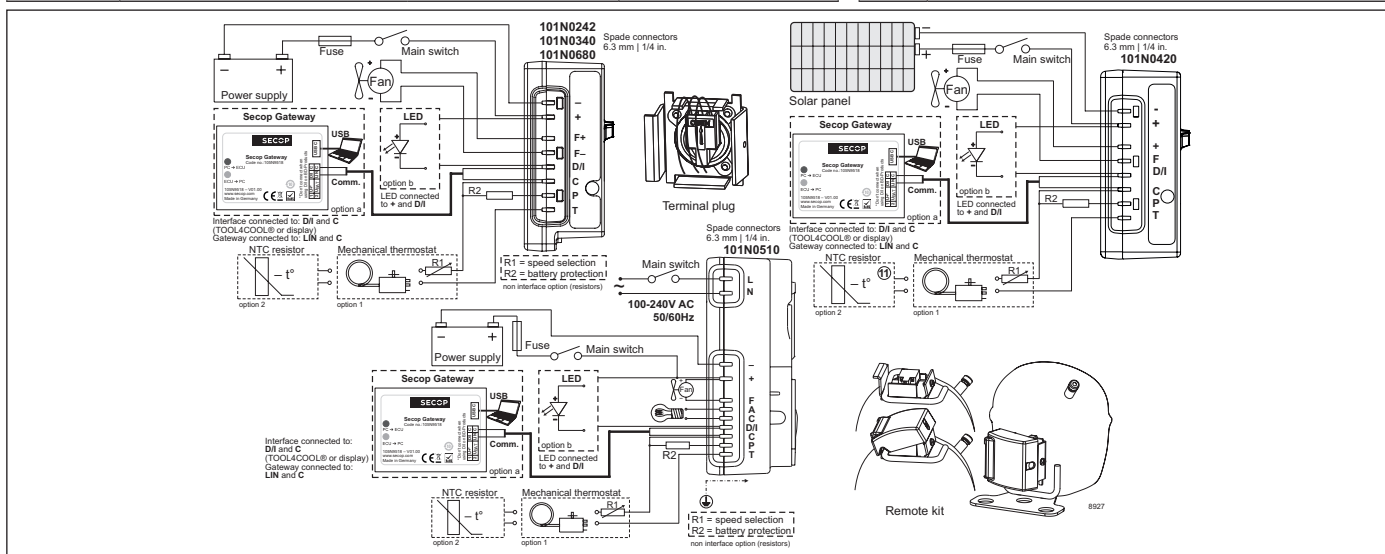
*Length between battery and electronic unit

Wire dimensions AC

Cross section min. 0.75 mm² or AWG 18

Operational errors

| Error code or LED flashes | Error type |
|---------------------------|--|
| | Can be read out in the software TOOL4COOL® |
| 6 | Thermostat failure (If the NTC thermistor is short-circuit or has no connection). |
| 5 | Thermal cut-out of electronic unit (If the refrigeration system has been too heavily loaded, or if the ambient temperature is high, the electronic unit will run too hot). |
| 4 | Minimum motor speed error (If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed at approximately 1,850 rpm). |
| 3 | Motor start error (The rotor is blocked or the differential pressure in the refrigeration system is too high (>5 bar)). |
| 2 | Too many start attempts or fan over current (Too many compressor or fan starts in short time or fan current higher than 0.5A _{avg}). |
| 1 | Battery protection cut-out (The voltage is outside the cut-out setting). |



Performance Data with Refrigerant R1234yf

| Capacity (ASHRAE LBP) | | 12V DC, static cooling | | | | | | | | | | BTU/h |
|-----------------------|------|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| rpm \ °F | -20 | -13 | -10 | 0 | 10 | 14 | 20 | 30 | 40 | 41 | 45 | 50 |
| 2,000 | 82.5 | 110 | 123 | 172 | 230 | 256 | 297 | 374 | 459 | 469 | 506 | 555 |
| 2,500 | 92.4 | 131 | 150 | 216 | 293 | 326 | 379 | 475 | 579 | 590 | 635 | |
| 3,000 | 123 | 158 | 175 | 241 | 322 | 359 | 420 | 538 | | | | |
| 3,500 | 142 | 175 | 193 | 266 | 362 | 406 | 478 | 616 | | | | |

| Capacity (EN 12900 Household/CECOMAF) | | 12V DC, static cooling | | | | | | | | | | watt |
|---------------------------------------|------|------------------------|------|------|------|------|------|------|-----|-----|-----|------|
| rpm \ °F | -20 | -13 | -10 | 0 | 10 | 14 | 20 | 30 | 40 | 41 | 45 | 50 |
| 2,000 | 18.6 | 24.8 | 27.8 | 38.8 | 51.9 | 57.7 | 67.0 | 84.1 | 103 | 105 | 114 | 125 |
| 2,500 | 20.8 | 29.6 | 33.8 | 48.9 | 66.2 | 73.7 | 85.6 | 107 | 131 | 133 | 143 | |
| 3,000 | 27.5 | 35.3 | 39.2 | 53.9 | 72.1 | 80.5 | 94.3 | 121 | | | | |
| 3,500 | 31.9 | 39.3 | 43.3 | 59.7 | 81.1 | 91.0 | 107 | 138 | | | | |

| Power consumption | | 12V DC, static cooling | | | | | | | | | | watt |
|-------------------|------|------------------------|------|------|------|------|------|------|------|------|------|------|
| rpm \ °F | -20 | -13 | -10 | 0 | 10 | 14 | 20 | 30 | 40 | 41 | 45 | 50 |
| 2,000 | 19.0 | 22.9 | 24.5 | 29.6 | 34.6 | 36.5 | 39.5 | 44.8 | 50.7 | 51.4 | 54.0 | 57.5 |
| 2,500 | 23.9 | 29.7 | 31.9 | 39.0 | 45.4 | 47.9 | 51.6 | 58.0 | 65.0 | 65.7 | 68.8 | |
| 3,000 | 30.4 | 34.6 | 36.6 | 44.3 | 52.8 | 56.3 | 61.5 | 70.0 | | | | |
| 3,500 | 36.0 | 41.3 | 43.7 | 52.5 | 62.0 | 65.9 | 72.0 | 82.2 | | | | |

| Current consumption (for 24V applications the following must be halved) | | | | | | | | | | | | A |
|---|------|------|------|------|------|------|------|------|------|------|------|------|
| rpm \ °F | -20 | -13 | -10 | 0 | 10 | 14 | 20 | 30 | 40 | 41 | 45 | 50 |
| 2,000 | 1.51 | 1.87 | 2.02 | 2.47 | 2.89 | 3.05 | 3.30 | 3.73 | 4.20 | 4.25 | 4.46 | 4.74 |
| 2,500 | 1.99 | 2.47 | 2.66 | 3.25 | 3.79 | 4.00 | 4.31 | 4.84 | 5.42 | 5.48 | 5.74 | |
| 3,000 | 2.49 | 2.88 | 3.05 | 3.70 | 4.39 | 4.67 | 5.10 | 5.81 | | | | |
| 3,500 | 2.99 | 3.42 | 3.63 | 4.36 | 5.15 | 5.48 | 5.99 | 6.85 | | | | |

| EER (ASHRAE LBP) | | 12V DC, static cooling | | | | | | | | | | BTU/Wh |
|------------------|------|------------------------|------|------|------|------|------|------|------|------|------|--------|
| rpm \ °F | -20 | -13 | -10 | 0 | 10 | 14 | 20 | 30 | 40 | 41 | 45 | 50 |
| 2,000 | 4.06 | 4.57 | 4.80 | 5.59 | 6.43 | 6.77 | 7.29 | 8.16 | 9.04 | 9.12 | 9.47 | 9.90 |
| 2,500 | 3.59 | 4.19 | 4.44 | 5.28 | 6.14 | 6.49 | 7.02 | 7.93 | 8.84 | 8.94 | 9.31 | |
| 3,000 | 3.68 | 4.27 | 4.51 | 5.25 | 5.98 | 6.29 | 6.77 | 7.68 | | | | |
| 3,500 | 3.55 | 3.91 | 4.10 | 4.83 | 5.66 | 6.01 | 6.55 | 7.48 | | | | |

| COP (EN 12900 Household/CECOMAF) | | 12V DC, static cooling | | | | | | | | | | W/W |
|----------------------------------|------|------------------------|------|------|------|------|------|------|------|------|------|------|
| rpm \ °F | -20 | -13 | -10 | 0 | 10 | 14 | 20 | 30 | 40 | 41 | 45 | 50 |
| 2,000 | 0.91 | 1.03 | 1.08 | 1.26 | 1.44 | 1.52 | 1.63 | 1.83 | 2.02 | 2.04 | 2.11 | 2.21 |
| 2,500 | 0.81 | 0.94 | 1.00 | 1.19 | 1.38 | 1.46 | 1.58 | 1.78 | 1.98 | 2.00 | | |
| 3,000 | 0.82 | 0.95 | 1.01 | 1.17 | 1.34 | 1.40 | 1.51 | 1.72 | | | | |
| 3,500 | 0.80 | 0.88 | 0.92 | 1.08 | 1.26 | 1.34 | 1.46 | 1.67 | | | | |

| Test conditions with electronic units | | EN 12900/CECOMAF | ASHRAE LBP |
|---------------------------------------|----------------------|------------------|------------|
| Condensing temperature | 101N0242 101N0680 | 131°F | 130°F |
| Ambient temperature | | 90°F | 90°F |
| Suction gas temperature | | 90°F | 90°F |
| Liquid temperature | | no subcooling | 90°F |

| Accessories for BD35F | | Code number |
|----------------------------|---|----------------------------|
| Bolt joint for one comp. | Ø: 5/8 in. | 118-1917 |
| Bolt joint in quantities | Ø: 5/8 in. | 118-1918 |
| Snap-on in quantities | Ø: 5/8 in. | 118-1919 |
| Remote kit (without cable) | | 105N9210 |
| Secop Gateway | | 105N9518 |
| DC usage: | Automobile fuse, DIN 7258 12V: 15A 24V: 7.5 A Main switch min. 20A | Not deliverable from Secop |
| AC usage: | Fuse, 100-240V Main switch min. 6A | |

Compressor speed

| Electronit unit | Resistor (R1) [Ω] | Motor speed |
|----------------------------------|-------------------|-------------|
| Code number | calculated values | [rpm] |
| | 0 | 2,000 |
| | 277 | 2,500 |
| 101N0242 | 692 | 3,000 |
| 101N0510 | 1523 | 3,500 |
| 101N0680 | 0 | AEO |
| 101N0340 101N0420 with AEO | 173 | 2,000 |
| | 450 | 2,500 |
| | 865 | 3,000 |
| | 1696 | 3,500 |

In AEO (Adaptive Energy Optimizing) speed mode the BD compressor will always adapt its speed to the actual cooling demand.

Wire dimensions DC

| Cross section | Size | | Max. length* 12V operation | | Max. length* 24V operation | |
|---------------|------|-------|----------------------------|-------|----------------------------|-------|
| | AWG | [mm²] | [m] | [ft.] | [m] | [ft.] |
| 2.5 | 12 | 2.5 | 8 | 5 | 16 | |
| 4 | 12 | 4 | 13 | 8 | 26 | |
| 6 | 10 | 6 | 20 | 12 | 39 | |
| 10 | 8 | 10 | 33 | 20 | 66 | |

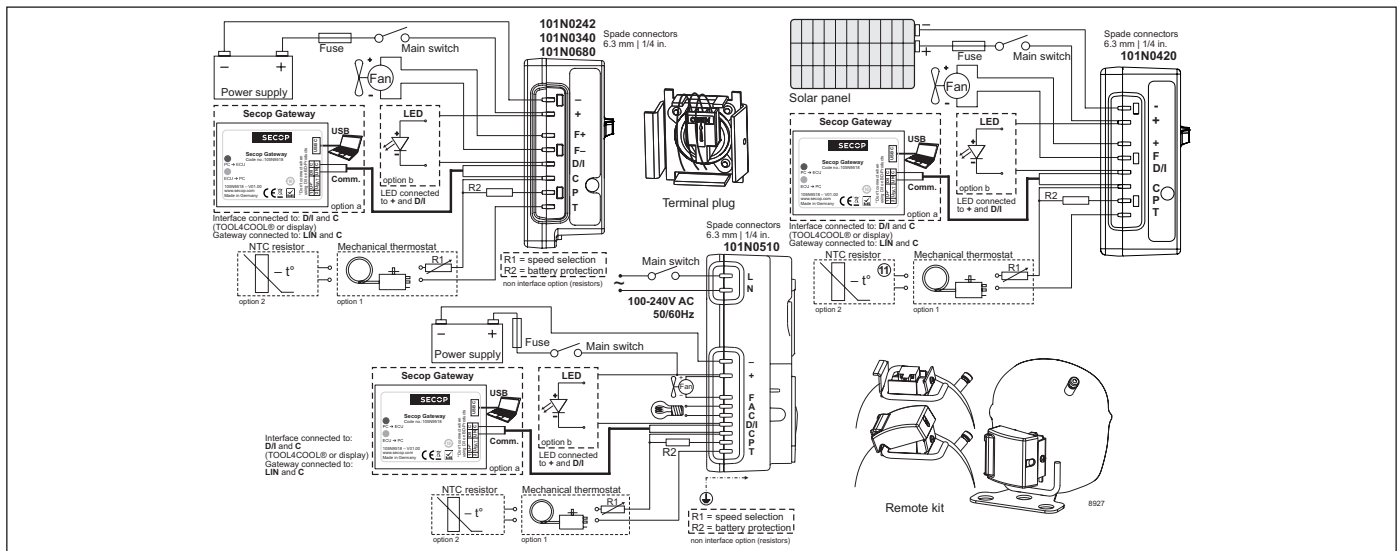
*Length between battery and electronic unit

Wire dimensions AC

Cross section min. 0.75 mm² or AWG 18

Operational errors

| Error code or LED flashes | Error type |
|---------------------------|--|
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| 4 | Minimum motor speed error (If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed at approximately 1,850 rpm). |
| 3 | Motor start error (The rotor is blocked or the differential pressure in the refrigeration system is too high (>5 bar)). |
| 2 | Too many start attempts or fan over current (Too many compressor or fan starts in short time or fan current higher than 0.5A _{avg}). |
| 1 | Battery protection cut-out (The voltage is outside the cut-out setting). |



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Instructions for Electronic Units
are available for download on
www.secop.com



BD Compressors



Service/Repair



BD Nano



**! max. 150°C/302°F !
at socket**
brazing solder: silver with flux

Do not heat up the bottom of the discharge connector directly.
Do not braze longer than 10 seconds and wait for 5 minutes for the next soldering attempt (Product Bulletin DES.N.101.M1).

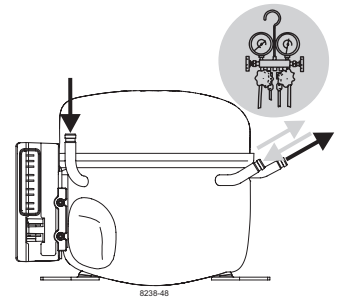
BD Micro



BD P-Housing



BD T-Housing



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