

Single Pack BD80CN 12/24V DC PM

Single pack code number: **195B4270**

| Position | Title | Code | Amount |
|----------|--|----------|--------|
| 1 | Compressor BD80CN | 101Z0403 | 1 |
| 2 | Electronic unit 12/24V DC - Standard | 101N0212 | 1 |
| 3 | Bolt joint for one compressor M6 ø16mm | 118-1917 | 1 |

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BD80CN Direct Current Compressor R290, 12/24V DC, 10-45V DC Solar & 100-240V AC 50/60Hz



General

| | |
|---|----------------------------|
| Code number (without electronic units) | 101Z0403 |
| 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

| |
|---------------|
| - |
| CB / UL / VDE |
| CB / UL / VDE |
| UL |
| CB / UL |



Application

| | | |
|--|---------|------------------------|
| Application | LBP/MBP | |
| Evaporating temperature | °C | -40 to -5 (5) |
| 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) | °C | 55 (65) |
| Max. winding temperature continuous (short) | °C | 125 (135) |

Cooling requirements

| Application | LBP | MBP | HBP |
|-------------------------|-----|----------------|-----|
| 32°C | S | F ₁ | - |
| 38°C | S | F ₁ | - |
| 43°C | S | F ₁ | - |
| Remarks on application: | | | |

Motor

| | | |
|-----------------------------------|----------------|-----|
| Motor type | variable speed | |
| Resistance, all 3 windings (25°C) | Ω | 1.8 |

Design

| | | |
|-------------------------------------|-----------------|-----------------------|
| Displacement | cm ³ | 2.00 |
| Oil quantity (type) | cm ³ | 150 (polyolester) |
| Maximum refrigerant charge | g | 120 |
| Free gas volume in compressor | cm ³ | 870 |
| Weight - Compressor/Electronic unit | kg | 4.3 / 0.19 (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 | mm | A | 137 |
| | | B | 135 |
| | | B1 | 128 |
| | | B2 | 73 |
| Suction connector | location/I.D. mm angle | C | 6.2 40° |
| | material comment | Cu-plated steel Al cap | |
| Process connector | location/I.D. mm angle | D | 6.2 45° |
| | material comment | Cu-plated steel Al cap | |
| Discharge connector | location/I.D. mm angle | E | 5.0 21° |
| | material comment | Cu-plated steel Al cap | |
| Connector tolerance | I.D. mm | ±0.09, on 5.0 +0.12/+0.20 | |
| Remarks | | | |

BD80CN

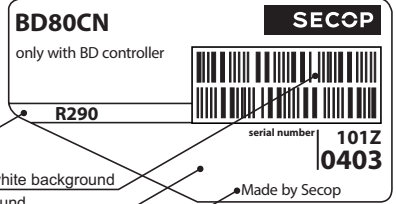
only with BD controller

Red stripe

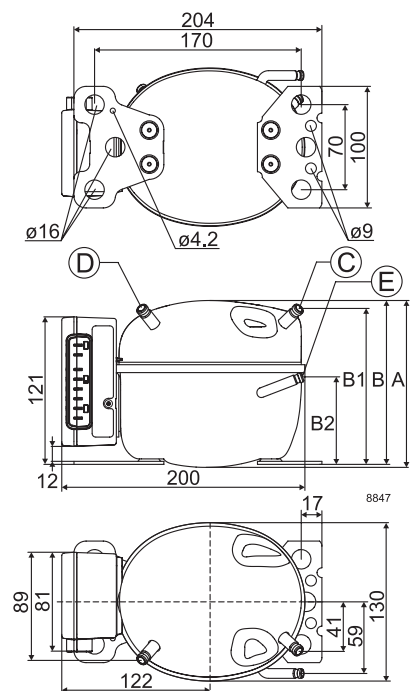
Barcode on white background

Grey background

Country of origin or manufacturer



- 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



| Capacity (EN 12900 Household/CECOMAF) | | | | | | | | | | | | 12V DC, static cooling | | watt |
|---------------------------------------|------|------|------|------|-------|------|------|------|-----|-----|-----|------------------------|--|------|
| rpm \ °C | -40 | -35 | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | | |
| 2,000 | 16.4 | 24.7 | 34.6 | 46.4 | 50.8 | 60.2 | 76.2 | 94.8 | 116 | 140 | 167 | | | |
| 2,500 | 20.2 | 29.0 | 40.7 | 55.5 | 61.2 | 73.0 | 95.0 | 119 | 147 | 179 | 215 | | | |
| 3,000 | 26.3 | 39.6 | 54.4 | 71.6 | 78.0 | 92.0 | 116 | 144 | 178 | 217 | | | | |
| 3,500 | 31.1 | 45.6 | 62.3 | 82.0 | 89.0 | 105 | 132 | 165 | 203 | | | | | |

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

| Capacity (ASHRAE LBP) | | | | | | | | | | | | 12V DC, static cooling | | watt |
|-----------------------|------|------|------|------|-------|------|------|-----|-----|-----|-----|------------------------|--|------|
| rpm \ °C | -40 | -35 | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | | |
| 2,000 | 18.2 | 27.5 | 38.6 | 51.7 | 56.7 | 67.2 | 85.1 | 106 | 130 | 157 | 187 | | | |
| 2,500 | 22.5 | 32.3 | 45.4 | 61.9 | 68.0 | 82.0 | 106 | 133 | 165 | 200 | 240 | | | |
| 3,000 | 29.3 | 44.1 | 60.7 | 80.0 | 87.0 | 102 | 129 | 161 | 199 | 243 | | | | |
| 3,500 | 34.7 | 50.8 | 69.5 | 91.0 | 100 | 117 | 148 | 184 | 227 | | | | | |

| Power consumption | | | | | | | | | | | | 12V DC, static cooling | | watt |
|-------------------|------|------|------|------|-------|------|------|------|------|------|------|------------------------|--|------|
| rpm \ °C | -40 | -35 | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | | |
| 2,000 | 27.3 | 29 | 31.8 | 35.5 | 36.9 | 39.8 | 44.3 | 48.9 | 53.3 | 57.1 | 60.1 | | | |
| 2,500 | 31.5 | 35.9 | 41.1 | 46.9 | 49.0 | 53.0 | 58.9 | 64.4 | 69.2 | 72.9 | 75.1 | | | |
| 3,000 | 42.9 | 45.3 | 51.0 | 58.8 | 61.6 | 67.3 | 75.2 | 81.4 | 85.0 | 89.0 | | | | |
| 3,500 | 45.3 | 52.2 | 60.4 | 69.3 | 72.4 | 78.2 | 87.0 | 93.0 | 98.0 | | | | | |

| Current consumption (for 24V applications the following must be halved) | | | | | | | | | | | | A | | |
|---|------|------|------|------|-------|------|------|------|------|------|------|-----|--|--|
| rpm \ °C | -40 | -35 | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | | |
| 2,000 | 2.13 | 2.25 | 2.47 | 2.78 | 2.89 | 3.13 | 3.51 | 3.89 | 4.23 | 4.52 | 4.73 | | | |
| 2,500 | 2.84 | 3.20 | 3.60 | 4.03 | 4.18 | 4.48 | 4.93 | 5.36 | 5.76 | 6.11 | 6.40 | | | |
| 3,000 | 3.60 | 3.78 | 4.25 | 4.89 | 5.13 | 5.60 | 6.27 | 6.78 | 7.02 | 7.20 | | | | |
| 3,500 | 3.31 | 3.99 | 4.56 | 5.08 | 5.26 | 5.63 | 6.28 | 7.10 | 8.17 | | | | | |

| COP (EN 12900 Household/CECOMAF) | | | | | | | | | | | | 12V DC, static cooling | | W/W |
|----------------------------------|------|------|------|------|-------|------|------|------|------|------|------|------------------------|--|-----|
| rpm \ °C | -40 | -35 | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | | |
| 2,000 | 0.60 | 0.85 | 1.09 | 1.31 | 1.38 | 1.51 | 1.72 | 1.94 | 2.18 | 2.45 | 2.78 | | | |
| 2,500 | 0.64 | 0.81 | 0.99 | 1.18 | 1.25 | 1.39 | 1.61 | 1.85 | 2.13 | 2.46 | 2.85 | | | |
| 3,000 | 0.61 | 0.87 | 1.07 | 1.22 | 1.27 | 1.36 | 1.54 | 1.77 | 2.10 | 2.43 | | | | |
| 3,500 | 0.69 | 0.87 | 1.03 | 1.18 | 1.23 | 1.34 | 1.53 | 1.76 | 2.06 | | | | | |

| COP (ASHRAE LBP) | | | | | | | | | | | | 12V DC, static cooling | | W/W |
|------------------|------|------|------|------|-------|------|------|------|------|------|------|------------------------|--|-----|
| rpm \ °C | -40 | -35 | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | | |
| 2,000 | 0.67 | 0.95 | 1.21 | 1.46 | 1.54 | 1.69 | 1.92 | 2.16 | 2.43 | 2.75 | 3.12 | | | |
| 2,500 | 0.71 | 0.90 | 1.10 | 1.32 | 1.40 | 1.55 | 1.79 | 2.07 | 2.38 | 2.75 | 3.20 | | | |
| 3,000 | 0.68 | 0.97 | 1.19 | 1.36 | 1.41 | 1.52 | 1.72 | 1.98 | 2.35 | 2.73 | | | | |
| 3,500 | 0.77 | 0.97 | 1.15 | 1.32 | 1.38 | 1.50 | 1.71 | 1.97 | 2.30 | | | | | |

| Test conditions with electronic units | | EN 12900/CECOMAF* | ASHRAE LBP* |
|---------------------------------------|--|-------------------|-------------|
| Condensing temperature | | 45°C | 45°C |
| Ambient temperature | | 32°C | 32°C |
| Suction gas temperature | | 32°C | 32°C |
| Liquid temperature | | no subcooling | 32°C |

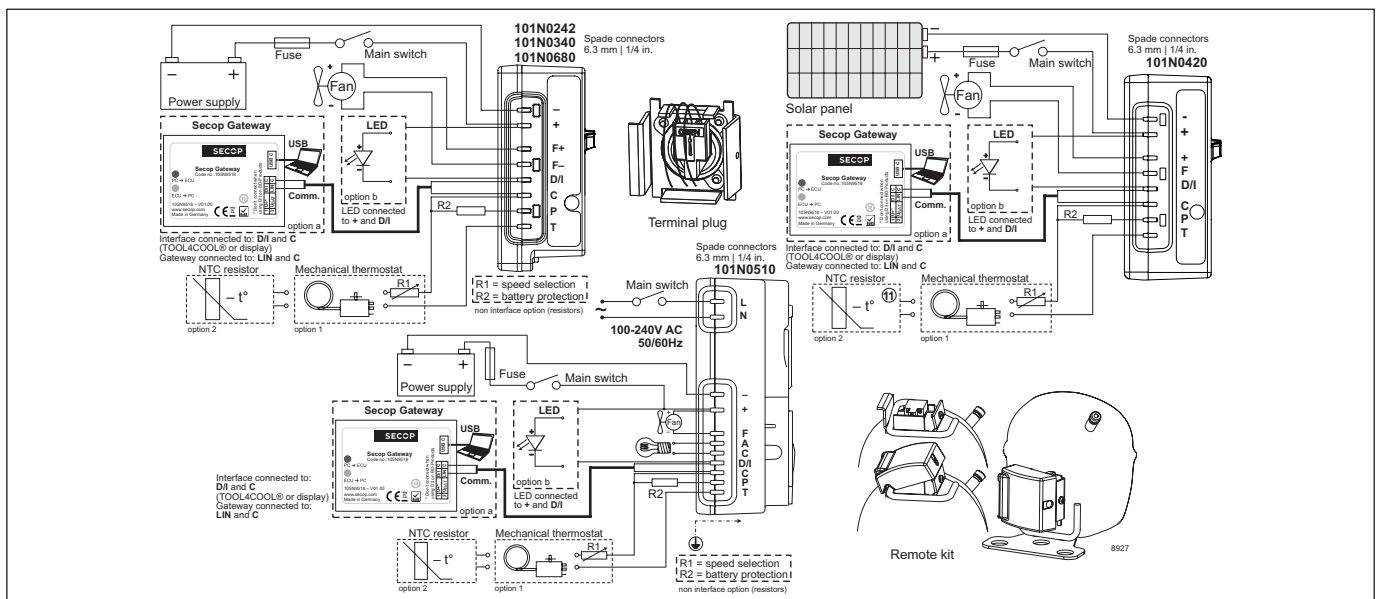
| Accessories for BD80CN | | Code number |
|----------------------------|---|----------------------------|
| Bolt joint for one comp. | | Ø:16 mm 118-1917 |
| Bolt joint in quantities | | Ø:16 mm 118-1918 |
| Snap-on in quantities | | Ø:16 mm 118-1919 |
| Remote kit (without cable) | | 105N9210 |
| Secop Gateway | | 105N9518 |
| DC usage: | Automobile fuse, DIN 7258 12V: 15A 24V: 7.5 A | Not deliverable from Secop |
| | Main switch min. 20A | |
| AC usage: | Fuse, 100-240V | Not deliverable from Secop |
| | Main switch min. 6A | |

| Wire dimensions DC | | | | | | |
|--------------------|------|-----|----------------------------|---------|----------------------------|-------|
| Cross section | Size | AWG | Max. length* 12V operation | | Max. length* 24V operation | |
| | | | [mm ²] | [Gauge] | [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 of the cut-out setting). |



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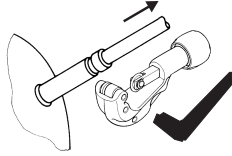
Instructions for Electronic Units
are available for download on
www.secop.com



BD Compressors



Service/Repair



BD Nano



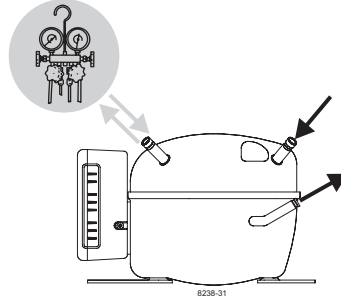
**! max. 150°C/302°F !
at socket**
brazing solder: silver with flux

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).

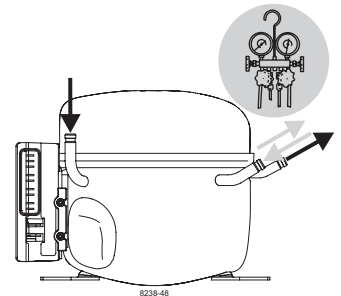
BD Micro



BD P-Housing



BD T-Housing



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