

BD35K-B Direct Current Compressor R600a, 12/24V DC, 10-45V DC Solar, & 100-240V AC 50/60Hz



General

| | |
|---|----------------------------|
| Code number (without electronic units) | 101Z0214 |
| 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 / VDE |
| CB / VDE |
| CB / VDE |
| CB / UL |



Application

| | |
|---|------------------------|
| Application | LBP/MBP/HBP |
| Evaporating temperature °C | -30 to 0 (10) |
| 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 | 60 (70) |
| Max. winding temperature continuous (short) °C | 125 (135) |

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.

Special version of the BD35K optimized for rough vehicle motions, especially in buses or other heavy duty applications.

Motor

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

Design

| | |
|---|-----------------------|
| Displacement cm ³ | 3.00 |
| 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) |

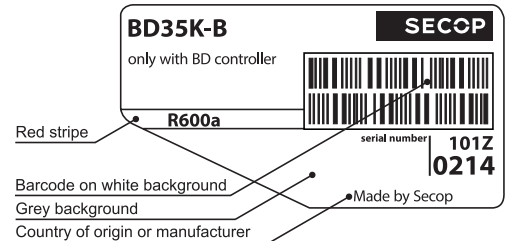
Standard battery protection settings (refer to electronic unit Instructions for optional settings)

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

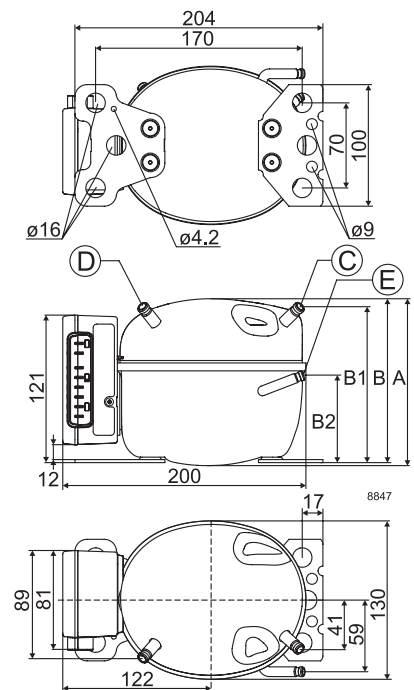
Dimensions

| 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:



- 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 | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 | | | |
| 2,000 | 13.1 | 20.9 | 23.8 | 29.8 | 39.7 | 51.1 | 64.1 | 79.1 | 96.2 | 104 | 116 | | | | |
| 2,500 | 16.8 | 25.2 | 28.4 | 35.2 | 47.0 | 60.9 | 77.2 | 96.0 | 118 | 128 | | | | | |
| 3,000 | 21.1 | 30.6 | 34.3 | 42.2 | 56.2 | 72.7 | 92.2 | 115 | | | | | | | |
| 3,500 | 25.0 | 36.0 | 40.2 | 49.1 | 65.0 | 83.8 | 106 | | | | | | | | |

| Capacity (ASHRAE LBP) | | | | | | | | | | | | 12V DC, static cooling | | watt | |
|-----------------------|------|------|-------|------|------|------|------|-----|-----|-----|-----|------------------------|--|------|--|
| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 | | | |
| 2,000 | 16.0 | 25.6 | 29.1 | 36.3 | 48.5 | 62.4 | 78.4 | 97 | 118 | 128 | 142 | | | | |
| 2,500 | 20.7 | 30.9 | 34.8 | 43.1 | 57.5 | 74.5 | 94.3 | 117 | 144 | 157 | | | | | |
| 3,000 | 25.8 | 37.4 | 42.0 | 51.6 | 68.6 | 88.9 | 113 | 140 | | | | | | | |
| 3,500 | 30.6 | 43.9 | 49.0 | 60.0 | 79.2 | 102 | 129 | | | | | | | | |

| Power consumption | | | | | | | | | | | | 12V DC, static cooling | | watt | |
|-------------------|------|------|-------|------|------|------|------|------|------|------|------|------------------------|--|------|--|
| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 | | | |
| 2,000 | 17.5 | 21.5 | 22.8 | 25.4 | 29.1 | 32.8 | 36.5 | 40.2 | 44.1 | 45.8 | 48.0 | | | | |
| 2,500 | 22.9 | 27.2 | 28.6 | 31.3 | 35.4 | 39.5 | 43.6 | 48.0 | 52.5 | 54.5 | | | | | |
| 3,000 | 28.9 | 34.6 | 36.4 | 40.0 | 45.4 | 50.9 | 56.5 | 62.5 | | | | | | | |
| 3,500 | 33.7 | 41.1 | 43.5 | 47.8 | 54.1 | 60.4 | 67.1 | | | | | | | | |

| Current consumption (for 24V applications the following must be halved) | | | | | | | | | | | | 12V DC, static cooling | | watt | |
|---|------|------|-------|------|------|------|------|------|------|------|------|------------------------|--|------|--|
| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 | | | |
| 2,000 | 1.48 | 1.80 | 1.91 | 2.12 | 2.43 | 2.74 | 3.04 | 3.35 | 3.65 | 3.79 | 3.97 | | | | |
| 2,500 | 1.90 | 2.28 | 2.40 | 2.63 | 2.98 | 3.32 | 3.67 | 4.02 | 4.40 | 4.57 | | | | | |
| 3,000 | 2.36 | 2.87 | 3.03 | 3.34 | 3.79 | 4.23 | 4.69 | 5.16 | | | | | | | |
| 3,500 | 2.81 | 3.42 | 3.61 | 3.98 | 4.52 | 5.04 | 5.58 | | | | | | | | |

| COP (EN 12900 Household/CECOMAF) | | | | | | | | | | | | 12V DC, static cooling | | W/W | |
|----------------------------------|------|------|-------|------|------|------|------|------|------|------|------|------------------------|--|-----|--|
| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 | | | |
| 2,000 | 0.75 | 0.97 | 1.04 | 1.17 | 1.36 | 1.56 | 1.76 | 1.97 | 2.18 | 2.28 | 2.41 | | | | |
| 2,500 | 0.73 | 0.93 | 1.00 | 1.12 | 1.33 | 1.54 | 1.76 | 1.99 | 2.23 | 2.34 | | | | | |
| 3,000 | 0.73 | 0.89 | 0.94 | 1.05 | 1.24 | 1.43 | 1.63 | 1.84 | | | | | | | |
| 3,500 | 0.74 | 0.87 | 0.92 | 1.03 | 1.20 | 1.39 | 1.58 | | | | | | | | |

| COP (ASHRAE LBP) | | | | | | | | | | | | 12V DC, static cooling | | W/W | |
|------------------|------|------|-------|------|------|------|------|------|------|------|------|------------------------|--|-----|--|
| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 7.2 | 10 | 15 | | | |
| 2,000 | 0.91 | 1.19 | 1.27 | 1.43 | 1.67 | 1.91 | 2.15 | 2.41 | 2.69 | 2.81 | 2.97 | | | | |
| 2,500 | 0.90 | 1.14 | 1.22 | 1.38 | 1.63 | 1.89 | 2.16 | 2.45 | 2.74 | 2.87 | | | | | |
| 3,000 | 0.89 | 1.08 | 1.15 | 1.29 | 1.51 | 1.75 | 2.00 | 2.26 | | | | | | | |
| 3,500 | 0.90 | 1.07 | 1.13 | 1.26 | 1.47 | 1.70 | 1.94 | | | | | | | | |

| Test conditions with electronic units | | EN 12900/CECOMAF | ASHRAE LBP |
|---------------------------------------|--|------------------|------------|
| Condensing temperature | | 55°C | 54.4°C |
| Ambient temperature | | 32°C | 32°C |
| Suction gas temperature | | 32°C | 32°C |
| Liquid temperature | | no subcooling | 32°C |

| Accessories for BD35K-B | | 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 | |

| 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 with AEO | 173 | 2,000 |
| | 450 | 2,500 |
| | 865 | 3,000 |
| | 1696 | 3,500 |

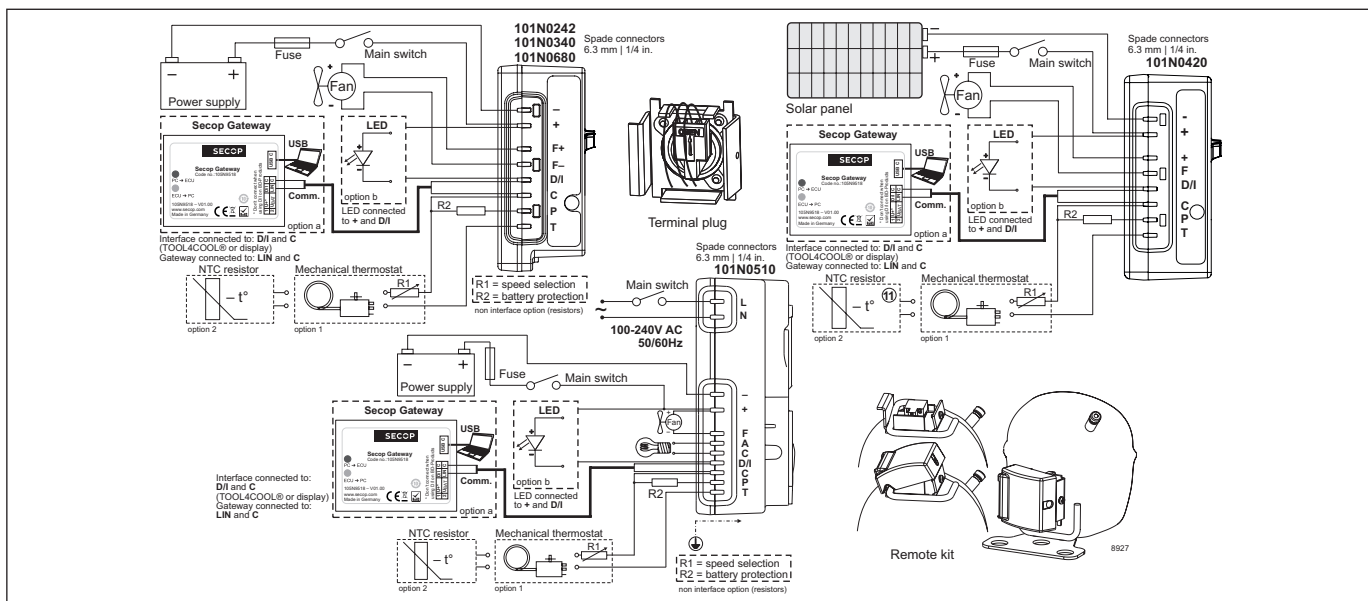
In AEO (Adaptive Energy Optimizing) speed mode the BD compressor will always adapt its speed to the actual cooling demand.

| Wire dimensions DC | | | | | | |
|--------------------|------|-----|----------------------------|---------|----------------------------|-------|
| Cross section | Size | 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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