

BD35F

Direct Current Compressor

R134a

12 - 24V

Data Sheet (Replaces CD.46.A5.02)

General

| | |
|--|------------------------------------|
| Compressor | BD35F |
| Code number: Comp. without electronic unit | 101Z0200 |
| Code number: Electronic unit 12-24V DC | single: 101N0210, 30 pcs: 101N0211 |

Application

| | |
|---|------------------------|
| Application | LBP/MBP/(HBP) |
| Evaporating temperature range °C | -30 to 0 (10) |
| Voltage range / max. voltage | 12 - 24V DC / 31.5V DC |
| Max. machine compartment temperature °C | 55 |
| Comp. cooling at ambient temp. 43°C | S or F ₁ * |

Design

* depending on application

| | | |
|------------------------------------|-----------------|----------|
| Displacement | cm ³ | 2.00 |
| Oil quantity | cm ³ | 150 |
| Maximum refrigerant charge | g | 300 |
| Free gas vol. in compressor | cm ³ | 870 |
| Weight: Compressor/Electronic unit | kg | 4.3/0.25 |

Motor

| | | |
|-----------------------------------|-------------------------|-----|
| Motor type | Variable speed | |
| Resistance, all 3 windings (25°C) | Ω | 2.3 |
| Approvals (electronic unit) | E4 72/245 95/54 0277 00 | |

Dimensions

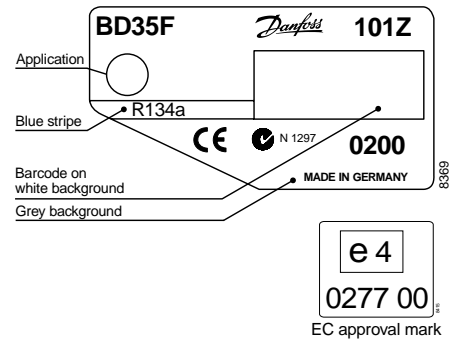
| | | | |
|-------------------------|------------------|----|-----------------|
| Height | mm | A | 137 |
| | | B | 135 |
| | | B1 | 128 |
| | | B2 | 73 |
| Suction connector | location/I.D. mm | C | 6.2 ±0.09 |
| Process connector | location/I.D. mm | D | 6.2 ±0.09 |
| Discharge connector | location/I.D. mm | E | 5.0 +0.12/+0.20 |
| Compressors on a pallet | pcs. | | 120 |

Standard battery protection settings

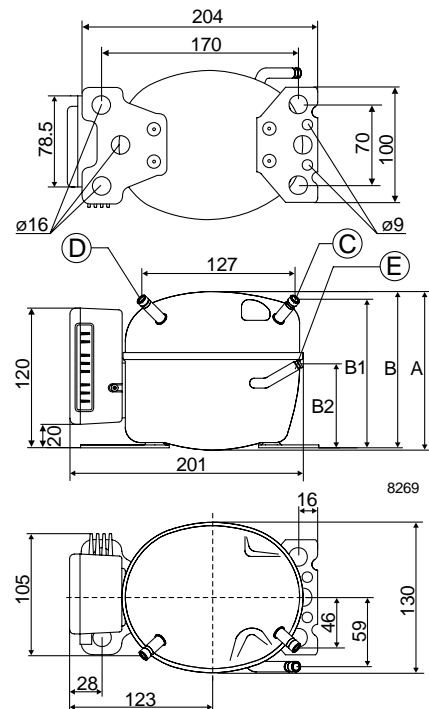
| | | | |
|-----------------|----------------|-----------------|------------------|
| 12V cut-out [V] | 12V cut-in [V] | 24V cut-out [V] | 24V cut - in [V] |
| 10.4 | 11.7 | 22.8 | 24.2 |

Optional battery protection settings

| Resistor (R2) [kΩ] | 12V cut-out [V] | 12V cut-in [V] | 12V max. Voltage | 24V cut-out [V] | 24V cut-in [V] | 24V max. Voltage |
|--------------------|-----------------|----------------|------------------|-----------------|----------------|------------------|
| 0 | 9.6 | 10.9 | 17.0 | 21.3 | 22.7 | 31.5 |
| 1.6 | 9.7 | 11.0 | 17.0 | 21.5 | 22.9 | 31.5 |
| 2.4 | 9.9 | 11.1 | 17.0 | 21.8 | 23.2 | 31.5 |
| 3.6 | 10.0 | 11.3 | 17.0 | 22.0 | 23.4 | 31.5 |
| 4.7 | 10.1 | 11.4 | 17.0 | 22.3 | 23.7 | 31.5 |
| 6.2 | 10.2 | 11.5 | 17.0 | 22.5 | 23.9 | 31.5 |
| 8.2 | 10.4 | 11.7 | 17.0 | 22.8 | 24.2 | 31.5 |
| 11 | 10.5 | 11.8 | 17.0 | 23.0 | 24.5 | 31.5 |
| 14 | 10.6 | 11.9 | 17.0 | 23.3 | 24.7 | 31.5 |
| 18 | 10.8 | 12.0 | 17.0 | 23.6 | 25.0 | 31.5 |
| 24 | 10.9 | 12.2 | 17.0 | 23.8 | 25.2 | 31.5 |
| 33 | 11.0 | 12.3 | 17.0 | 24.1 | 25.5 | 31.5 |
| 47 | 11.1 | 12.4 | 17.0 | 24.3 | 25.7 | 31.5 |
| 82 | 11.3 | 12.5 | 17.0 | 24.6 | 26.0 | 31.5 |
| 220 | 9.6 | 10.9 | | | | 31.5 |



- 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



Capacity (EN 12900/CECOMAF)

watt

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 10 |
|----------|------|------|-------|------|------|------|------|------|-----|-----|
| 2,000 | 15.8 | 23.9 | 26.9 | 33.1 | 43.8 | 56.6 | 71.7 | 89.9 | 111 | 136 |
| 2,500 | 20.2 | 29.9 | 33.5 | 41.2 | 54.6 | 70.7 | 89.7 | 112 | 139 | |
| 3,000 | 22.5 | 32.4 | 36.5 | 45.4 | 61.8 | 81.7 | 105 | 133 | | |
| 3,500 | 26.2 | 35.9 | 40.4 | 50.5 | 69.8 | 93.6 | 122 | | | |

Capacity (ASHRAE)

watt

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 10 |
|----------|------|------|-------|------|------|------|------|-----|-----|-----|
| 2,000 | 19.5 | 29.4 | 33.1 | 40.7 | 54.0 | 69.8 | 88.6 | 111 | 137 | 169 |
| 2,500 | 24.9 | 36.8 | 41.3 | 50.7 | 67.3 | 87.1 | 111 | 139 | 172 | |
| 3,000 | 27.7 | 39.9 | 44.9 | 55.9 | 76.1 | 101 | 130 | 164 | | |
| 3,500 | 32.2 | 44.2 | 49.7 | 62.2 | 86.0 | 115 | 150 | | | |

Power consumption

watt

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 10 |
|----------|------|------|-------|------|------|------|------|------|------|------|
| 2,000 | 17.6 | 23.4 | 25.3 | 28.7 | 33.6 | 38.3 | 43.0 | 48.0 | 53.4 | 59.5 |
| 2,500 | 23.3 | 30.9 | 33.3 | 37.8 | 44.1 | 50.2 | 56.2 | 62.3 | 68.7 | |
| 3,000 | 29.9 | 36.0 | 38.3 | 43.0 | 50.7 | 58.7 | 66.8 | 74.8 | | |
| 3,500 | 36.0 | 42.8 | 45.4 | 50.8 | 59.5 | 68.9 | 78.5 | | | |

Current consumption (for 24V applications the following must be halved)

A

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 10 |
|----------|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|
| 2,000 | 1.5 | 2.0 | 2.1 | 2.4 | 2.8 | 3.2 | 3.6 | 4.0 | 4.5 | 5.0 |
| 2,500 | 1.9 | 2.6 | 2.8 | 3.2 | 3.7 | 4.2 | 4.7 | 5.2 | 5.8 | |
| 3,000 | 2.5 | 3.0 | 3.2 | 3.6 | 4.2 | 4.9 | 5.6 | 6.2 | | |
| 3,500 | 3.0 | 3.6 | 3.8 | 4.3 | 5.0 | 5.7 | 6.5 | | | |

COP (EN 12900/CECOMAF)

W/W

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 10 |
|----------|------|------|-------|------|------|------|------|------|------|------|
| 2,000 | 0.90 | 1.02 | 1.06 | 1.15 | 1.31 | 1.48 | 1.67 | 1.87 | 2.08 | 2.29 |
| 2,500 | 0.87 | 0.97 | 1.01 | 1.09 | 1.24 | 1.41 | 1.60 | 1.80 | 2.02 | |
| 3,000 | 0.75 | 0.90 | 0.95 | 1.06 | 1.22 | 1.39 | 1.58 | 1.78 | | |
| 3,500 | 0.73 | 0.84 | 0.89 | 1.00 | 1.17 | 1.36 | 1.55 | | | |

COP (ASHRAE)

W/W

| rpm \ °C | -30 | -25 | -23.3 | -20 | -15 | -10 | -5 | 0 | 5 | 10 |
|----------|------|------|-------|------|------|------|------|------|------|------|
| 2,000 | 1.10 | 1.25 | 1.31 | 1.42 | 1.61 | 1.82 | 2.06 | 2.31 | 2.57 | 2.84 |
| 2,500 | 1.07 | 1.19 | 1.24 | 1.34 | 1.53 | 1.74 | 1.97 | 2.23 | 2.50 | |
| 3,000 | 0.93 | 1.11 | 1.17 | 1.30 | 1.50 | 1.72 | 1.95 | 2.20 | | |
| 3,500 | 0.89 | 1.03 | 1.09 | 1.23 | 1.44 | 1.68 | 1.91 | | | |

Test conditions

EN 12900/CECOMAF

ASHRAE

Condensing temperature

55°C

55°C

Ambient and suction gas temp.

32°C

32°C

Liquid temperature

55°C

32°C

Static cooling, 12V DC

1 Watt = 0.86 kcal/h

Compressor speed

| Resistor (R1) [Ω] | Motor speed [rpm] | Control circ. Current [mA] |
|-------------------|-------------------|----------------------------|
| 0 | 2,000 | 5 |
| 277 | 2,500 | 4 |
| 692 | 3,000 | 3 |
| 1523 | 3,500 | 2 |

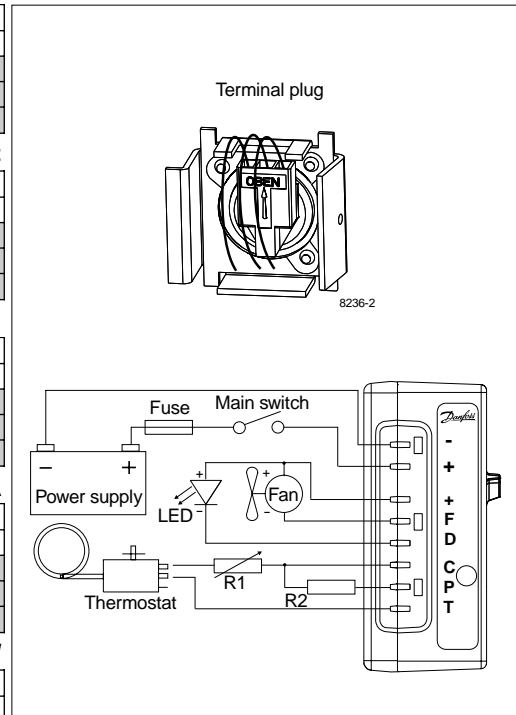
Wire dimensions

| Cross section [mm ²] | Max. length ^{*)} [m] | Max. length ^{*)} [m] |
|----------------------------------|-------------------------------|-------------------------------|
| | 12V operation | 24V operation |
| 2.5 | 2.5 | 5 |
| 4 | 4 | 8 |
| 6 | 6 | 12 |
| 10 | 10 | 20 |

^{*)} Length between battery and electronic unit

Accessories

| Devices | BD35F |
|--|----------------------------------|
| Standard automobile fuse DIN 7258 12V: 15A 24V: 7.5A | Not deliverable from Danfoss |
| Mounting accessories Bolt joint for one compressor Bolt joint in quantities Snap on in quantities | 118-1917 118-1918 118-1919 |



Operational errors shown by LED (optional)

| Number of flashes | Error type |
|-------------------|--|
| 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 | Fan over-current cut-out (The fan loads the electronic unit with more than 1A _{peak}). |
| 1 | Battery protection cut-out (The voltage is outside the cut-out setting). |