

# BD80F

## Direct Current Compressor

### R134a

### 12 - 24V

Data Sheet (Replaces (CD.46.F1.02))

#### Code numbers

BD80F without electronic unit	101Z0280
Electronic unit 12-24V DC - standard	single: 101N0280, 28 pcs: 101N0281

#### Application

Application	LBP
Evaporating temperature range °C	-30 to -5
Voltage range / max. voltage	12 - 24V DC / 31.5V DC
Max. machine compartment temperature °C	43
Comp. cooling at ambient temp. 43°C	S or F <sub>1</sub> *

\* depending on application

#### Design

Displacement	cm <sup>3</sup>	3.00
Oil quantity	cm <sup>3</sup>	150
Maximum refrigerant charge	g	300
Free gas vol. in compressor	cm <sup>3</sup>	870
Weight: Compressor/Electronic unit	kg	4.3/0.3

#### Motor

Motor type	Variable speed	
Resistance, all 3 windings (25°C)	Ω	2.0
Approvals (electronic unit)	E4 72/245 95/54 0277 00	

#### Dimensions

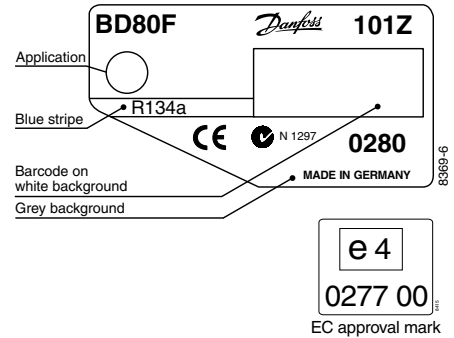
Height	mm	A	137
		B	135
		B1	128
		B2	73
Suction connector	location/I.D. mm	C	6.2 ±0.09
Process connector	location/I.D. mm	D	6.2 ±0.09
Discharge connector	location/I.D. mm	E	5.0 +0.12/+0.20
Compressors on a pallet	pcs.	150	

#### Standard battery protection settings (no connection C - P)

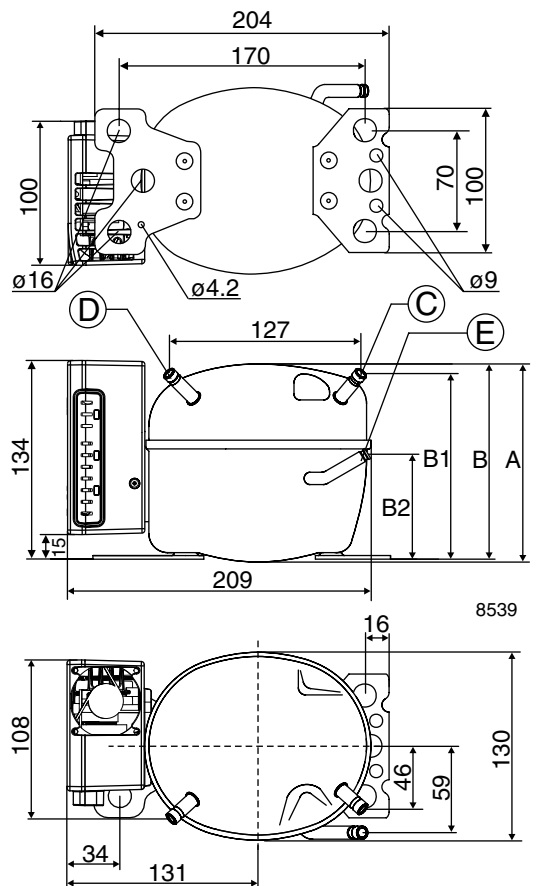
12V cut-out [V]	12V cut-in [V]	24V cut-out [V]	24V cut - in [V]
10.4	11.7	22.8	24.2

#### 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
- F<sub>1</sub> = Fan cooling 1.5 m/s  
(compressor compartment temperature equal to ambient temperature)
- F<sub>2</sub> = Fan cooling 3.0 m/s necessary



### Capacity (EN 12900/CECOMAF)

watt

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5
2,500	35.3	49.5	55.0	66.6	87.1	112	140
3,100	41.8	59.0	65.6	79.6	104	133	168
3,800	49.6	70.5	78.5	95.3	125	159	200
4,400	54.8	78.0	86.7	105	138	176	221

### Capacity (ASHRAE)

watt

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5
2,500	43.5	61.1	67.8	82.2	108	138	174
3,100	51.5	72.8	80.9	98.2	129	165	207
3,800	61.1	87.0	96.8	118	154	197	248
4,400	67.6	96.1	107	130	170	218	274

### Power consumption

watt

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5
2,500	40.0	50.0	53.4	60.3	71.3	83.1	96
3,100	48.7	61.2	65.4	73.8	87.0	101	118
3,800	59.5	75.0	80.2	90.3	106	124	145
4,400	69.0	87.0	93.0	105	123	144	168

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

A

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5
2,500	3.3	4.2	4.5	5.0	5.9	6.9	8.0
3,100	4.1	5.1	5.5	6.1	7.2	8.5	9.8
3,800	5.0	6.3	6.7	7.5	8.9	10.3	12.1
4,400	5.8	7.2	7.7	8.7	10.3	12.0	14.0

### COP (EN 12900/CECOMAF)

W/W

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5
2,500	0.88	0.99	1.03	1.10	1.22	1.34	1.46
3,100	0.86	0.96	1.00	1.08	1.20	1.31	1.42
3,800	0.83	0.94	0.98	1.06	1.17	1.28	1.39
4,400	0.79	0.90	0.93	1.01	1.12	1.22	1.32

### COP (ASHRAE)

W/W

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5
2,500	1.09	1.22	1.27	1.36	1.51	1.66	1.81
3,100	1.06	1.19	1.24	1.33	1.48	1.62	1.76
3,800	1.03	1.16	1.21	1.30	1.45	1.59	1.71
4,400	0.98	1.11	1.15	1.24	1.38	1.51	1.63

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

Fan cooling of electronic unit integrated

1 Watt = 0.86 kcal/h

### Compressor speed

Electronic unit	Resistor (R1) Ω	Motor speed rpm	Contr.circ. current mA
<b>101N0280</b> with AEO	0	AEO	6
	203	2,500	5
	451	3,100	4
	867	3,800	3
	1700	4,400	2

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

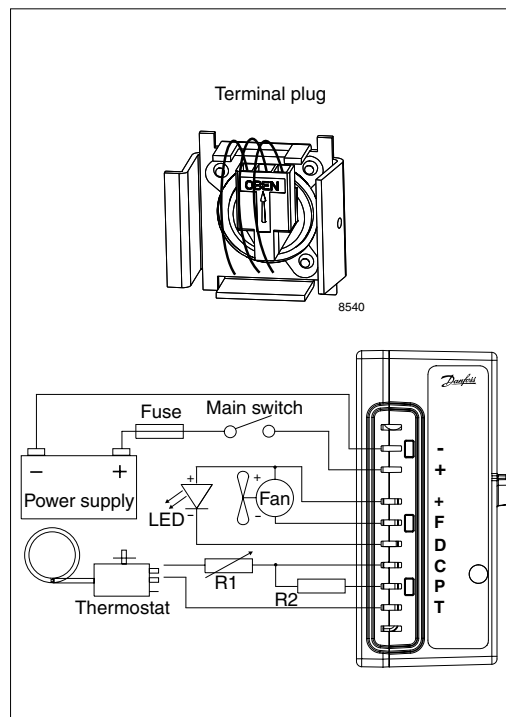
### Wire dimensions

Cross section mm <sup>2</sup>	Max length* m	Max length* m
	12V operation	24V operation
6	2.5	5

\*Length between battery and electronic unit

### Accessories

Devices	BD80F
Standard automobile fuse DIN 7258 12V: 30A 24V: 15A	Not deliverable from Danfoss
Mounting accessories	
Bolt joint for one compressor	118-1917
Bolt joint in quantities	118-1918
Snap on in quantities	118-1919



### Operational errors shown by LED (optional)

Number of flashes	Error type
5	<b>Thermal cut-out of electronic unit</b> (If the refrigeration system has been too heavily loaded, or if the ambient temperature is high, the electronic unit will run too hot).
4	<b>Minimum motor speed error</b> (If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed at approximately 2,450 rpm).
3	<b>Motor start error</b> (The rotor is blocked or the differential pressure in the refrigeration system is too high (>5 bar)).
2	<b>Fan over-current cut-out</b> (The fan loads the electronic unit with more than 1A <sub>peak</sub> ).
1	<b>Battery protection cut-out</b> (The voltage is outside the cut-out setting).