

Datasheets

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

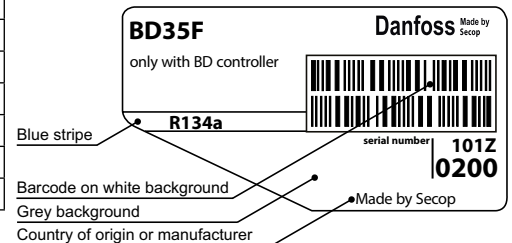
General

Code number (without electronic units)	101Z0200	<b>Approvals</b>
Electronic unit 12/24V DC - Standard	101N0212, 30 pcs: 101N0213	-
Electronic unit 12/24V DC - AEO	101N0340, 30 pcs: 101N0341	UL
Electronic unit 10-45V DC - Solar	101N0420, 30 pcs: 101N0421	-
Electronic unit 12/24V DC & 100-240V AC 50/60Hz	101N0510, 28 pcs: 101N0511	UL / VDE
Electronic unit 12/24V DC - Automotive	101N0650, 30 pcs: 101N0651	UL
Compressors on pallet	150	



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 F <sub>1</sub> depending on application and speed.			

- 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
- 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

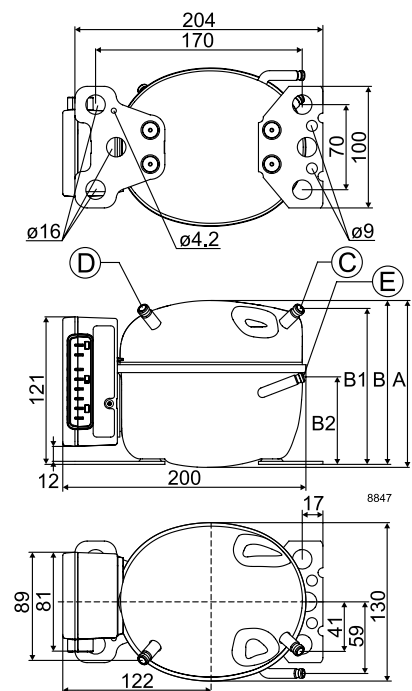
Displacement	cm <sup>3</sup>	2.00
Oil quantity (type)	cm <sup>3</sup>	150 (polyolester)
Maximum refrigerant charge	g	300
Free gas volume in compressor	cm <sup>3</sup>	870
Weight - Compressor/Electronic unit	kg	4.3 / 0.19 (Standard)

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:			





**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	16.0	23.8	26.7	32.9	43.7	56.5	71.8	89.8	111	121	136	
2,500	18.8	29.9	33.9	41.9	55.4	71.1	89.8	112	139	152		
3,000	22.4	32.9	37.1	46.1	62.5	82.2	106	133				
3,500	27.0	35.9	40.2	50.3	69.8	93.9	122					

**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	20.0	29.8	33.4	41.2	54.6	70.6	89.7	112	139	152	169	
2,500	23.6	37.5	42.4	52.4	69.2	88.8	112	140	173	190		
3,000	28.1	41.3	46.5	57.9	78.2	103	132	166				
3,500	33.9	45.1	50.5	63.1	87.3	117	153					

**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	17.7	22.9	24.6	27.7	32.2	36.7	41.3	46.2	51.6	54.3	57.8	
2,500	22.1	29.7	32.0	36.3	42.4	48.1	53.8	59.7	66.1	69.1		
3,000	29.3	34.6	36.7	41.2	48.7	56.5	64.5	72.0				
3,500	34.5	41.3	43.8	48.9	57.3	66.2	75.4					

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

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000	1.4	1.9	2.0	2.3	2.7	3.1	3.4	3.8	4.3	4.5	4.8	
2,500	1.8	2.5	2.7	3.0	3.5	4.0	4.5	5.0	5.5	5.8		
3,000	2.4	2.9	3.1	3.4	4.0	4.7	5.3	6.0				
3,500	2.9	3.4	3.6	4.1	4.8	5.5	6.3					

**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	0.90	1.04	1.09	1.19	1.36	1.54	1.74	1.94	2.15	2.24	2.35	
2,500	0.85	1.01	1.06	1.15	1.31	1.48	1.67	1.88	2.10	2.20		
3,000	0.76	0.95	1.01	1.12	1.28	1.45	1.64	1.85				
3,500	0.78	0.87	0.92	1.03	1.22	1.42	1.62					

**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	1.13	1.30	1.36	1.49	1.70	1.93	2.18	2.44	2.70	2.81	2.95	
2,500	1.07	1.26	1.33	1.45	1.64	1.86	2.10	2.36	2.64	2.77		
3,000	0.96	1.19	1.27	1.41	1.61	1.83	2.06	2.32				
3,500	0.98	1.09	1.15	1.29	1.53	1.78	2.03					

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 BD35F**

Accessories for BD35F	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
One Wire/LIN gateway	105N9501

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 [rpm]	Control circuit current [mA]
101N0212 101N0510 101N0650	0	2,000	5
	277	2,500	4
	692	3,000	3
101N0340 101N0420 with AEO	1523	3,500	2
	0	AEO	6
	173	2,000	5
	450	2,500	4
	865	3,000	3
	1696	3,500	2

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 [mm²]	Size AWG [Gauge]	Max. length* 12V operation		Max. length* 24V operation	
		[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

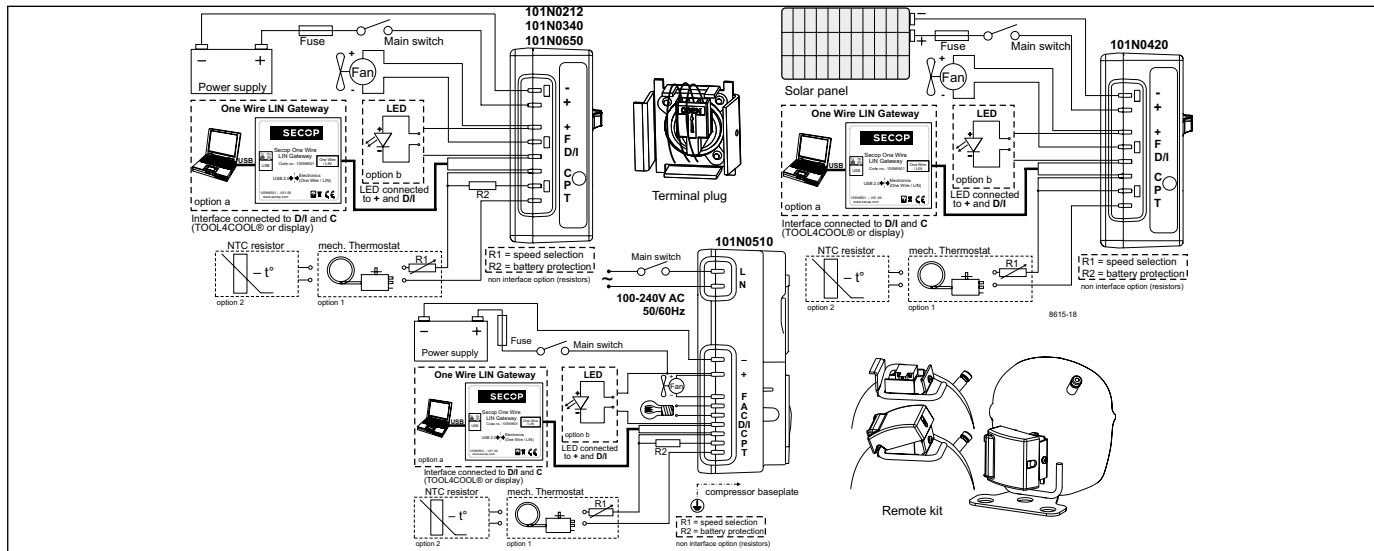
\*Length between battery and electronic unit

**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 <b>TOOL4COOL®</b>
6	<b>Thermostat failure</b> (If the NTC thermistor is short-circuit or has no connection).
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 1,850 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>Too many start attempts or fan over current</b> (Too many compressor or fan starts in short time or fan current higher than 0.5A <sub>avg</sub> ).
1	<b>Battery protection cut-out</b> (The voltage is outside the cut-out setting).



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