

# BD35F

## Direct Current Compressor

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



#### General

Code number (without electronic units)	101Z0204
Electronic unit 12/24V DC - Standard (2nd generation)	101N0212, 30 pcs: 101N0213
Electronic unit 12/24V DC - AEO & EMI	101N0320, 30 pcs: 101N0321
Electronic unit 10-30V DC - Solar	101N0400, 30 pcs: 101N0401
Electronic unit 20-45V DC - Solar	101N0410, 30 pcs: 101N0411
Electronic unit 12/24V DC & 100-240V AC 50/60Hz	101N0500, 36 pcs: 101N0501
Electronic unit 12/24V DC - Automotive	101N0600, 30 pcs: 101N0601
Electronic unit 12/24V DC - Automotive	101N0630, 30 pcs: 101N0631
Electronic unit 12/24V DC - Automotive (2nd generation)	101N0650, 30 pcs: 101N0651
Approved compressor - electronic unit combinations	refer to <i>Instructions</i> for 101N0xxx
Additional approvals	C-Tick
Compressors on pallet	150

#### Application

Application	LBP/MBP/HBP	
Evaporating temperature	°F	-20 to 50
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 - 30 / 20 - 45
Max. condensing temperature continuous (short)	°F	140 (158)
Max. winding temperature continuous (short)	°F	257 (275)

#### 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.			

#### Motor

Motor type	variable speed
Resistance, all 3 windings (25°C)	Ω 2.2

#### Design

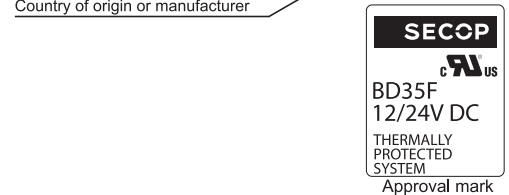
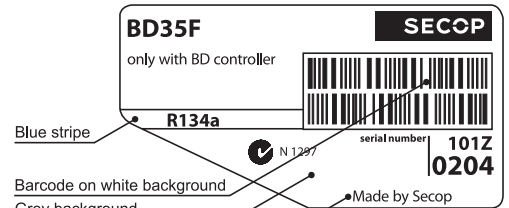
Displacement	cu.in.	0.12
Oil quantity (type)	fl.oz.	5.1 (polyolester)
Maximum refrigerant charge	oz.	10.5
Free gas volume in compressor	fl.oz.	29.6
Weight - Compressor/Electronic unit	lbs.	9.5 / 0.42 (Standard)

#### Standard battery protection settings (refer to 101N0xxx *Instructions* for optional settings)

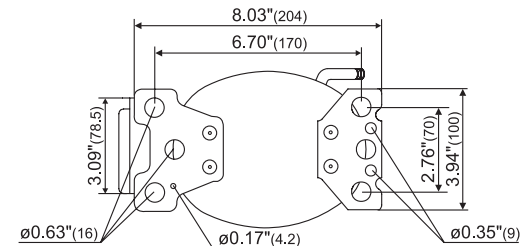
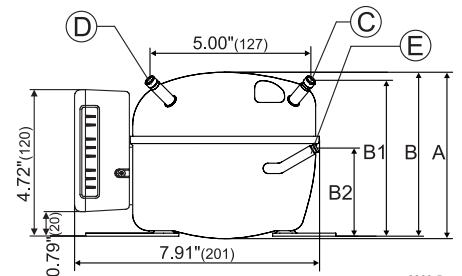
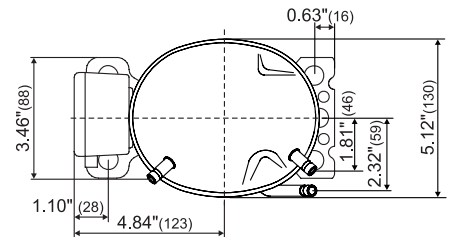
Voltage	12V	24V
Cut out	VDC 10.4	22.8
Cut in	VDC 11.7	24.2

#### Dimensions

Height	inch	A	5.39
		B	5.32
		B1	5.04
		B2	2.87
Suction connector	location/I.D. inch   angle	C	0.252-0.259   40°
	material   comment		Cu-plated steel   Al cap
Process connector	location/I.D. inch   angle	D	0.252-0.259   45°
	material   comment		Cu-plated steel   Al cap
Discharge connector	location/I.D. inch   angle	E	0.202-0.205   21°
	material   comment		Cu-plated steel   Al cap
Remarks: <b>inch connectors</b>			



- 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



Capacity (ASHRAE LBP)		12V DC, static cooling										BTU/h
rpm \ °F	-20	-13	-10	0	10	14	20	30	40	41	45	50
2,000	75.2	101	114	160	215	241	283	364	462	472	517	577
2,500	90.9	128	144	203	272	303	354	455	577	591	649	
3,000	105	141	158	226	311	350	415	539	685			
3,500	122	154	172	249	352	400	479	626				

Capacity (EN 12900 Household/CECOMAF)		12V DC, static cooling										watt
rpm \ °F	-20	-13	-10	0	10	14	20	30	40	41	45	50
2,000	17.7	23.8	26.7	37.4	50.5	56.5	66.4	85.5	108	111	121	136
2,500	21.3	29.9	33.8	47.6	63.8	71.1	83.2	107	136	139	152	
3,000	24.5	32.9	37.0	53.0	73.0	82.2	97.4	127	161			
3,500	28.5	35.9	40.1	58.4	82.6	93.9	112	147				

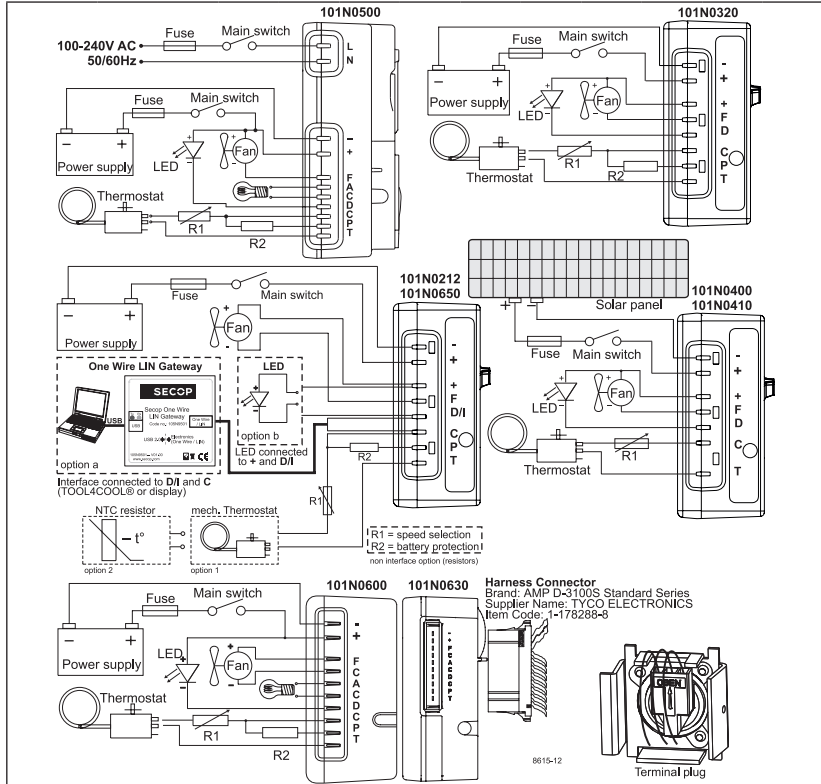
Power consumption		12V DC, static cooling										watt
rpm \ °F	-20	-13	-10	0	10	14	20	30	40	41	45	50
2,000	19.0	22.9	24.5	29.6	34.6	36.5	39.5	44.8	50.7	51.4	54.0	57.5
2,500	23.9	29.7	31.9	39.0	45.4	47.9	51.6	58.0	65.0	65.7	68.8	
3,000	30.4	34.6	36.6	44.3	52.8	56.3	61.5	70.0	77.6			
3,500	36.0	41.3	43.7	52.5	62.0	65.9	72.0	82.2				

Current consumption (for 24V applications the following must be halved)												A
rpm \ °F	-20	-13	-10	0	10	14	20	30	40	41	45	50
2,000	1.51	1.87	2.02	2.47	2.89	3.05	3.30	3.73	4.20	4.25	4.46	4.74
2,500	1.99	2.47	2.66	3.25	3.79	4.00	4.31	4.84	5.42	5.48	5.74	
3,000	2.49	2.88	3.05	3.70	4.39	4.67	5.10	5.81	6.49			
3,500	2.99	3.42	3.63	4.36	5.15	5.48	5.99	6.85				

EER (ASHRAE LBP)		12V DC, static cooling										BTU/Wh
rpm \ °F	-20	-13	-10	0	10	14	20	30	40	41	45	50
2,000	3.97	4.42	4.63	5.38	6.23	6.59	7.15	8.12	9.10	9.20	9.58	10.05
2,500	3.80	4.31	4.51	5.21	5.98	6.32	6.86	7.84	8.89	9.00	9.43	
3,000	3.45	4.06	4.31	5.11	5.89	6.22	6.74	7.70	8.83			
3,500	3.39	3.73	3.93	4.75	5.68	6.07	6.65	7.62				

COP (EN 12900 Household/CECOMAF)		12V DC, static cooling										W/W
rpm \ °F	-20	-13	-10	0	10	14	20	30	40	41	45	50
2,000	0.93	1.04	1.09	1.26	1.46	1.54	1.67	1.90	2.13	2.15	2.24	2.35
2,500	0.89	1.01	1.06	1.22	1.40	1.48	1.60	1.83	2.08	2.10		
3,000	0.81	0.95	1.01	1.19	1.38	1.45	1.58	1.80	2.06			
3,500	0.79	0.87	0.92	1.11	1.33	1.42	1.55	1.78				

Test conditions with electronic units		EN 12900/CECOMAF	ASHRAE LBP
Condensing temperature	101N0212 101N0650	131°F	130°F
Ambient temperature		90°F	90°F
Suction gas temperature		90°F	90°F
Liquid temperature		no subcooling	90°F



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>Fan over-current cut-out</b> (The fan loads the electronic unit with more than 0.5A <sub>avg</sub> ).
1	<b>Battery protection cut-out</b> (The voltage is outside the cut-out setting).

Compressor speed			
Electronit unit	Resistor (R1) [Ω]	Motor speed [rpm]	Control circuit current [mA]
Code number	calculated values		
101N0212	0	2,000	5
101N0500	277	2,500	4
101N0600	692	3,000	3
101N0630	1523	3,500	2
101N0650			
	0	AEO	6
101N0320	173	2,000	5
101N0400	450	2,500	4
101N0410	865	3,000	3
with AEO	1696	3,500	2

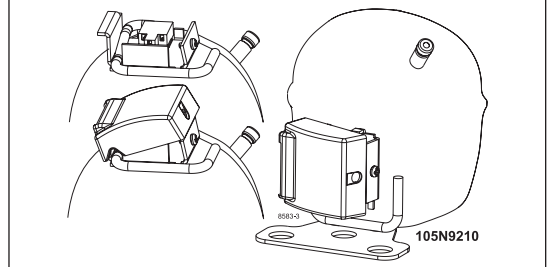
In AEO (Adaptive Energy Optimizing) speed mode the BD compressor will always adapt its speed to the actual cooling demand.

Wire Dimensions DC					
Cross section [mm²]	Size AWG [Gauge]	Max. length* 12V operation [m]		Max. length* 24V operation [m]	
		[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 an electronic unit

**Wire Dimensions AC**  
Cross section min. 0.75 mm² or AWG 18

Accessories for BD35F	Code number
Bolt joint for one comp. Ø: 5/8 in.	118-1917
Bolt joint in quantities Ø: 5/8 in.	118-1918
Snap-on in quantities Ø: 5/8 in.	118-1919
Remote kit (without cable)	105N9210



DC usage:	Automobile fuse 12V: 15A	Not deliverable from Secop
	DIN 7258 24V: 7.5 A	
AC usage:	Main switch min. 20A	
	Fuse, 100-240V min. 4A	

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