

# BD50F

## Direct Current Compressor

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

# SECOP

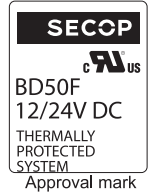


#### General

Code number (without electronic units)	101Z0203
Electronic unit 12/24V DC - Standard	101N0212, 30 pcs: 101N0213
Electronic unit 12/24V DC - AEO	101N0340, 30 pcs: 101N0341
Electronic unit 12/24V DC & 100-240V AC 50/60Hz	101N0510, 28 pcs: 101N0511
Electronic unit 12/24V DC - Automotive	101N0650, 30 pcs: 101N0651
Compressors on pallet	150

#### Approvals

-
UL
UL / VDE
UL



#### 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
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	F <sub>1</sub>
38°C	S	S	F <sub>1</sub>
43°C	S	S	F <sub>1</sub>

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 1.8

#### Design

Displacement	cu.in.	0.15
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)

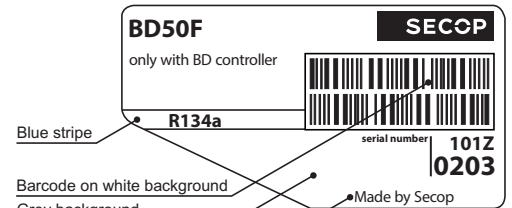
#### Standard battery protection settings (refer to electronic unit Instructions for optional settings)

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

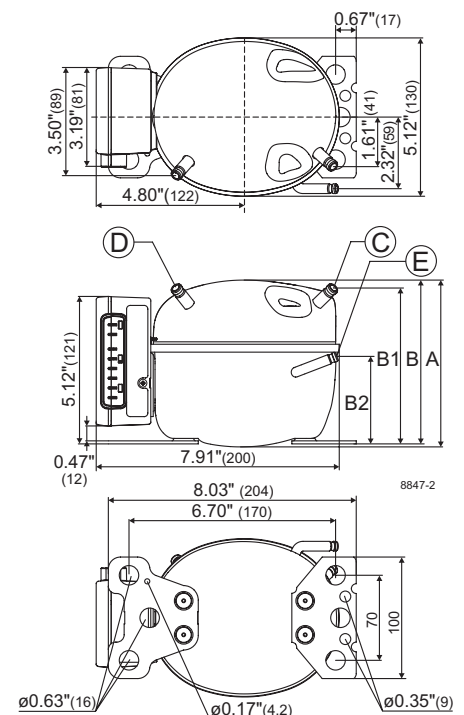
#### Dimensions

Height	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: **inch connectors**



- 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	96	127	142	202	274	307	360	459	572	584*	633*	698*
2,500	119	156	174	245	334	375	442	572	724	741*	810*	
3,000	143	189	211	297	403	452	531	682	858*			
3,500	168	219	244	342	464	520*	613*	792*				

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	22.8	30.1	33.7	47.8	65.1	72.8	85.4	109	135	138*	150*	165*
2,500	28.2	37.0	41.3	58.1	79.1	88.7	105	135	171	175*	191*	
3,000	33.9	44.8	50.1	70.5	95.6	107	126	161	203*			
3,500	40.0	52.0	57.9	81.0	110	123*	145*	187*				

Power consumption		12V DC, static cooling										watt
rpm \ °F	-20	-13	-10	0	10	14	20	30	40	41	45	50
2,000	26.4	31.4	33.5	40.5	47.4	50.3	54.8	63.0	72.2	73.2*	77.3*	82.8*
2,500	32.8	39.5	42.3	51.7	60.9	64.6	70.2	79.6	89.3	90.3*	94.4*	
3,000	39.9	48.0	51.4	62.5	73.2	77.5	84.0	95.0	107*			
3,500	47.7	56.7	60.5	72.9	85.4	90.6*	98.7*	113*				

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	2.19	2.58	2.76	3.37	4.01	4.29	4.70	5.43	6.20	6.28*	6.60*	7.01*
2,500	2.76	3.25	3.47	4.23	5.03	5.36	5.86	6.69	7.51	7.59*	7.91*	
3,000	3.38	3.99	4.26	5.16	6.08	6.46	7.03	7.99	8.98*			
3,500	4.04	4.69	4.98	6.00	7.09	7.55*	8.27*	9.51*				

EER (ASHRAE LBP)		12V DC, static cooling										BTU/W/h
rpm \ °F	-20	-13	-10	0	10	14	20	30	40	41	45	50
2,000	3.64	4.04	4.24	4.98	5.78	6.10	6.57	7.29	7.92	7.98*	8.19*	8.43*
2,500	3.64	3.96	4.12	4.75	5.49	5.80	6.30	7.18	8.11	8.20*	8.58*	
3,000	3.58	3.93	4.10	4.76	5.51	5.82	6.32	7.18	8.06*			
3,500	3.53	3.86	4.03	4.69	5.43	5.74*	6.21*	6.99*				

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	0.86	0.95	1.00	1.17	1.36	1.43	1.54	1.71	1.86	1.87*	1.92*	1.97*
2,500	0.86	0.94	0.97	1.12	1.29	1.37	1.48	1.69	1.90	1.92*	2.01*	
3,000	0.85	0.93	0.97	1.12	1.30	1.37	1.49	1.68	1.89*			
3,500	0.84	0.92	0.95	1.11	1.28	1.35*	1.46*	1.64*				

\* fan cooling of electronic unit compulsory

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

Accessories for BD50F		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
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
Code number	calculated values	[rpm]
101N0212	0	2,000
101N0510	277	2,500
101N0650	692	3,000
	1523	3,500
101N0340 with AEO	0	AEO
	173	2,000
	450	2,500
	865	3,000
	1696	3,500

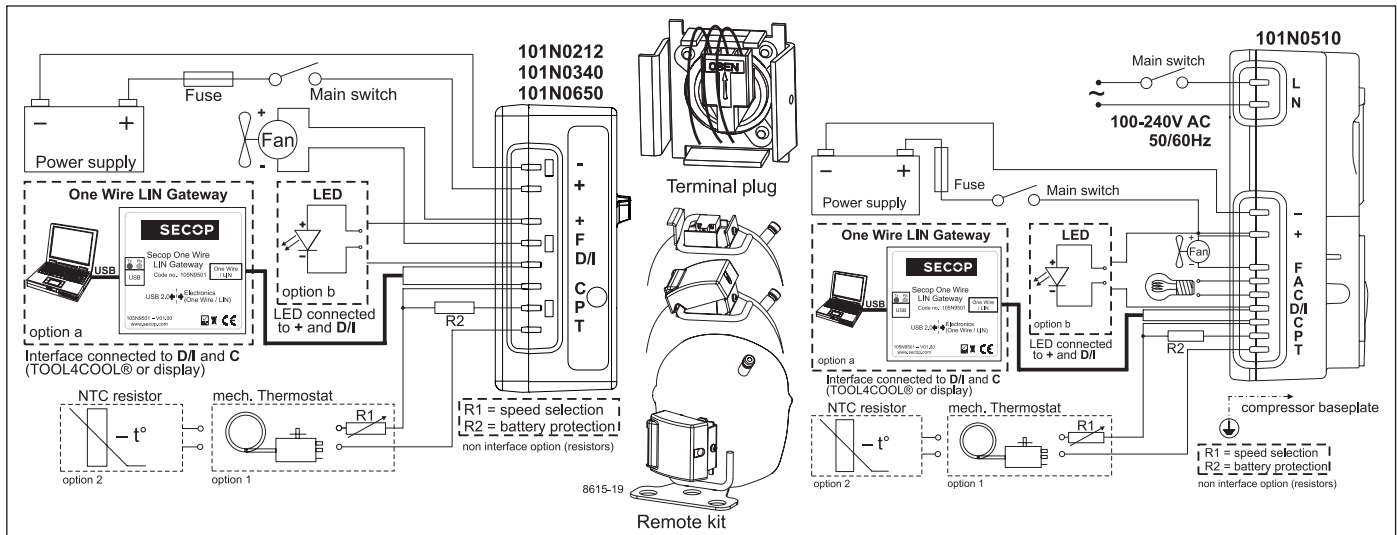
In AEO (Adaptive Energy Optimizing) speed mode the BD compressor will always adapt its speed to the actual cooling demand.

Wire dimensions DC						
Cross section	Size		Max. length* 12V operation		Max. length* 24V operation	
	[mm²]	[Gauge]	[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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