

BD50F Direct Current Compressor R134a, 12/24V DC & 100-240V AC 50/60Hz



General

Code number (without electronic units)	101Z1220
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 12/24V DC - AEO & High Start	101N0330, 30 pcs: 101N0331
Electronic unit 12/24V DC & 100-240V AC 50/60Hz	101N0500, 36 pcs: 101N0501
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	°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	
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	F ₁
38°C	S	S	F ₁
43°C	S	S	F ₁

Remarks on application: Fan cooling F₁ depending on application and speed.

Motor

Motor type	variable speed	
Resistance, all 3 windings (25°C)	Ω	1.8

Design

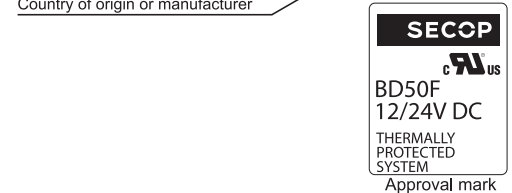
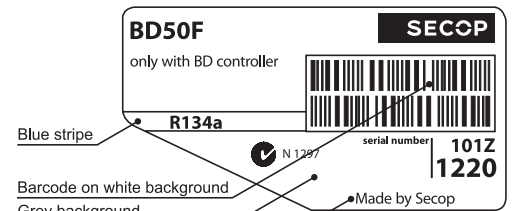
Displacement	cm ³	2.50
Oil quantity (type)	cm ³	150 (polyolester)
Maximum refrigerant charge	g	300
Free gas volume in compressor	cm ³	870
Weight - Compressor/Electronic unit	kg	4.3 / 0.19 (Standard)

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

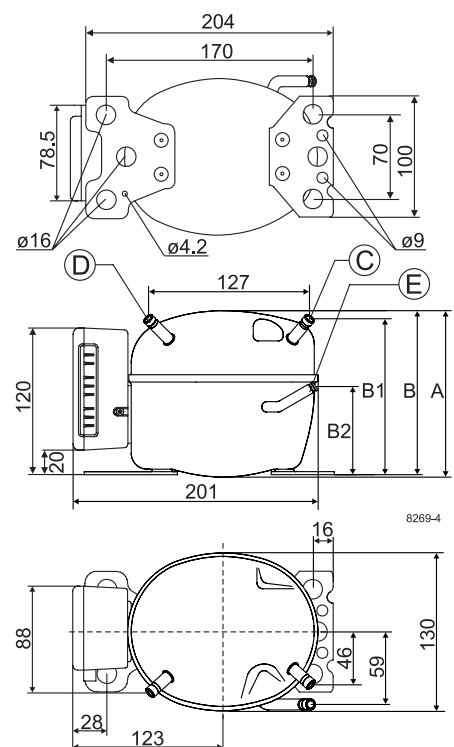
Voltage	12V	24V	
Cut out	VDC	10.4	22.8
Cut in	VDC	11.7	24.2

Dimensions

Height	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:			



- 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
- SG = Suction gas cooling normally sufficient
- = not applicable in this area



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	20.9	30.1	33.8	41.8	56.1	72.8	92.1	114	138*	150*	165*				
2,500	26.1	37.0	41.4	50.9	68.0	88.7	113	142*	175*	191*					
3,000	31.2	44.8	50.2	61.8	82.4	107	136*	169*							
3,500	37.0	52.0	58.0	71.1	94.7	123*	157*								

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	25.9	37.2	41.8	51.7	69.3	90.0	114	141	171*	185*	205*				
2,500	32.3	45.9	51.3	63.1	84.3	110	140	176*	217*	237*					
3,000	38.5	55.4	62.0	76.4	102	132	168*	210*							
3,500	45.5	64.2	71.6	87.8	117	152*	194*								

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	25.0	31.6	33.8	38.0	44.3	50.8	57.7	65.3	73.8*	77.9*	83.5*				
2,500	30.7	39.5	42.4	48.0	56.5	64.9	73.4	82.0*	90.9*	94.9*					
3,000	37.4	48.1	51.6	58.3	68.3	78.1	87.9*	98.0*							
3,500	45.0	56.8	60.7	68.2	79.5	91.2*	104*								

Power consumption is limited to 100W with electronic unit 101N0500.

Current consumption (for 24V applications the following must be halved)												A	
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15	
2,000	2.07	2.58	2.76	3.12	3.70	4.31	4.94	5.62	6.32*	6.64*	7.05*		
2,500	2.62	3.24	3.47	3.92	4.63	5.38	6.13	6.88*	7.63*	7.95*			
3,000	3.20	3.99	4.27	4.80	5.63	6.48	7.34*	8.23*					
3,500	3.86	4.70	4.99	5.60	6.56	7.58*	8.67*						

COP (EN 12900 Household/CECOMAF)												W/W	
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15	
2,000	0.84	0.95	1.00	1.10	1.27	1.43	1.60	1.74	1.87*	1.92*	1.97*		
2,500	0.85	0.94	0.98	1.06	1.20	1.37	1.54	1.73*	1.92*	2.01*			
3,000	0.83	0.93	0.97	1.06	1.21	1.37	1.54*	1.72*					
3,500	0.82	0.92	0.96	1.04	1.19	1.35*	1.51*						

COP (ASHRAE LBP)												W/W	
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15	
2,000	1.04	1.19	1.25	1.37	1.58	1.79	1.99	2.18	2.34*	2.40*	2.47*		
2,500	1.05	1.16	1.21	1.32	1.50	1.70	1.93	2.16*	2.41*	2.52*			
3,000	1.03	1.15	1.21	1.32	1.50	1.71	1.93*	2.16*					
3,500	1.01	1.13	1.18	1.29	1.48	1.68*	1.89*						

power consumption is limited to 100W with 101N0500 * fan cooling of electronic unit compulsory

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

Error code or LED flashes	Error type
	Can be read out in the software TOOL4COOL®
6	Thermostat failure (If the NTC thermistor is short-circuit or has no connection).
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 0.5A _{avg}).
1	Battery protection cut-out (The voltage is outside the cut-out setting).

Compressor speed			
Electronit unit	Resistor (R1) [Ω]	Motor speed	Control circuit current [mA]
Code number	calculated values	[rpm]	
101N0212 101N0500 101N0650	0	2,000	5
	277	2,500	4
	692	3,000	3
101N0320 101N0330 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

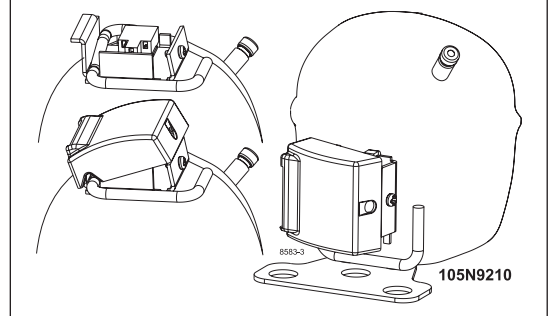
In AEO (Adaptive Energy Optimizing) speed mode the BD compressor will always adapt its speed to the actual cooling demand.

Wire Dimensions DC						
Cross section	Size		Max. length* 12V operation		Max. length* 24V operation	
	[mm²]	AWG	[m]	[ft.]	[m]	[ft.]
2.5	12	12	2.5	8	5	16
4	12	12	4	13	8	26
6	10	10	6	20	12	39
10	8	8	10	33	20	66

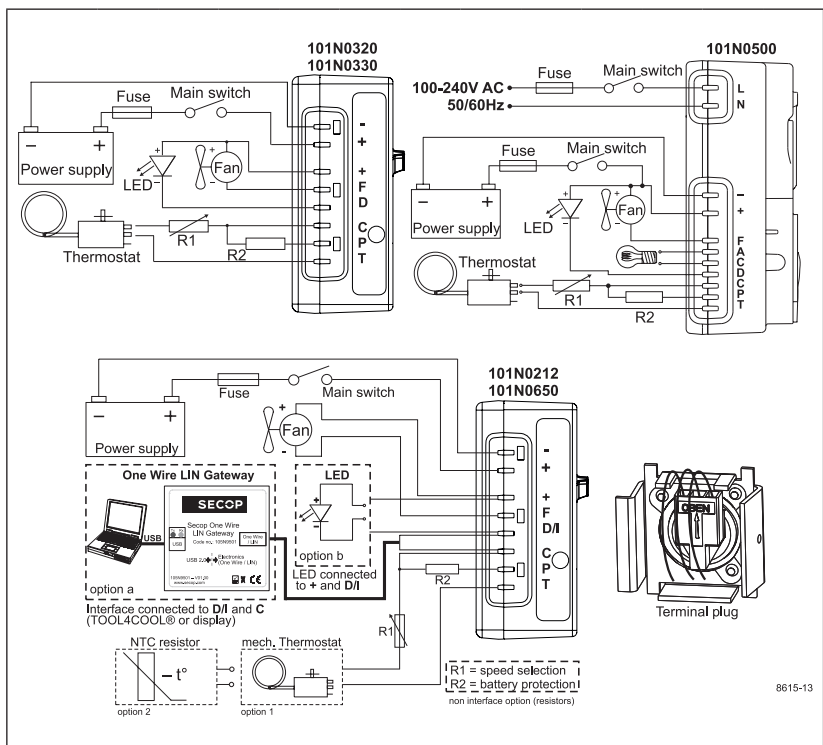
*Length between battery and electronic unit

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

Accessories for BD50F	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



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	
	Main switch min. 6A	



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