

## BD1.4F-VSD.2 Direct Current Compressor R134a, 12/24V DC & 100-240V AC 50/60Hz



### General

Code number (without electronic units)	109Z0206
Electronic unit - Variable Speed	101N2100, 30 pcs: 101N2101
Electronic unit - Variable Speed w. AC/DC converter	101N5100, 24 pcs: 101N5101
Approvals	UL
Compressors on pallet	180

### Application

Application		LBP/MBP/HBP
Evaporating temperature	°F	-20 to 59
Voltage range DC	VDC	9.6 - 17 / 19 - 34
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	S
38°C	S	S	S
43°C	S	S	S

Remarks on application:

**New generation with optimized noise level during rough vehicle motions.**

### Motor

Motor type		permanet magnet, brushless DC
Speed		variable speed
Resistance, all 3 windings (25°C)	mΩ	210

### Design

Displacement	cu.in.	0.086
Oil quantity (type)	fl.oz.	2.64 (polyolester)
Maximum refrigerant charge	oz.	5.29
Free gas volume in compressor	fl.oz.	17.60
Weight - Compressor/Electronic unit	lbs.	4.63 / 0.24 (DC) / 0.64 (AC/DC)

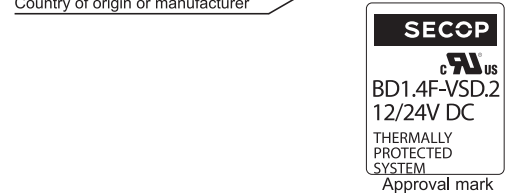
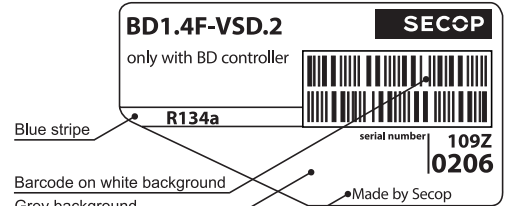
**Standard battery protection settings** (refer to 101N2100/5100 Instructions for optional settings)

Voltage (0.1 steps)			Min. value	Default	Max. value	
12V	± 0.3V DC, all values	Cut out	VDC	9.6	10.4	17
		Cut in diff.	VDC	0.5	1.3	10
24V	± 0.3V DC, all values	Cut out	VDC	19	21.3	27
		Cut in diff.	VDC	0.5	1.3	10

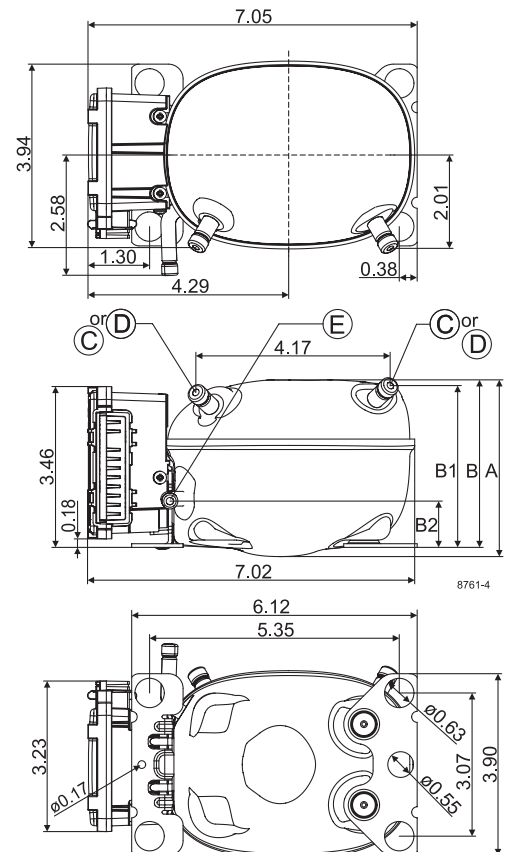
### Dimensions

Height	inch	A	3.79
		B	3.59
		B1	3.46
		B2	0.99
Suction connector	location/I.D. inch   angle	C	0.252-0.259   25°
	material   comment		Cu-plated steel   Al cap
Process connector	location/I.D. inch   angle	D	0.252-0.259   25°
	material   comment		Cu-plated steel   Al cap
Discharge connector	location/I.D. inch   angle	E	0.202-0.205   0°
	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	41	45	50	59
2,000		41	48	78	115	133	162	218	294	325	366	450
2,500	32	57	67	107	154	175	210	278	370	409	461	569
3,000	52	80	92	138	192	216	257	337	447	493	556	685
3,500	51	89	106	164	229	258	306	400	528	582	656	809
4,000	67	105	122	185	260	295	352	462	611	673	757	928

Capacity (EN 12900 Household/CECOMAF)		12V DC, static cooling										watt
rpm \ °F	-20	-13	-10	0	10	14	20	30	41	45	50	59
2,000		10	12	19	28	32	39	52	70	77	87	107
2,500	9	16	19	31	45	51	61	80	105	116	130	159
3,000	14	22	26	39	55	62	74	97	127	140	157	192
3,500	11	24	30	48	68	76	90	116	149	163	181	219
4,000	21	32	36	54	75	85	100	130	170	186	209	253

Power consumption		12V DC, static cooling										watt
rpm \ °F	-20	-13	-10	0	10	14	20	30	41	45	50	59
2,000		14	15	19	24	26	29	35	40	41	43	44
2,500	19	21	22	25	29	31	34	38	42	43	44	45
3,000	22	24	26	30	36	38	41	46	51	52	53	54
3,500	25	29	31	37	44	46	50	55	60	62	63	65
4,000	31	36	38	45	51	53	57	63	69	71	74	79

Current consumption (for 24V applications the following must be halved)		A										
rpm \ °F	-20	-13	-10	0	10	14	20	30	41	45	50	59
2,000		1.31	1.39	1.65	1.90	2.00	2.15	2.41	2.71	2.82	2.96	3.23
2,500	1.51	1.62	1.68	1.95	2.28	2.42	2.63	2.96	3.25	3.33	3.40	3.45
3,000	1.78	1.97	2.06	2.40	2.76	2.91	3.14	3.49	3.82	3.92	4.03	4.17
3,500	1.95	2.25	2.38	2.85	3.32	3.51	3.78	4.20	4.58	4.69	4.81	4.95
4,000	3.17	3.24	3.29	3.56	3.93	4.11	4.38	4.86	5.37	5.55	5.75	6.05

EER (ASHRAE LBP)		12V DC, static cooling										BTU/h
rpm \ °F	-20	-13	-10	0	10	14	20	30	41	45	50	59
2,000		2.88	3.19	4.06	4.78	5.06	5.49	6.29	7.39	7.88	8.58	10.17
2,500	1.88	2.95	3.33	4.32	5.09	5.38	5.83	6.66	7.79	8.29	9.00	10.57
3,000	2.73	3.55	3.82	4.54	5.16	5.42	5.84	6.68	7.89	8.43	9.19	10.90
3,500	2.09	3.14	3.49	4.42	5.18	5.49	5.96	6.84	8.01	8.50	9.18	10.60
4,000	2.36	3.09	3.36	4.19	5.00	5.34	5.87	6.83	8.03	8.51	9.15	10.40

COP (EN 12900 Household/CECOMAF)		12V DC, static cooling										W/W
rpm \ °F	-20	-13	-10	0	10	14	20	30	41	45	50	59
2,000		0.69	0.77	0.97	1.14	1.21	1.31	1.50	1.76	1.88	2.04	2.42
2,500	0.45	0.77	0.89	1.23	1.52	1.62	1.79	2.09	2.50	2.68	2.94	3.53
3,000	0.62	0.90	1.00	1.29	1.54	1.64	1.80	2.10	2.52	2.70	2.96	3.55
3,500	0.46	0.83	0.96	1.29	1.56	1.66	1.81	2.10	2.48	2.64	2.87	3.35
4,000	0.67	0.88	0.96	1.21	1.48	1.58	1.76	2.07	2.46	2.61	2.82	3.22

### Operational errors (TOOL4COOL® or LED flashes)

Error code or LED flashes	Error type
	Can be read out in the software TOOL4COOL®
6	<b>Thermostat failure</b> (If the NTC thermistor is short-circuit or has no connection, the electronic unit will enter manual mode).
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 0.65A <sub>peak</sub> ).
1	<b>Battery protection cut-out</b> (The voltage is outside the cut-out setting).

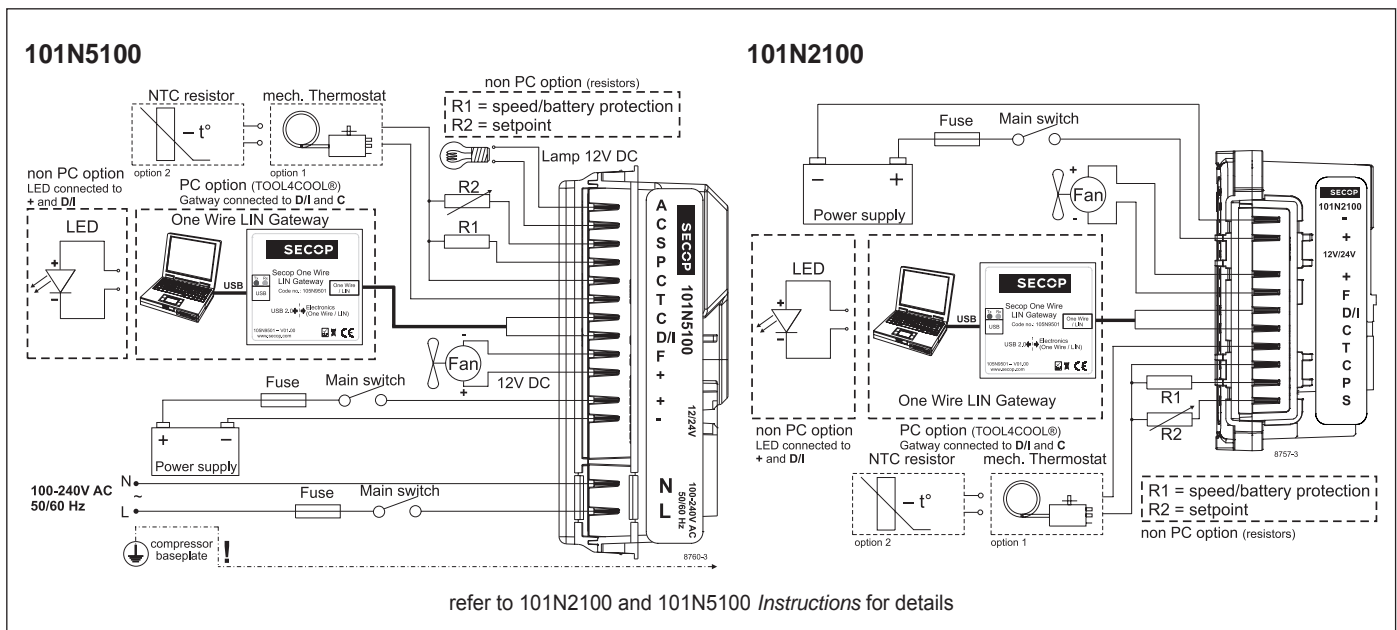
### Wire Dimensions DC

Size	Cross section [mm <sup>2</sup> ]	AWG [Gauge]	Max. length* 12V operation		Max. length* 24V operation	
			[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

Accessories for BD1.4F-VSD	Code number
Bolt joint for one compressor	Ø:16 mm 118-1917
Bolt joint in quantities	Ø:16 mm 118-1918
Snap-on in quantities	Ø:16 mm 118-1919
Terminal cover for electronic unit	105N9120
Automobile fuse DIN 7258	12V: 15A 24V: 15A
Main switch	min. 20A Not deliverable from Secop

Test conditions	EN 12900 CECOMAF	ASHRAE LBP
Condensing temperature	131°F	130°F
Ambient temperature	90°F	90°F
Suction gas temperature	90°F	90°F
Liquid temperature	no subcooling	90°F



refer to 101N2100 and 101N5100 Instructions for details

Nidec GA Compressors accepts no responsibility for possible errors in catalogs, brochures, and other printed material. Nidec GA Compressors reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without consequential changes being necessary to specifications already agreed. All trademarks in this material are the property of the respective companies. Secop and the Secop logotype are trademarks of Nidec Global Appliance Germany GmbH. All rights reserved. [www.secop.com](http://www.secop.com)