

BD35F.2 Direct Current Compressor R134a, R1234yf 12/24V DC

General

Code number (without electronic unit)	101Z0700
Electronic unit 12/24V DC	101N0226, 30 pcs: 101N0227
Compressors on pallet	150

Approvals

R134a/R1234yf
UL pending



Application

Application	LBP/MBP
Evaporating temperature °C	-30 to 0 (10)
Voltage range VDC	9.6 - 17 / 21.3 - 31.5
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	–
38°C	S	S	–
43°C	S	S	–
Remarks on application:			

Motor

Motor type	variable speed
Resistance, all 3 windings (25°C) Ω	0.12

Design

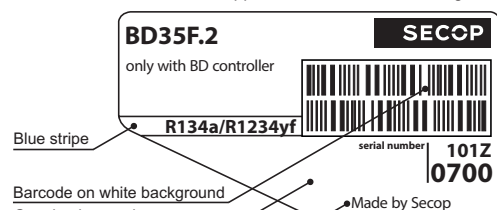
Displacement cm³	2.00
Oil quantity (type) cm³	150 (polyolester)
Maximum refrigerant charge g	300
Free gas volume in compressor cm³	870
Weight - Compressor/Electronic unit kg	4.05 / 0.14

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

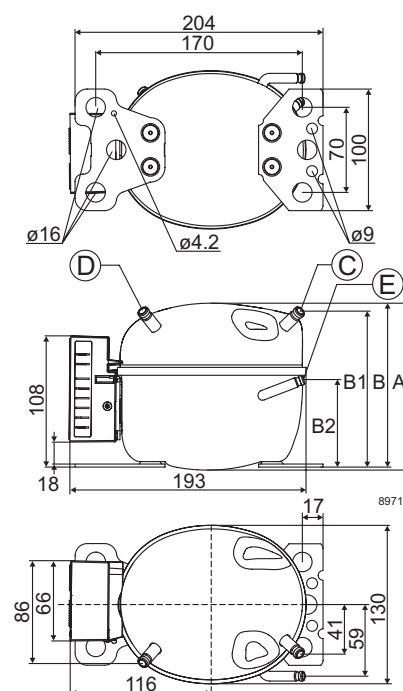
Voltage	12V	24V
Cut out VDC	10.4	22.8
Cut in VDC	11.7	24.2

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:			



- 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



Performance Data with Refrigerant R134a

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	29.7	33.4	41.1	54.6	70.6	89.6	112	138	151	169		
2,500	23.6	37.5	42.4	52.4	69.1	88.7	112	140	173	190			
3,000	28.1	41.2	46.5	57.8	78.1	103	132	166					
3,500	33.9	45.2	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	18.5	24.0	25.8	29.0	33.7	38.4	43.2	48.4	54.1	56.8	60.6		
2,500	23.2	31.1	33.6	38.1	44.4	50.4	56.3	62.5	69.2	72.4			
3,000	30.7	36.2	38.5	43.2	51.0	59.2	67.5	75.4					
3,500	36.1	43.2	45.8	51.3	60.0	69.4	79.0						

Current consumption (for 12V applications the following must be doubled)												A	
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15	
2,000	1.55	2.00	2.15	2.42	2.81	3.20	3.60	4.03	4.51	4.74	5.05		
2,500	1.93	2.59	2.80	3.17	3.70	4.20	4.69	5.21	5.77	6.03			
3,000	2.55	3.02	3.21	3.60	4.25	4.93	5.63	6.28					
3,500	3.01	3.60	3.82	4.27	5.00	5.78	6.58						

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	0.86	0.99	1.04	1.13	1.29	1.47	1.66	1.86	2.05	2.14	2.24		
2,500	0.81	0.96	1.01	1.10	1.25	1.41	1.59	1.79	2.01	2.10			
3,000	0.73	0.91	0.96	1.07	1.23	1.39	1.56	1.76					
3,500	0.75	0.83	0.88	0.98	1.16	1.35	1.55						

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	1.08	1.24	1.30	1.42	1.62	1.85	2.08	2.33	2.57	2.68	2.81		
2,500	1.02	1.21	1.26	1.38	1.56	1.77	2.00	2.25	2.52	2.64			
3,000	0.91	1.14	1.21	1.34	1.54	1.74	1.96	2.21					
3,500	0.94	1.04	1.10	1.23	1.46	1.70	1.94						

Test conditions with electronic unit		EN 12900/CECOMAF	ASHRAE LBP
Condensing temperature	101N0226	55°C	54.4°C
Ambient temperature		32°C	32°C
Suction gas temperature		32°C	32°C
Liquid temperature		no subcooling	32°C

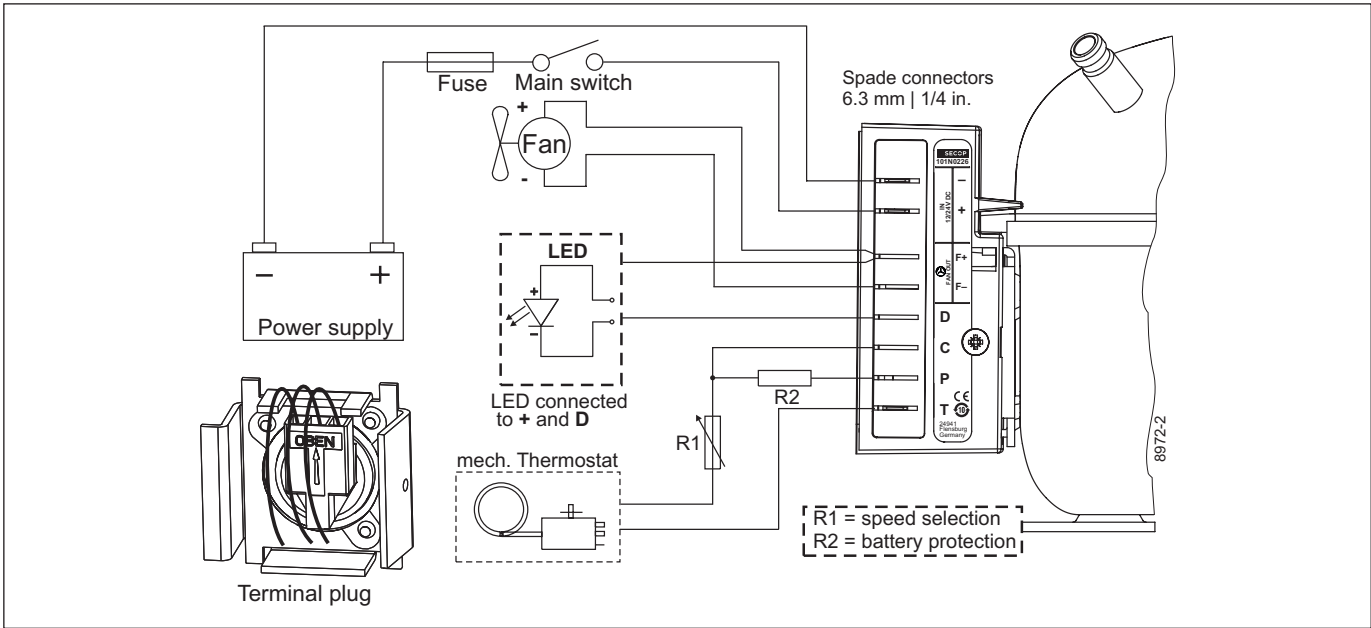
Accessories for BD35F.2		Code number
Bolt joint for one comp.	Ø:16 mm	118-1917
Bolt joint in quantities	Ø:16 mm	118-1918
Snap-on in quantities	Ø:16 mm	118-1919
Automobile fuse, DIN 7258	12V: 15A 24V: 15A	Not deliverable
Main switch	min. 20A	from Secop

Compressor speed		
Electronit unit	Resistor (R1) [Ω]	Motor speed
Code number	calculated values	[rpm]
101N0226	0	2,000
	277	2,500
	692	3,000
	1523	3,500

Wire dimensions		Max. length* 12V operation		Max. length* 24V operation	
Cross section	Size AWG				
[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

Operational errors	
LED flashes	Error type
5	Thermal cut-out of electronic unit (If the refrigeration system has been too heavily loaded, or if the ambient temperature is higher or lower than 10°C, the electronic will cut out).
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	Too many start attempts or fan over current (Too many compressor or fan starts in short time or fan current higher than 0.5A _{avg}).
1	Battery protection cut-out (The voltage is outside the cut-out setting).



Performance Data with Refrigerant R1234yf

Capacity (EN 12900 Household/CECOMAF)

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000	17.0	24.8	27.8	34.1	45.1	57.7	71.9	87.8	105	114	125	
2,500	18.4	29.6	33.8	42.5	57.3	73.7	91.8	112	133	143		
3,000	25.5	35.3	39.2	47.6	62.5	80.5	102	127				
3,500	30.2	39.3	43.3	52.5	69.8	91.0	116					

12V DC, static cooling

watt

Compressor speed

Electronit unit	Resistor (R1) [Ω]	Motor speed
Code number	calculated values	[rpm]
101N0226	0	2,000
	277	2,500
	692	3,000
	1523	3,500

Capacity (ASHRAE LBP)

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000	22.1	32.3	36.2	44.5	58.7	75.1	93.6	114	137	148	163	
2,500	24.1	38.5	44.0	55.3	74.4	95.7	119	145	173	186		
3,000	33.5	46.3	51.4	62.3	81.8	105	133	165				
3,500	39.4	51.3	56.6	68.7	91.3	119	152					

12V DC, static cooling

watt

Power consumption

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000	20.1	25.3	27.0	30.2	35.0	39.8	44.5	49.3	54.2	56.4	59.2	
2,500	25.1	32.9	35.4	40.1	46.7	53.0	58.8	64.4	69.7	72.0		
3,000	34.1	38.8	40.8	45.1	52.3	60.1	67.9	75.2				
3,500	40.5	47.0	49.4	54.4	62.5	71.1	79.9					

12V DC, static cooling

watt

Current consumption (for 12V applications the following must be doubled)

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000	1.73	2.19	2.35	2.64	3.06	3.49	3.91	4.34	4.79	4.99	5.26	
2,500	2.17	2.84	3.06	3.46	4.05	4.61	5.14	5.65	6.15	6.36		
3,000	2.91	3.31	3.48	3.84	4.47	5.15	5.83	6.48				
3,500	3.45	4.00	4.21	4.63	5.32	6.07	6.83					

Wire dimensions

Cross section	Size	Max. length*		Max. length*	
	AWG	12V operation		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

COP (EN 12900 Household/CECOMAF)

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000	0.84	0.98	1.03	1.13	1.29	1.45	1.61	1.78	1.95	2.02	2.11	
2,500	0.73	0.90	0.95	1.06	1.22	1.39	1.56	1.73	1.91	1.99		
3,000	0.75	0.91	0.96	1.06	1.20	1.34	1.50	1.68				
3,500	0.75	0.84	0.88	0.97	1.12	1.28	1.45					

12V DC, static cooling

W/W

COP (ASHRAE LBP)

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000	1.10	1.28	1.34	1.48	1.68	1.90	2.11	2.33	2.55	2.65	2.77	
2,500	0.96	1.17	1.24	1.38	1.60	1.82	2.04	2.27	2.50	2.60		
3,000	0.98	1.19	1.26	1.39	1.57	1.76	1.97	2.21				
3,500	0.97	1.09	1.15	1.27	1.47	1.68	1.91					

12V DC, static cooling

W/W

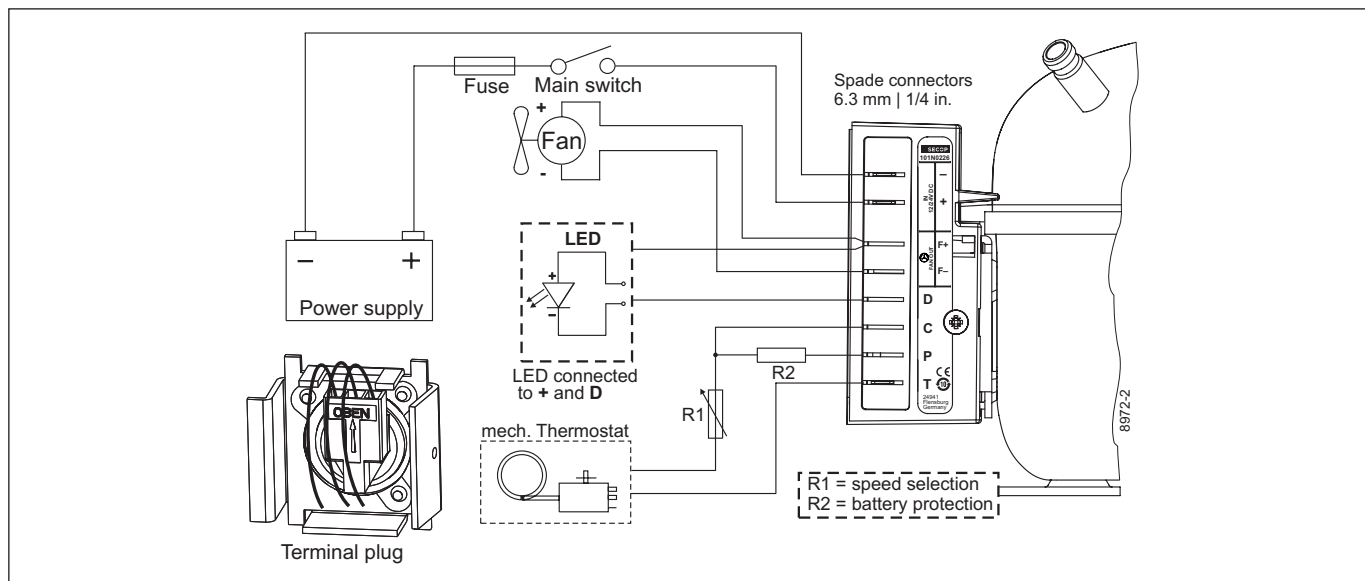
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LED flashes	Error type
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Test conditions with electronic unit	EN 12900/CECOMAF	ASHRAE LBP
Condensing temperature	55°C	54.4°C
Ambient temperature	32°C	32°C
Suction gas temperature	32°C	32°C
Liquid temperature	no subcooling	32°C

Accessories for BD35F.2

	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
Automobile fuse, DIN 7258	12V: 15A 24V: 15A
Main switch	min. 20A Not deliverable from Secop



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