

Collection of Datasheets

Direct Current Compressors R134a • 12-24V • 10-45V (Solar) R600a • 10-45V (Solar)

REFRIGERATION AND AIR CONDITIONING

Danfoss

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General

Contents

Danfoss variable speed refrigeration compressors type BD35F, BD50F and BD80F are designed for connection to 12V and 24V DC power supply and for refrigerant R134a (CF₂-CH₂F).

The compressors are intended especially for use in mobile applications, e.g. cooling boxes, boats, caravans, trucks, vans, buses, etc. Due to their low energy consumption and the option for a wide supply voltage range, the compressors are also very suitable for stationary applications powered by photovoltaic solar panels.

The compressors can be used in refrigerators and freezers designed for capillary tube and TEV as the throttling device.

The BD35K is especially designed for refrigeration systems using isobutane, refrigerant R600a (C_4H_{10}). R600a is classified as a flammable refrigerant of class A3 according to ANSI/ASHRAE 34. Accordingly, special safety regulations must be complied with. For domestic appliances a special Test Schedule has been integrated in the European Standard EN 60335-2-24 and IEC 60335-2-24. For commercial refrigerators IEC 60335-2-89 will include flammable refrigerants.

The BD35K must only and exclusively be used in appliances certified for R600a according to these or later regulations. This means that the compressors must not be used in appliances which are not originally designed and certified for R600a.

This compressor was designed for stationary use only.

The BD compressor concept includes an electronic unit which features overload protection and battery protection. The electronic unit has internal voltage recording and calibration to the applied voltage. The electronic unit may also be powered directly from certain types of electronic power supply units and thus no battery is required.

In addition to being especially quiet in operation, the compressors have a high COP value. They will operate under continual heeling of 30° such as occurs on boats.

The BD compressors must be mounted in a dry and clean place. The compressors will withstand storage temperatures down to -35°C.

Condensing temperatures:

Max. 60°C at stable conditions and max. 70°C at peak load.

Ambient temperatures: Min. -10°C, max. 55°C



Electric circuit

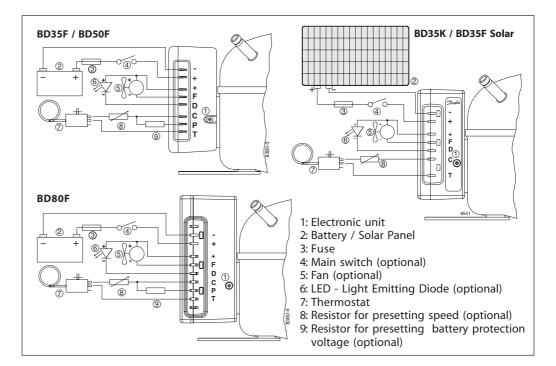
The BD compressors are fitted with a brushless direct current motor which is electronically commutated by an electronic unit.

The electronic unit is delivered separately and must be mounted on the compressor, please see instructions page 20. The electronic unit must always be connected directly to the battery poles or power supply unit terminals. For the protection of the installation an external fuse must be installed in the power supply cable close to the battery or power supply unit. Establish a special wiring for the BD power supply using direct one-piece cables and avoid to use the existing wiring. If the chassis is used as a conductor, a proper connection between cable and chassis must be estable.

lished.

Wrong polarity applied to the electronic unit does not destroy the unit, however, the compressor does not work.

If the compressor is planned to be stopped for a longer period, a main switch can be installed. The switch must have a contact system rated min. 20A, otherwise the voltage drop over the contacts will cause the battery protection to cut off the compressor earlier than intended.



Voltage range

BD35/50/80F: 12V systems: From 10.4V (9.6V) to 17V; 24V systems: From 22.8V (21.3V) to 31.5V. **BD35F/BD35K:** Solar systems: 10V - 45V

The low voltage limits stated in brackets () can be established if a connection is made between the terminals C and P, please see also the passage **Optional battery protection settings** page 5.

The electronic unit will calibrate to the applied voltage. This means that if the battery voltage is less than 17V, the electronic unit assumes that it is working in a 12V system. If the voltage is higher than 17V, the electronic unit assumes that it is working in a 24V system. Consequently, the compressor does not run at power supply voltages between about 17V and the desired battery protection cut-out voltage for 24V systems.

A continuous voltage range from 9.6V to 31.5V can be established if a $220k\Omega$ resistor (wiring diagram item 9) is connected between the terminals C and P. This wide voltage range makes the BD compressors very suitable for photovoltaic powering.

Cable dimensions

To ensure correct start and operating conditions, the following cable dimensions must be observed:

BD35F / BD50F / BD35K Solar / BD35F Solar					
Cross section mm²	Max length* m 12V operation	Max length* m 24V operation			
2.5	2.5	5			
4	4	8			
6	6	12			
10	10	20			

DDOVF		
Cross section mm ²	m	Max length* m 24V operation
6	2.5	5

*Length between battery and electronic unit

Wiring diagram

antos

Thermostat connection

BD compressors can operate with normal mechanical type thermostats as used in refrigeration appliances, or with electronic thermostats. Always use new thermostats.

The thermostat is connected between the terminals C and T of the electronic unit.

The compressor current does not flow through the thermostat contacts.

When the thermostat is cut out there will still be power on to the electronic unit.

A system with no stand-by power consumption can be established if the thermostat (7) is replaced by a jumper between the terminals C and T, and the main switch (4) is replaced by a thermostat. In this case the full current to the compressor flows through the thermostat, which must be rated accordingly.

Compressor speed

Without any resistor in the control circuit, the compressor will run with a fixed speed of **2,000 rpm** when the thermostat is switched on, depending on the electronic unit version (see tables below).

Other fixed speeds in the range between **2,000** and **3,500/4,400rpm** can be obtained when a resistor (8) is installed to adjust the current (mA) of the contol circuit, please see wiring diagrammes page 3.

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

BD35F	/ BD50F
-------	---------

Electronic	Resistor	Motor	Contr.circ.
unit	R1 (8)	speed	current
	Ω	rpm	mA
20	0	2,000	5
202,20	277	2,500	4
1011 NOV	692	3,000	3
101N0210 101N0220	1523	3,500	2
	0	AEO	6
200	173	2,000	5
NO to	450	2,500	4
10110300 101101000	865	3,000	3
3 .	1696	3,500	2

B	D	8	0	F	

Electronic unit	Resistor R1 (8)	Motor speed	Contr.circ. current
	Ω	rpm	mA
	0	AEO	6
280	203	2,500	5
1Nº AFO	451	3,100	4
101N0280	867	3,800	3
	1700	4,400	2

BD35F Solar / BD35K Solar

Electronic	Resistor	Motor	Contr.circ.
unit	R1 (8)	speed	current
	Ω	rpm	mA
	0	AEO	6
AOU	173	2,000	5
INO AFO	450	2,500	4
101W0400 101with450	865	3,000	3
	1696	3,500	2

LED connection

A 10mA Light Emitting Diode (LED) for compressor operation monitoring can be connected between the terminals + and D.

Operational errors will cause the LED to flash a number of times. The number of flashes depends on what kind of operational error was recorded.

Each flash will last ¼ second. After the actual number of flashes there will be a delay with no flashes, so that the sequence for each error recording is repeated every 4 seconds.

Operational errors shown by LED (optional):

BD35F/BD50F/BD35K Solar/BD35F Solar

Number of 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 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 pres- sure in the refrigeration system is too high (>5 bar)).
2	Fan over-current cut-out (The fan loads the electronic unit with more than $1A_{peak}$).
1	Battery protection cut-out (The voltage is outside the cut-out setting).

BD80F	
Number of 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 high, the electronic unit will run too hot).
4	Minimum motor speed error (If the refrigeration system is too heavily lo-aded, the motor cannot maintain minimum speed at approximately 2,450 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 1A _{peak}).
1	Battery protection cut-out (The voltage is outside the cut-out setting).

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				e
Fan connection	If a fan is to be used, it mu Always use a 12V fan, also voltage to 12V for the fan Using the special solar ele The max. load on the elee	n in 24V systems, as the en. ectronic unit 101N0400, ectronic unit is 0.5A _{average}	electronic unit will automathe fan runs with input v	atically reduce the applied oltage always.
	current for the first 2 seco If the fan becomes overloa		pressor will be cut out by	the overload protection.
Troubleshooting	To diagnose why a comp Emitting Diode (LED) insta the electronic unit is prop of flashes emitted by the l operation. The motor windings can lead-in pins. If the measur likely all right. The electronic unit is not	alled between the termin perly connected to the p LED will give a hint abou be checked for defects ed values between all 3	als + and D, please see pa ower supply, and the the it the reason for the inter by measuring the resista pins are approximately th	age 3 and 4. Provided tha rmostat is on, the numbe ruption of the compresso ince between the curren
	The electronic unit is not	to be repaired, it should	not be opened at all.	
Protection systems	The BD compressor protection system facilitates protection against compressor overload and start failure, fan overload and electronic unit overheating as well as destructive battery discharge. When an overload protection is activated, the compressor enters a cycle in which it makes start attempts at about 60 seconds intervals until a successfull start is achieved.			
Overload protections	The compressor overload speed drops below appro motor speed is not reach activating could be exce difference. The fan overle 0.5A _{average} or 1A _{peak} . An overheating of the ele automatically when the to If a fan is installed, it will overheating.	oximately 1,850 rpm (Bl ned during the start set ss refrigeration system oad protection stops th ectronic unit heat sink w emperature has dropped	D35F/BD50F/BD35K) or 2 quence. Possible reasons pressures during operat he compressor and fan if ill cause the compressor d.	450 rpm (BD80F) or this for overload protection or too high pressure the fan current exceeds to stop. Restart will occu
Voltage protection	If a voltage outside the specified range is applied to the electronic unit, the compressor does not start, or it stops if the voltage limit is exceeded during operation. The compressor will restart automatically about 1 minute after the supply voltage has reached the reset voltage within the range in question. If a fan is installed, it will start to operate without a delay as soon as the reset voltage is reached.			
Battery protection (BD35F / BD50F / BD80F)	To ensure sufficient batter the battery because of he The compressor is stoppe the + and - terminals of t	avy discharge, the BD e d and restarted again ac	lectronic unit facilitates a	lso a battery protection.
	Standard battery protecti	on settings		
	12V cut-out V	12V cut-in V	24V cut-out V	24V cut-in V
	10.4	11.7	22.8	24.2

Other battery protection settings are optional if a connection, which includes a resistor, is established between terminals C and P, please see the wiring diagram page 3.

Optional battery protection settings

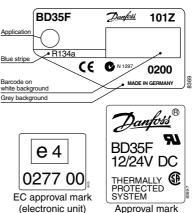
Resistor (R9)	12V cut-out	12V cut-in	12V max.	24V cut-out	24V cut-in	24V max.
kΩ	V	V	voltage	V	V	voltage
0	9.6	10.9	17.0	21.3	22.7	31.5
1.6	9.7	11.0	17.0	21.5	22.9	31.5
2.4	9.9	11.1	17.0	21.8	23.2	31.5
3.6	10.0	11.3	17.0	22.0	23.4	31.5
4.7	10.1	11.4	17.0	22.3	23.7	31.5
6.2	10.2	11.5	17.0	22.5	23.9	31.5
8.2	10.4	11.7	17.0	22.8	24.2	31.5
11	10.5	11.8	17.0	23.0	24.5	31.5
14	10.6	11.9	17.0	23.3	24.7	31.5
18	10.8	12.0	17.0	23.6	25.0	31.5
24	10.9	12.2	17.0	23.8	25.2	31.5
33	11.0	12.3	17.0	24.1	25.5	31.5
47	11.1	12.4	17.0	24.3	25.7	31.5
82	11.3	12.5	17.0	24.6	26.0	31.5
220	9.6	10.9				31.5

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BD35F **Direct Current Compressor** R134a 12 - 24V

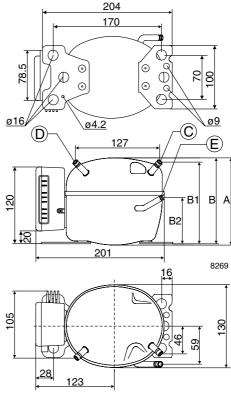
Data Sheet (Replaces CD.46.A7.02)

				Data O	neer (nepi		יח.י
Code num	bers						
BD35F with	nout elect	ronic unit			101Z0200		
Electronic u	unit 12-24	V DC - standa	ard	single: 101N	10210, 30 pcs	s: 101N0211	
Electronic u	unit 12-24	V DC - w. meta	al shielding	single: 101N	10220, 30 pcs	s: 101N0221	
Electronic u	unit 12-24	V DC - with A	EO	single: 101N	0300, 30 pcs	s: 101N0301	
Applicatio	n						
Application				LI	3P/MBP/(HE	BP)	
Evaporating	g tempera	ture range	°C		-30 to 0 (10)	
Voltage ran	ge / max.	voltage		12 - 2	4V DC / 31.	5V DC	
Max. machi	ne compa	artment temper	rature °C		55		
Comp. cooli	ing at am	bient temp.	43°C		S or F,*		
Design	-			۱ * د	lependina or	n application	
Displaceme	ent		cm ³	-	2.00		
Oil quantity			cm ³		150		
Maximum re		charge	g		300		
Free gas vol			g cm ³		870		
•	•	Electronic unit			4.3/0.25		
Motor	100000		. ky	1	1.0/0.20		
				, I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.	/ariable spee	d	
Motor type		dinan (25°C)	Ω		2.3	eu	
	, all 5 Wil	ndings (25°C)	52	E 4 70/045 05/	-		
Approvals				E4 /2/245 95/	54 0277 00, UL9	84, CSA-C22.2	
Dimensior	าร			•	107		
Height			mm	A B	137 135		
				B1	128		
				B2	73		
Suction cor	nnector	locat	ion/I.D. mm	С	6.2 ±0.09		ģ
Process co	onnector	locat	ion/I.D. mm	D	6.2 ±0.09		
Discharge	connecto	r locat	ion/I.D. mm	E 5	.0 +0.12/+0.	20	
Compresso			pcs.		150		
		protection se	•	connectio	on C - P)		
12V cut-c		12V cut-in		V cut-out [V]		ut - in [V]	ç
10.4		11.7		22.8		24.2	Ţ
		rotection se	-	1	1	,	
		out 12V cut-in	12V max.	24V cut-out		24V max.	
[kΩ] 0	[V] 9.6	[V] 10.9	Voltage 17.0	[V] 21.3	[V] 22.7	Voltage 31.5	
1.6	9.7	11.0	17.0	21.5	22.9	31.5	
2.4	9.9	11.1	17.0	21.8	23.2	31.5	
3.6 4.7	<u>10.0</u> 10.1	11.3 11.4	17.0 17.0	22.0 22.3	23.4 23.7	31.5 31.5	,
6.2	10.1	11.4	17.0	22.5	23.7	31.5	5
8.2	10.4	11.7	17.0	22.8	24.2	31.5	
11	10.5	11.8	17.0	23.0	24.5	31.5	
14	10.6	11.9	17.0	23.3	24.7	31.5	
18	10.8	12.0	17.0	23.6	25.0	31.5	
24	10.9	12.2	17.0	23.8	25.2	31.5	
33	11.0	12.3	17.0	24.1	25.5	31.5	
47	<u>11.1</u> 11.3	12.4	17.0	24.3	25.7	31.5	
82	11.3	12.5	17.0	24.6	26.0	31.5	



= Static cooling normally sufficient

- = Oil cooling = Fan cooling 1.5 m/s (compressor compartment temperature
- equal to ambient temperature) = Fan cooling 3.0 m/s necessary



9.6

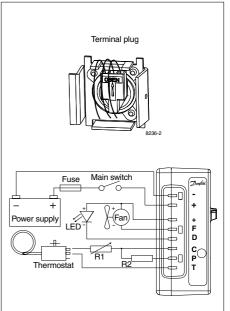
10.9

1

31.5

Capacity (EN 12900/CECOMAF)

Capacity	(EN 12	2900/C	ECOMA	۹F)						watt
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	15.8	23.9	26.9	33.1	43.8	56.6	71.7	89.9	111	136
2,500	20.2	29.9	33.5	41.2	54.6	70.7	89.7	112	139	
3,000	22.5	32.4	36.5	45.4	61.8	81.7	105	133		
3,500	26.2	35.9	40.4	50.5	69.8	93.6	122			
Capacity	(ASHF	RAE)								watt
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	19.5	29.4	33.1	40.7	54.0	69.8	88.6	111	137	169
2,500	24.9	36.8	41.3	50.7	67.3	87.1	111	139	172	
3,000	27.7	39.9	44.9	55.9	76.1	101	130	164		
3,500	32.2	44.2	49.7	62.2	86.0	115	150			
Power co	onsump	otion								watt
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	17.6	23.4	25.3	28.7	33.6	38.3	43.0	48.0	53.4	59.5
2,500	23.3	30.9	33.3	37.8	44.1	50.2	56.2	62.3	68.7	
3,000	29.9	36.0	38.3	43.0	50.7	58.7	66.8	74.8		
3,500	36.0	42.8	45.4	50.8	59.5	68.9	78.5			
Current of	consun	nption	(for 24V a	applicatio	ons the fo	llowing r	nust be h	alved)		Α
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	1.5	2.0	2.1	2.4	2.8	3.2	3.6	4.0	4.5	5.0
2,500	1.9	2.6	2.8	3.2	3.7	4.2	4.7	5.2	5.8	
3,000	2.5	3.0	3.2	3.6	4.2	4.9	5.6	6.2		
3,500	3.0	3.6	3.8	4.3	5.0	5.7	6.5			
COP (EN	12900	/CECO	MAF)							W/W
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	0.90	1.02	1.06	1.15	1.31	1.48	1.67	1.87	2.08	2.29
2,500	0.87	0.97	1.01	1.09	1.24	1.41	1.60	1.80	2.02	
3,000	0.75	0.90	0.95	1.06	1.22	1.39	1.58	1.78		
3,500	0.73	0.84	0.89	1.00	1.17	1.36	1.55			
COP (AS	HRAE)									W/W
rpm∖°C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	1.10	1.25	1.31	1.42	1.61	1.82	2.06	2.31	2.57	2.84
2,500	1.07	1.19	1.24	1.34	1.53	1.74	1.97	2.23	2.50	
3,000	0.93	1.11	1.17	1.30	1.50	1.72	1.95	2.20		
3,500	0.89	1.03	1.09	1.23	1.44	1.68	1.91			



rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	1.10	1.25	1.31	1.42	1.61	1.82	2.06	2.31	2.57	2.84
2,500	1.07	1.19	1.24	1.34	1.53	1.74	1.97	2.23	2.50	
3,000	0.93	1.11	1.17	1.30	1.50	1.72	1.95	2.20		
3,500	0.89	1.03	1.09	1.23	1.44	1.68	1.91			
Test conditio	ons		EN	12900/C	ECOMA	F AS	HRAE			
Condensing	tempera	ture	55	°C		55	°C			
Ambient and	d suction	gas temp	. 32	°C		32	°C			
Liquid temperature 55°C					32	°C				

Test conditions Condensing temperature Ambient and suction gas temp. Liquid temperature Static cooling, 12V DC 1 Watt = 0.86 kcal/h

Compressor speed

Electronic unit	Resistor (R1)	Motor speed	Contr.circ. current
	Ω	rpm	mA
1011021020 101010220	0	2,000	5
202 20	277	2,500	4
101,101	692	3,000	3
10	1523	3,500	2
	0	AEO	6
200	173	2,000	5
Nº Nº	450	2,500	4
to the second	865	3,000	3
4	1696	3,500	2

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

55°C 32°C 32°C

Accessories	
Devices	BD35F
Standard automobile fuse DIN 7258 12V: 15A 24V: 7.5A	Not deliverable from Danfoss
Mounting accessories Bolt joint for one compressor Bolt joint in quantities Snap on in quantities	118-1917 118-1918 118-1919

Wire dimensions

S AWG	ize Cross section	Max le 12V op		Max length* 24V operation						
Gauge	mm ²	ft.	m	ft.	m					
12	2.5	8	2.5	16	5					
12	4	13	4	26	8					
10	6	19.5	6	39	12					
8	10	32.8	10	65.6	20					
	*Length between battery and electronic unit									

Operational errors shown by LED (optional)

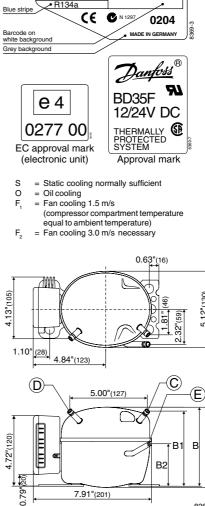
Number of flashes	Error type
5	Thermal cut-out of electronic unit (If the refrigeration system has been too hea- vily loaded, or if the ambient temperature is high, the electronic unit will run too hot).
4	Minimum motor speed error (If the refrigeration system is too heavily lo- aded, the motor cannot maintain minimum speed at approximately 1,850 rpm).
3	Motor start error (The rotor is blocked or the differential pres- sure in the refrigeration system is too high (>5 bar)).
2	Fan over-current cut-out (The fan loads the electronic unit with more than $1A_{peak}$).
1	Battery protection cut-out (The voltage is outside the cut-out setting).

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BD35F (Inch Connectors) Direct Current Compressor R134a, 12 - 24V

Data Sheet (Replaces CD.46.C1.22)

					Data Sh	iee	с (неріа	ices CD.4	
Code num	bers								
BD35F with	nout elec	tronic unit				10	1Z0204		
Electronic ι	unit 12-24	4V DC - standa	ard		single: 101N	021	0, 30 pcs	: 101N0211	
Electronic u	unit 12-24	V DC - w. meta	al shie	lding	single: 101N0220, 30 pcs: 101N0221				
		IV DC - with A		-	single: 101N	030	0, 30 pcs	: 101N0301	
Applicatio	n				0				
Application	-				LE	BP/N	/IBP/ [HE	3P]	
Evaporating	tempera	ature range	°F	(°C)	-22 to 3	2 [5	i0] (-30 t	o 0 [10])	
Voltage ran	· ·			. ,			DC / 31.		
	-	artment temp.	°F	(°C)		1:	31 (55)		
	-	bient temp. 11		. ,			or F,*		
Design	ing at an		01 (10 0)	* d			applicatior	
Displaceme	ont		cu.in.	(cm ³)			2 (2.00)		
Oil quantity			fl.oz.	. ,			1 (150)		
. ,		t obarga							
Maximum r	-	-		z. (g)			5 (300)		
Free gas vo	-		fl.oz.				6 (870)	25)	
	mpresso	r/Electronic uni	it Ibs.	. (kg)	9.5	/0.5	5 (4.3/0	.25)	
Motor									
Motor type					V	aria	ible spee	ed	
Resistance	, all 3 wir	ndings (77°F)		Ω			2.3		
Approvals	(electroni	c unit)			E4 72/245 95/5	54 02	277 00, UL9	84, CSA-C22.2	
Dimensior	าร			<u> </u>					
Height			ın.	(mm)	A B		39 (137) 32 (135)		
					B1)4 (128)		
					B2 2.87 (73)				
Suction cor	nnector	location/I.	D. in.	(mm)					
Process co		location/I.		. ,	· · · · ·				
Discharge				. ,			5 (5.0+0.		
_			D. III.	pcs.	L 0.202 0	.20	150	12/0.20)	
Compresso				-					
12V cut-c		protection se 12V cut-in			V cut-out [V]			ut - in [V]	
10.4		11.7			22.8			24.2	
		protection set							
Resistor (R2) [kΩ]	12V cut-0 [V]	out 12V cut-in	12V Volt		24V cut-out [V]	24	V cut-in [V]	24V max. Voltage	
0	9.6	10.9	-	.0	21.3		22.7	31.5	
1.6	9.7	11.0	17	<i>.</i> 0	21.5		22.9	31.5	
2.4	9.9	11.1		<u>.0</u>	21.8		23.2	31.5	
3.6	10.0	11.3	17		22.0 22.3		23.4	31.5 31.5	
4.7 6.2	10.1 10.2	11.4	17 17		22.5		<u>23.7</u> 23.9	31.5	
8.2	10.2	11.7	.0 '.0	22.8		24.2	31.5		
11	10.5	'.O	23.0		24.5	31.5			
14	'.O	23.3		24.7	31.5				
18	10.8	12.0		<u>.0</u>	23.6		25.0	31.5	
01	.0	23.8		25.2	31.5				
24	10.9	10.0	<u>^</u>						
33	11.0	12.3							
		12.3 12.4 12.5	17		24.1 24.3 24.6		25.5 25.7 26.0	31.5 31.5 31.5	

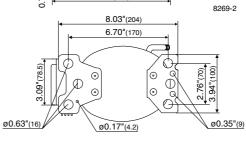


BD35F

Applicati

<u>Danfoss</u>

101Z



April 2004

CD.46.C2.22

5.12"(130)

А

Danfoss

Capacity (ASHRAE)

rpm \ °F	-20	-13	-10	0	10	20	30	40	45	50
2,000	74	101	113	159	214	280	361	458	514	575
2,500	95	127	142	199	268	351	452	573	643	
3,000	104	138	155	222	307	410	535	681		
3,500	119	153	171	248	349	473	619			
Capacity	(EN 12	2900/CI	ECOMA	AF)						watt
rpm \ °F	00	10	4.0	•						
прпп \ г	-20	-13	-10	0	10	20	30	40	45	50
2,000	-20	-13 23.9	-10 26.8	0 37.6	10 50.6	20 66.4	30 85.5	40 109	45 122	50 136
				•	-	-		-	-	
2,000	17.5	23.9	26.8	37.6	50.6	66.4	85.5	109	122	

Power consumption

Power consumption											
rpm \ °F	-20	-13	-10	0	10	20	30	40	45	50	
2,000	19.1	23.5	25.3	30.8	36.1	41.3	46.6	52.5	55.7	59.1	
2,500	25.2	31.0	33.3	40.7	47.4	54.0	60.7	67.7	71.5		
3,000	31.0	35.8	38.0	45.9	54.5	63.4	72.2	80.6			
3,500	37.5	42.9	45.4	54.5	64.4	74.9	85.7				

Current consumption (for 24V applications the following must be halved)

Current consumption (for 24V applications the following must be halved)										
rpm \ °F	-20	-13	-10	0	10	20	30	40	45	50
2,000	1.59	1.96	2.10	2.57	3.01	3.44	3.89	4.37	4.64	4.93
2,500	2.10	2.58	2.77	3.38	3.95	4.49	5.05	5.63	5.95	
3,000	2.61	3.01	3.19	3.86	4.58	5.32	6.06	6.76		
3,500	3.14	3.58	3.79	4.55	5.38	6.25	7.15			
EEB (ASHBAE) Btu/										

FER (ASHBAE)

EER (AS	IINAE)) (U/ VV II
rpm \ °F	-20	-13	-10	0	10	20	30	40	45	50
2,000	3.87	4.29	4.48	5.16	5.93	6.80	7.74	8.73	9.23	9.73
2,500	3.75	4.09	4.26	4.89	5.64	6.50	7.45	8.47	8.99	
3,000	3.36	3.86	4.07	4.83	5.63	6.48	7.41	8.44		
3,500	3.16	3.56	3.77	4.56	5.42	6.31	7.23			
COP (EN	12900	/CECO	MAF)							W/W

COP (EN 12900/CECOMAF)

Compressor speed

001 (EII	12000	0200	····~· /							
rpm \ °F	-20	-13	-10	0	10	20	30	40	45	50
2,000	0.92	1.02	1.06	1.22	1.40	1.60	1.82	2.06	2.17	2.29
2,500	0.89	0.97	1.01	1.15	1.33	1.53	1.76	2.00	2.12	
3,000	0.79	0.90	0.96	1.13	1.32	1.52	1.74	1.98		
3,500	0.75	0.84	0.89	1.07	1.28	1.49	1.70			
	Wire dimensions									

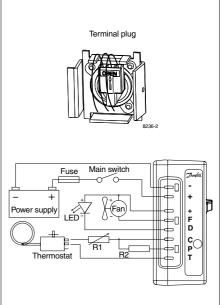
oompres.	soi speec	4	
Electronic	Resistor	Motor	Contr.circ.
unit	(R1)	speed	current
	Ω	rpm	mA
~	0	2,000	5
202 20	277	2,500	4
OT NON	692	3,000	3
totho210 totho220	1523	3,500	2
	0	AEO	6
200	173	2,000	5
10110300 101vitn AFO	450	2,500	4
10 intre	865	3,000	3
4	1696	3,500	2

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

Size AWG Cross section		Max le 12V op		Max length* 24V operation		
Gauge	mm ²	ft.	m	ft.	m	
12	2.5	8	2.5	16	5	
12	4	13	4	26	8	
10	6	19.5	6	39	12	
8	10	32.8	10	65.6	20	
	*Length	between	battery a	nd electr	onic uni	

Accessories

Devices	BD35F
Standard automobile fuse	Not
DIN 7258 12V: 15A	deliverable
24V: 7.5A	from Danfoss
Mounting accessories	
Bolt joint for one compressor	118-1917
Bolt joint in quantities	118-1918
Snap on in quantities	118-1919



	Test conditions	ASHRAE	EN 12900
	Condensing temperature	130°F (54,4°C)	55°C (131°F)
-	Ambient & suction gas temp.	90°F (32°C)	32°C (90°F)
	Liquid temperature	90°F (32°C)	55°C (131°F)
W	Static cooling, 12V DC		

1 Watt = 3.41 Btu/h = 0.86 kcal/h

Btu/h

Operational errors shown by LED (optional) N

Number of	Error type
flashes	
5	Thermal cut-out of electronic unit (If the refrigeration system has been too hea- vily 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 lo- aded, the motor cannot maintain minimum speed at approximately 1,850 rpm).
3	Motor start error (The rotor is blocked or the differential pres- sure in the refrigeration system is too high (>5 bar)).
2	Fan over-current cut-out (The fan loads the electronic unit with more than $1A_{\text{peak}}$).
1	Battery protection cut-out (The voltage is outside the cut-out setting).

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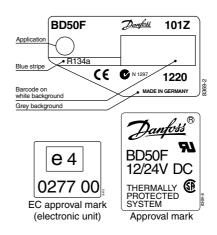
BD50F **Direct Current Compressor** R134a 12 - 24V

Data Sheet (Replaces CD.46.B5.02)

					· ·		
Code num	bers						
BD50F with	nout elec	tronic unit	101Z1220				
Electronic u	unit 12-24	4V DC - standa	single: 101N0210, 30 pcs: 101N0211				
Electronic u	unit 12-24	4V DC - w. met	single: 101N	10220, 30 pc	s: 101N0221		
Electronic u	unit 12-24	4V DC - with A	EO	single: 101N	10300, 30 pc	s: 101N0301	
Applicatio	n						
Application				L	BP/MBP/(HE	3P)	
Evaporating	g temper	ature range	°C		-30 to 0 (10)	
Voltage ran	ige / max	. voltage		12 - 2	24V DC / 31.	5V DC	
Max. mach	ine comp	partment tempe	erature °C		55		
Comp. cool	ling at an	nbient temp.	43°C		S or F,*		
Design	-			* (depending or	n application	
Displaceme	ent		cm ³		2.50		
Oil quantity			cm ³		150		
Maximum ı		nt charge	g		300		
Free gas vo	-	-	cm ³		870		
		r/Electronic un			4.3/0.25		
Motor							
Motor type				Variable speed			
	all 3 wi	ndings (25°C)	Ω	2.0			
Approvals	-	• • •	32	E4 72/245 95/54 0277 00, UL984, CSA-C22.2			
Dimensior	`			E472/24393	/34 0277 00, OLS	04, U3A-022.2	
Height	15		mm	A	137		
rieigin				В	135		
				B1 128			
				B2 73			
Suction cor	nnector	locat	ion/I.D. mm	C 6.2 ±0.09			
Process co	onnector	locat	tion/I.D. mm	D 6.2 ±0.09			
Discharge	connecto	or locat	tion/I.D. mm	E 5.0 +0.12/+0.20			
Compresso	ors on a	pallet	pcs.	150			
Standard I	battery	protection se	ettings (no	connecti	on C - P)		
12V cut-o		12V cut-in	[V] 24	V cut-out [V		ut - in [V]	
10.4		11.7	ttingo	22.8	2	24.2	
		out 12V cut-in		24V out out	t 24V cut-in	24V max.	
$[k\Omega]$	[V]		Voltage	[V]	[V]	Voltage	
0	9.6	10.9	17.0	21.3	22.7	31.5	
1.6	9.7	11.0	17.0	21.5	22.9	31.5	
2.4 3.6	9.9 10.0	11.1	17.0	21.8 22.0	23.2 23.4	31.5 31.5	
4.7	10.0	11.3	17.0	22.0	23.4	31.5	
6.2	10.1	11.5	17.0	22.5	23.9	31.5	
8.2	10.4	11.7	17.0	22.8	24.2	31.5	
	10.5	11.8	17.0 17.0	23.0	24.5	31.5	
11			23.3	24.7	31.5		
11 14	10.6	11.9		00.0			
11 14 18	10.6 10.8	12.0	17.0	23.6	25.0	31.5	
11 14 18 24	10.6 10.8 10.9	12.0 12.2	17.0 17.0	23.8	25.2	31.5	
11 14 18	10.6 10.8	12.0	17.0				
11 14 18 24 33	10.6 10.8 10.9 11.0	12.0 12.2 12.3	17.0 17.0 17.0	23.8 24.1	25.2 25.5	31.5 31.5	

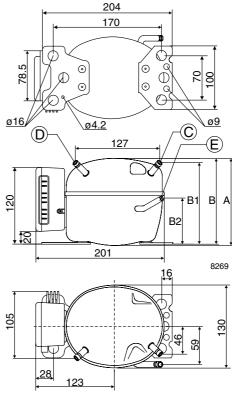
April 2004

CD.46.B6.02



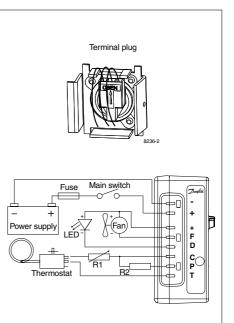
 Static cooling normally sufficient
 Oil cooling
 Fan cooling 1.5 m/s (compressor compartment temperature S O F₁

- equal to ambient temperature) = Fan cooling 3.0 m/s necessary F,



Capacity (EN 12900/CECOMAF)

Sapaony	(EN 12	2900/C	ECOMA	AF)						watt	
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10	
2,000	20.1	31.0	34.9	42.8	56.3	72.2	91.6	115	144*	178*	
2,500	27.0	39.0	43.4	52.7	68.9	88.9	113	144*	181*		
3,000	31.0	45.4	50.6	61.5	80.7	104	134*	171*			
3,500	38.1	53.2	59.1	71.9	95.0	124*	159*				
Capacity (ASHRAE) wa											
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10	
2,000	24.7	38.3	43.1	52.9	69.5	89.3	113	143	178*	221*	
2,500	33.3	48.1	53.6	65.0	85.1	110	140	178*	224*		
3,000	38.2	56.0	62.5	75.9	100	129	166*	212*			
3,500	47.0	65.7	72.9	88.7	117	153*	196*				
Power co	onsum	otion								watt	
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10	
2,000	25.1	31.8	34.0	38.2	44.7	51.3	58.3	65.8	74.2*	83.5*	
2,500	34.1	40.5	42.9	47.8	55.8	64.7	74.3	84.8*	96.1*		
3,000	39.9	49.2	52.2	57.8	66.5	76.4	88.4*	104*			
3,500	50.2	59.3	62.5	69.0	80.2	93.4*	109*				
Current	consun	nption	(for 24V	applicati	ons the f	ollowing	must be	halved)		Α	
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10	
2,000	2.2	2.6	2.8	3.1	3.8	4.4	5.1	5.8	6.4*	6.9*	
2,500	2.9	3.4	3.6	4.0	4.7	5.4	6.2	7.0*	7.8*		
3,000	3.5				- 0						
		4.2	4.4	4.9	5.6	6.5	7.4*	8.5*			
3,500	4.2	4.2 4.9	4.4 5.2	4.9 5.8	5.6 6.7	6.5 7.8*	7.4* 9.0*	8.5*			
3,500 COP (EN	4.2	4.9	5.2	-				8.5*		W/W	
	4.2	4.9	5.2	-				8.5*	5	W/W	
COP (EN	4.2 12900	4.9 /CECO	5.2 MAF)	5.8	6.7	7.8*	9.0*		5 1.94*		
COP (EN	4.2 12900 -30	4.9 /CECO -25	5.2 MAF) -23.3	5.8 -20	6.7 -15	7.8* -10	9.0* -5	0	-	10	
COP (EN rpm \ °C 2,000	4.2 12900 -30 0.80	4.9 / CECO -25 0.98	5.2 MAF) -23.3 1.03	5.8 -20 1.12	6.7 -15 1.26	7.8* -10 1.41	9.0* -5 1.57	0	1.94*	10	
COP (EN rpm \ °C 2,000 2,500	4.2 12900 -30 0.80 0.79	4.9 / CECO -25 0.98 0.96	5.2 MAF) -23.3 1.03 1.01	5.8 -20 1.12 1.10	6.7 -15 1.26 1.24	7.8* -10 1.41 1.37	9.0* -5 1.57 1.53	0 1.75 1.70*	1.94*	10	
COP (EN rpm \ °C 2,000 2,500 3,000	4.2 12900 -30 0.80 0.79 0.78 0.76	4.9 / CECO -25 0.98 0.96 0.92 0.90	5.2 MAF) -23.3 1.03 1.01 0.97	5.8 -20 1.12 1.10 1.06	6.7 -15 1.26 1.24 1.21	7.8* -10 1.41 1.37 1.37	9.0* -5 1.57 1.53 1.51*	0 1.75 1.70*	1.94*	10	
COP (EN rpm \ °C 2,000 2,500 3,000 3,500	4.2 12900 -30 0.80 0.79 0.78 0.76	4.9 / CECO -25 0.98 0.96 0.92 0.90	5.2 MAF) -23.3 1.03 1.01 0.97	5.8 -20 1.12 1.10 1.06	6.7 -15 1.26 1.24 1.21	7.8* -10 1.41 1.37 1.37	9.0* -5 1.57 1.53 1.51*	0 1.75 1.70*	1.94*	10 2.13*	
COP (EN rpm \ °C 2,000 2,500 3,000 3,500 COP (AS	4.2 12900, -30 0.80 0.79 0.78 0.76 HRAE)	4.9 / CECO -25 0.98 0.96 0.92 0.90	5.2 MAF) -23.3 1.03 1.01 0.97 0.95	5.8 -20 1.12 1.10 1.06 1.04	6.7 -15 1.26 1.24 1.21 1.19	7.8* -10 1.41 1.37 1.37 1.32*	9.0* -5 1.57 1.53 1.51* 1.45*	0 1.75 1.70* 1.65*	1.94* 1.88*	10 2.13* W/W	
COP (EN rpm \ °C 2,000 2,500 3,000 3,500 COP (AS rpm \ °C	4.2 12900, -30 0.80 0.79 0.78 0.76 HRAE) -30	4.9 / CECO -25 0.98 0.96 0.92 0.90 -25	5.2 MAF) -23.3 1.03 1.01 0.97 0.95 -23.3	5.8 -20 1.12 1.10 1.06 1.04 -20	6.7 -15 1.26 1.24 1.21 1.19 -15	7.8* -10 1.41 1.37 1.37 1.32*	9.0* -5 1.57 1.53 1.51* 1.45*	0 1.75 1.70* 1.65*	1.94* 1.88* 5	10 2.13* W/W 10	
COP (EN rpm \ °C 2,000 2,500 3,000 3,500 COP (AS rpm \ °C 2,000	4.2 12900 -30 0.80 0.79 0.78 0.76 HRAE -30 0.99	4.9 /CECO -25 0.98 0.96 0.92 0.90 -25 1.21	5.2 MAF) -23.3 1.03 1.01 0.97 0.95 -23.3 1.27	5.8 -20 1.12 1.10 1.06 1.04 -20 1.38	6.7 -15 1.26 1.24 1.21 1.19 -15 1.56	7.8* -10 1.41 1.37 1.37 1.32* -10 1.74	9.0* -5 1.57 1.53 1.51* 1.45* -5 1.94	0 1.75 1.70* 1.65* 0 2.16	1.94* 1.88* 5 2.40*	10 2.13* W/W 10	



3,500	0.76	0.90	0.95	1.04	1.19	1.32*	1.45*			
COP (AS	HRAE))								W/V
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	0.99	1.21	1.27	1.38	1.56	1.74	1.94	2.16	2.40*	2.65'
2,500	0.98	1.19	1.25	1.36	1.53	1.70	1.89	2.10*	2.33*	
3,000	0.96	1.14	1.20	1.31	1.50	1.69	1.87*	2.04*		
3,500	0.94	1.11	1.17	1.28	1.46	1.64*	1.80*			
Test conditio	ons		EN	12900/C	ECOMA	F AS	HRAE			

 Test conditions
 EN 12

 Condensing temperature
 55°C

 Ambient and suction gas temp.
 32°C

 Liquid temperature
 55°C

 Static cooling, 12V DC

 * Fan cooling of electronic unit compulsory

 1 Watt = 0.86 kcal/h

Compressor speed

Electronic unit	Resistor (R1)	Motor speed	Contr.circ. current
	Ω	rpm	mA
~	0	2,000	5
202 20	277	2,500	4
101 NOV	692	3,000	3
10110220 101010220	1523	3,500	2
	0	AEO	6
200	173	2,000	5
Nº to	450	2,500	4
to the second	865	3,000	3
4	1696	3,500	2

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

55°C 32°C 32°C

Accessories

Devices	BD50F
Standard automobile fuse DIN 7258 12V: 15A 24V: 7.5A	Not deliverable from Danfoss
Mounting accessories Bolt joint for one compressor Bolt joint in quantities Snap on in quantities	118-1917 118-1918 118-1919

Wire dimensions

	ize		ength*	Max length*		
AWG	Cross section	12V op	eration	24V op	eration	
Gauge	mm ²	ft.	m	ft.	m	
12	2.5	8	2.5	16	5	
12	4	13	4	26	8	
10	6	19.5	6	39	12	
8	10	32.8	10	65.6	20	
	*Length	between	battery a	nd electr	onic unit	

Operational	errors shown	by LED	(optional)

Number of	Error type
flashes	
5	Thermal cut-out of electronic unit (If the refrigeration system has been too hea- vily 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 lo- aded, the motor cannot maintain minimum speed at approximately 1,850 rpm).
3	Motor start error (The rotor is blocked or the differential pres- sure in the refrigeration system is too high (>5 bar)).
2	Fan over-current cut-out (The fan loads the electronic unit with more than $1A_{peak}$).
1	Battery protection cut-out (The voltage is outside the cut-out setting).

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BD50F (Inch Connectors) Direct Current Compressor R134a, 12 - 24V

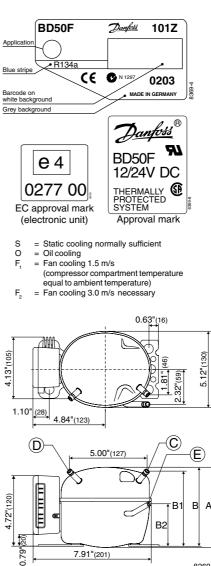
Data Sheet (Replaces CD.46.D1.22)

Code num								-
BD50F with	nout electro	onic unit				101Z0203		
Electronic u	ınit 12-24∖	/ DC - standa	ard		single: 101N	0210, 30 pc	s: 101N0211	
Electronic L	ınit 12-24V	DC - w. meta	al shie	lding	single: 101N	0220, 30 pc	s: 101N0221	
Electronic u	ınit 12-24V	DC - with A	EO		single: 101N	0300, 30 pc	s: 101N0301	
Applicatio	n							_
Application					LE	BP/MBP/ [H	BP]]
Evaporating	g temperat	ure range	°F	(°C)	-22 to 3	2 [50] (-30	to 0 [10])]
Voltage ran	ge / max.	voltage			12 - 24	4V DC / 31	.5V DC	1
Max. machi	ine compa	rtment temp.	°F	: (°C)		131 (55)		1
Comp. cool	ing at amb	ient temp. 11	0°F (4	13°C)		S or F ₁ *		1
Design	-				* d	epending o	n applicatior	'n
Displaceme	ent		cu.in.	(cm ³)		0.15 (2.50))]
Oil quantity			fl.oz.	(cm ³)		5.1 (150)		1
Maximum r		charge		z. (g)	+	10.5 (300)		1
Free gas vo	-	-	fl.oz.		+	29.6 (870)		1
		Electronic uni		. (kg)		/0.55 (4.3/0		1
Motor				(1		- /	
Motor type					v	ariable spe	ed	1
	all 3 wind	lings (77°F)		Ω		2.0		1
Approvals		• • •			E4 72/245 95/54 0277 00, UL984, CSA-C22.2			
Dimensior		unity				J-10277 00, 02.	, 00/ 022.2	
Height			in.	(mm)	A	5.39 (137)		1
					В	5.32 (135)	1	
					B1	5.04 (128))	
					B2	2.87 (73)		
Suction cor	nnector	location/I.	D. in.	(mm)	C 0.252-0.259 (6.5±0.09)			
Process co	onnector	location/I.	D. in.	(mm)	D 0.252-0.259 (6.5±0.09)			
Discharge	connector	location/I.	D. in.	(mm)	E 0.202-0.205 (5.0+0.12/0.20)			
Compresso	rs on a pa	llet		pcs.		150]
					connection C - P)			
12V cut-c		12V cut-in 11.7	[V]	24	V cut-out [V] 22.8		cut - in [V] 24.2	-
		otection se	ttinas				27.2	_
Resistor (R2)		It 12V cut-in			24V cut-out	24V cut-in	24V max.]
[kΩ]	[V]	[V]		age	[V]	[V]	Voltage	1
0	9.6	10.9		<u>.0</u>	21.3	22.7	31.5	-
1.6	<u>9.7</u> 9.9	11.0	-	<u>′.0</u> ′.0	21.5 21.8	22.9 23.2	31.5 31.5	1
3.6	10.0	11.3	17	<i>.</i> 0	22.0	23.4	31.5	1
4.7	10.1	11.4		<u>.0</u>	22.3	23.7	31.5	-
6.2 8.2	10.2 10.4	11.5	17	<u>.0</u> .0	22.5 22.8	23.9 24.2	31.5 31.5	-
11	10.4	11.7		.0 '.0	22.0	24.2	31.5	1
14	10.6	11.9	17	'.O	23.3	24.7	31.5]
18	10.8	12.0		<u>.0</u>	23.6	25.0	31.5	-
24 33	10.9 11.0	12.2		'.0 '.0	23.8 24.1	25.2 25.5	31.5 31.5	-
47	11.1	12.3		.0 '.0	24.3	25.7	31.5	
82 220	11.3	12.5		.0	24.6	26.0	31.5	
	9.6	10.9					31.5	1

April 2004

CD.46.D2.22

CK.46.C7.02



8269-2 8.03"(204) 6.70"(170) Ø .09"(78.5) (20) 100 a O a í0 0 ന 2.76"(.94"(0 0 G 0.63"(16) ø0.35"(9) ø0.17"(4.2)

<u>Danfoss</u>

Capacity (ASHRAE)

rpm \ °F	-20	-13	-10	0	10	20	30	40	45	50
2,000	95	126	142	201	273	359	458	570	632*	697*
2,500	119	157	176	247	335	442	570	723*	809*	
3,000	142	189	211	296	401	529	682*	863*		
3,500	167	220	245	342	464	612*	790*			
Capacity (EN 12900/CECOMAF) wat										
rpm \ °F	-20	-13	-10	0	10	20	30	40	45	50
2,000	22.6	30.0	33.6	47.7	64.9	85.2	109	135	150*	165*
2,500	28.2	37.3	41.7	58.5	79.3	105	135	171*	191*	
3,000	33.7	44.8	50.1	70.4	95.2	125	161*	204*		
3,500	39.8	52.2	58.2	81.3	110	145*	187*			

Power consumption

Power consumption										
rpm \ °F	-20	-13	-10	0	10	20	30	40	45	50
2,000	27.4	32.5	34.6	41.7	49.0	56.8	65.4	75.1	80.4*	86.2*
2,500	34.3	41.4	44.3	54.0	63.4	73.0	82.8	93.1*	98.6*	
3,000	41.4	50.1	53.7	65.2	76.2	87.4	98.9*	111*		
3,500	49.6	58.8	62.6	75.5	88.7	103*	119*			
Current	Current consumption (for 24V applications the following must be halved)									Α

Current consumption (for 24V applications the following must be halved)

rpm \ °F	-20	-13	-10	0	10	20	30	40	45	50
2,000	2.28	2.69	2.87	3.50	4.18	4.90	5.65	6.45	6.87*	7.29*
2,500	2.86	3.41	3.65	4.45	5.26	6.10	6.94	7.81*	8.25*	
3,000	3.52	4.16	4.43	5.37	6.33	7.31	8.32*	9.34*		
3,500	4.20	4.88	5.18	6.24	7.39	8.61*	9.91*			
FFR (AS	EER (ASHRAE) Rtu/Wt									

EER (ASHRAE)	
--------------	--

EER (AS	пкас)									SLU/ WY M	
rpm \ °F	-20	-13	-10	0	10	20	30	40	45	50	
2,000	3.49	3.89	4.09	4.81	5.57	6.31	7.00	7.60	7.85*	8.09*	
2,500	3.47	3.81	3.97	4.58	5.28	6.05	6.88	7.76*	8.21*		
3,000	3.43	3.77	3.93	4.55	5.26	6.05	6.89*	7.76*			
3,500	3.37	3.74	3.91	4.54	5.23	5.94*	6.66*				
COP (EN	COP (EN 12900/CECOMAF)										

COP (EN 12900/CECOMAF)

••• (=										
rpm \ °F	-20	-13	-10	0	10	20	30	40	45	50
2,000	0.82	0.92	0.96	1.13	1.31	1.48	1.64	1.78	1.84*	1.90*
2,500	0.82	0.90	0.94	1.08	1.24	1.42	1.62	1.82*	1.93*	
3,000	0.81	0.89	0.93	1.07	1.24	1.42	1.62*	1.82*		
3,500	0.80	0.88	0.92	1.07	1.23	1.40*	1.56*			

Compressor speed

Electronic unit	Resistor (R1)	Motor speed	Contr.circ. current
	Ω	rpm	mA
1 ⁰	0	2,000	5
2020	277	2,500	4
oll Nor	692	3,000	3
1011102100 101110220	1523	3,500	2
	0	AEO	6
200	173	2,000	5
NO E	450	2,500	4
totho300	865	3,000	3
4	1696	3,500	2

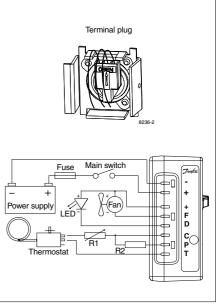
In AEO (Adaptive Energy Optimizing) speed mode the BD compressor will always adapt its speed to the actual cooling demand.

Wire dimensions

-	ize Cross section		ength* eration	Max length* 24V operation			
Gauge	mm²	ft.	m	ft.	m		
12	2.5	8	2.5	16	5		
12	4	13	4	26	8		
10	6	19.5	6	39	12		
8	10	32.8	10	65.6	20		

Accessories

Devices	BD50F
Standard automobile fuse DIN 7258 12V: 15A	Not deliverable
24V: 7.5A	from Danfoss
Mounting accessories	
Bolt joint for one compressor	118-1917
Bolt joint in quantities	118-1918
Snap on in quantities	118-1919



Btu/h

	To all a supplicit and		
	Test conditions	ASHRAE	EN 12900
_	Condensing temperature	130°F (54,4°C)	55°C (131°F)
	Ambient & suction gas temp.	90°F (32°C)	32°C (90°F)
	Liquid temperature	90°F (32°C)	55°C (131°F)
۰۸/	Static cooling, 12V DC		

 * Fan cooling of electronic unit compulsory
1 Watt = 3.41 Btu/h = 0.86 kcal/h

Operational errors shown	by LED (optional)

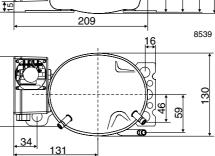
•	onal errors shown by LED (optional)
Number of flashes	Error type
5	Thermal cut-out of electronic unit (If the refrigeration system has been too hea- vily loaded, or if the ambient temperature is high, the electronic unit will run too hot).
4	Minimum motor speed error (If the refrigeration system is too heavily lo- aded, the motor cannot maintain minimum speed at approximately 1,850 rpm).
3	Motor start error (The rotor is blocked or the differential pres- sure in the refrigeration system is too high (>5 bar)).
2	Fan over-current cut-out (The fan loads the electronic unit with more than $1A_{peak}$).
1	Battery protection cut-out (The voltage is outside the cut-out setting).

Danfoss

BD80F Direct Current Compressor R134a 12 - 24V

Data Sheet (Replaces (CD.46.F1.02)

Code numbers				
BD80F without electronic unit	101Z0280	BD80F Danford 101Z		
Electronic unit 12-24V DC - standard	single: 101N0280, 28 pcs: 101N0281	Application		
Application		Blue stripe		
Application	LBP	CE © N 1297 0280 (°		
Evaporating temperature range °C	-30 to -5	Barcode on white background		
Voltage range / max. voltage	12 - 24V DC / 31.5V DC	Grey background		
Max. machine compartment temperature °C	43	e 4		
Comp. cooling at ambient temp. 43°C	S or F ₁ *	0277 00		
Design	* depending on application	EC approval mark		
Displacement cm	3 3.00	S = Static cooling normally sufficient		
Oil quantity cm	3 150	O = Oil cooling		
Maximum refrigerant charge	300	F ₁ = Fan cooling 1.5 m/s (compressor compartment temperature		
Free gas vol. in compressor cm	3 870	equal to ambient temperature) F ₂ = Fan cooling 3.0 m/s necessary		
Weight: Compressor/Electronic unit k	4.3/0.3			
Motor				
Motor type	Variable speed			
Resistance, all 3 windings (25°C)	2 2.0	204		
Approvals (electronic unit)	E4 72/245 95/54 0277 00			
Dimensions				
Height mr	n A 137			
	B 135			
	B1 128			
	B2 73			
Suction connector location/I.D. mn	C 6.2 ±0.09			
Process connector location/I.D. mn	D 6.2 ±0.09	\square		
Discharge connector location/I.D. mn	E 5.0 +0.12/+0.20			
Compressors on a pallet pcs	. 150			
Standard battery protection settings (n	o connection C - P)			
	4V cut-out [V] 24V cut - in [V]			
10.4 11.7	22.8 24.2			
Optional battery protection settings				
Resistor (R2) 12V cut-out 12V cut-in 12V max [kΩ] [V] [V] Voltage	24V cut-out 24V cut-in 24V max. [V] [V] Voltage	209		
0 9.6 10.9 17.0	21.3 22.7 31.5	€		
1.6 9.7 11.0 17.0	21.5 22.9 31.5			
<u>2.4 9.9 11.1 17.0</u>	21.8 23.2 31.5			



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3.6 4.7

6.2

8.2

11

14

18

24

33

47 82 220 10.0

10.1

10.2

10.4

10.5

10.6 10.8 10.9

11.0

11.1 11.3

9.6

CD.46.F2.02

23.4 23.7 23.9

24.2

24.5 24.7 25.0 25.2

25.5

25.7 26.0

17.0 17.0 17.0

17.0

17.0 17.0 17.0

17.0 17.0 17.0

17.0 17.0

11.3 11.4 11.5 11.7 11.8 11.9 12.0 12.2 12.3

12.4 12.5 10.9 22.0 22.3

22.5

22.8

23.0 23.3 23.6 23.8

24.1

24.3 24.6

1

31.5 31.5 31.5 31.5 31.5

31.5

31.5 31.5

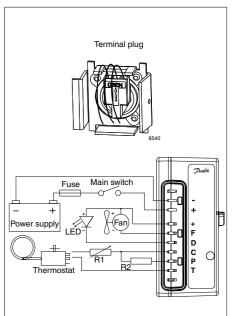
31.5 31.5

31.5 31.5

31.5

Capacity (EN 12900/CECOMAF)

Capacity (EN 12900	/CECOM	AF)				wat
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5
2,500	35.3	49.5	55.0	66.6	87.1	112	140
3,100	41.8	59.0	65.6	79.6	104	133	168
3,800	49.6	70.5	78.5	95.3	125	159	200
4,400	54.8	78.0	86.7	105	138	176	221
Capacity (ASHRAE						wat
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5
2,500	43.5	61.1	67.8	82.2	108	138	174
3,100	51.5	72.8	80.9	98.2	129	165	207
3,800	61.1	87.0	96.8	118	154	197	248
4,400	67.6	96.1	107	130	170	218	274
Power cor	sumption	้า					wat
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5
2,500	40.0	50.0	53.4	60.3	71.3	83.1	96
3,100	48.7	61.2	65.4	73.8	87.0	101	118
3,800	59.5	75.0	80.2	90.3	106	124	145
4,400	69.0	87.0	93.0	105	123	144	168
Current co	onsumptio	ON (for 24V	application	s the follow	ing must be	halved)	
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5
2,500	3.3	4.2	4.5	5.0	5.9	6.9	8.0
3,100	4.1	5.1	5.5	6.1	7.2	8.5	9.8
3,800	5.0	6.3	6.7	7.5	8.9	10.3	12.1
4,400	5.8	7.2	7.7	8.7	10.3	12.0	14.0
COP (EN 1	2900/CE	COMAF)					W/W
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5
2,500	0.88	0.99	1.03	1.10	1.22	1.34	1.46
3,100	0.86	0.96	1.00	1.08	1.20	1.31	1.42
3,800	0.83	0.94	0.98	1.06	1.17	1.28	1.39
4,400	0.79	0.90	0.93	1.01	1.12	1.22	1.32
COP (ASH	IRAE)						W/V
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5
2,500	1.09	1.22	1.27	1.36	1.51	1.66	1.81
3,100	1.06	1.19	1.24	1.33	1.48	1.62	1.76
3,800	1.03	1.16	1.21	1.30	1.45	1.59	1.71
4,400	0.98	1.11	1.15	1.24	1.38	1.51	1.63
Test condition	s	El	N 12900/CEC	COMAF	ASHRAE		



Test conditions 55°C 32°C Condensing temperature Ambient and suction gas temp. 32° Liquid temperature 55° Static cooling, 12V DC Fan cooling of electronic unit integrated 1 Watt = 0.86 kcal/h 55°C

Compressor speed

Electronic unit	Resistor (R1) Ω	Motor speed rpm	Contr.circ. current mA
10110280 10110104E0	0 203 451 867 1700	AEO 2,500 3,100 3,800 4,400	6 5 4 3 2

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

ASHRAE 55°C 32°C 32°C

Wire dimensions

Cross section mm ²	Max length* m 12V operation	Max length* m 24V operation						
6	2.5	5						
*Length	*Length between battery and electronic unit							

Accessories

Devices	BD80F
Standard automobile fuse	Not
DIN 7258 12V: 30A	deliverable
24V: 15A	from Danfoss
Mounting accessories	
Bolt joint for one compressor	
Bolt joint in quantities	118-1918
Snap on in quantities	118-1919

Operational errors shown by LED (optional)

Number of	Error type
flashes	
5	Thermal cut-out of electronic unit (If the refrigeration system has been too hea- vily 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 lo- aded, the motor cannot maintain minimum speed at approximately 2,450 rpm).
3	Motor start error (The rotor is blocked or the differential pres- sure in the refrigeration system is too high (>5 bar)).
2	Fan over-current cut-out (The fan loads the electronic unit with more than $1A_{peak}$).
1	Battery protection cut-out (The voltage is outside the cut-out setting).

Danfoss

BD35F Direct Current Compressor for Solar Applications R134a 10 - 45V

	Data Sheet	
Code numbers		
BD35F without electronic unit	101Z0210	BD35F Danfoss 101Z
Electronic unit 10-45V DC	single: 101N0400, 30 pcs: 101N0401	Application
		Blue stripe
		CE V 1297 0210 19
Application		Barcode on white background
Application	LBP/MBP/(HBP)	Grey background
Evaporating temperature range °C		e 4
Voltage range / max. voltage	10 - 45V DC	0277 00
Fan output	same as input voltage	EC approval mark
Max. machine compartment temperature °C	55	
Comp. cooling at ambient temp. 43°C	S or F ₁ *	S = Static cooling normally sufficient
	* depending on application	$O = Oil cooling F_1 = Fan cooling 1.5 m/s$
Desien		(compressor compartment temperature equal to ambient temperature)
Design		F_2 = Fan cooling 3.0 m/s necessary
Displacement cm		
Oil quantity cm		
Maximum refrigerant charge	300	
Free gas vol. in compressor cm		204
Free gas vol. in compressor cm Weight: Compressor/Electronic unit kg	3 870	<u>204</u> ↓ 170
•	3 870	
Weight: Compressor/Electronic unit ko	3 870	◀
Weight: Compressor/Electronic unit kg	³ 870 4.3/0.25	
Weight: Compressor/Electronic unit kg Motor Motor type	3 870 3 4.3/0.25 Variable speed	
Weight: Compressor/Electronic unit kg Motor Motor type Resistance, all 3 windings (25°C) G	3 870 4.3/0.25 Variable speed 2 2.3	
Weight: Compressor/Electronic unit kg Motor Motor type	3 870 3 4.3/0.25 Variable speed	
Weight: Compressor/Electronic unit kg Motor	3 870 4.3/0.25 Variable speed 2 2.3	
Weight: Compressor/Electronic unit kg Motor Motor type Resistance, all 3 windings (25°C) G	3 870 4.3/0.25 Variable speed 2 2.3	
Weight: Compressor/Electronic unit kg Motor Motor type Resistance, all 3 windings (25°C) G Approvals (electronic unit)	3 870 3 4.3/0.25 4 3/0.25 2 2.3 2 2.3 4 72/245 95/54 0277 00	
Weight: Compressor/Electronic unit kg Motor Motor type Resistance, all 3 windings (25°C) G Approvals (electronic unit) Dimensions	3 870 3 4.3/0.25 4 3/0.25 2 2.3 E4 72/245 95/54 0277 00 A 137 B 135	
Weight: Compressor/Electronic unit kg Motor Motor type Resistance, all 3 windings (25°C) G Approvals (electronic unit) Dimensions	3 870 3 4.3/0.25 4 3/0.25 2 2.3 E4 72/245 95/54 0277 00 A 137 B 135 B1 128	
Weight: Compressor/Electronic unit kg Motor Motor type Resistance, all 3 windings (25°C) Approvals (electronic unit) Dimensions Height mn	3 870 3 4.3/0.25 4 3/0.25 2 2.3 2 2.3 E4 72/245 95/54 0277 00 1 A 135 B1 128 B2 73	
Weight: Compressor/Electronic unit kg Motor	3 870 4.3/0.25 4.3/0.25 2 2.3 E4 72/245 95/54 0277 00 A 137 B 135 B1 128 B2 73 A 6.2 ±0.09	
Weight: Compressor/Electronic unit kg Motor Motor type Resistance, all 3 windings (25°C) G Approvals (electronic unit) G Dimensions Height Height mn Suction connector location/I.D. mn Process connector location/I.D. mn	3 870 3 4.3/0.25 4 3/0.25 2 2.3 E4 72/245 95/54 0277 00 3 E4 72/245 95/54 0277 00 4 137 B 135 B1 128 B2 73 1 C 6.2 ±0.09 1 D 6.2 ±0.09	
Weight: Compressor/Electronic unit kg Motor	3 870 3 4.3/0.25 4 3/0.25 2 2.3 2 2.3 E4 72/245 95/54 0277 00 3 E4 72/245 95/54 0277 00 4 137 B 135 B1 128 B2 73 A C 6.2 ±0.09 D 6.2 ±0.09 A E 5.0 +0.12/+0.20	

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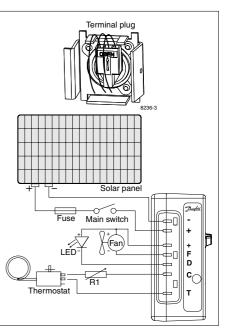
July 2003

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Danfoss

(EN 12000/CECOMAE)

Capacity	(EN 12	2900/C	ECOM/	۹F)						watt
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	15.8	23.9	26.9	33.1	43.8	56.6	71.7	89.9	111	136
2,500	20.2	29.9	33.5	41.2	54.6	70.7	89.7	112	139	
3,000	22.5	32.4	36.5	45.4	61.8	81.7	105	133		
3,500	26.2	35.9	40.4	50.5	69.8	93.6	122			
Capacity (ASHRAE) wa									watt	
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	19.5	29.4	33.1	40.7	54.0	69.8	88.6	111	137	169
2,500	24.9	36.8	41.3	50.7	67.3	87.1	111	139	172	
3,000	27.7	39.9	44.9	55.9	76.1	101	130	164		
3,500	32.2	44.2	49.7	62.2	86.0	115	150			
Power co	onsum	otion								watt
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	17.6	23.4	25.3	28.7	33.6	38.3	43.0	48.0	53.4	59.5
2,500	23.3	30.9	33.3	37.8	44.1	50.2	56.2	62.3	68.7	00.0
3.000	29.9	36.0	38.3	43.0	50.7	58.7	66.8	74.8	00.7	
3,500	36.0	42.8	45.4	50.8	59.5	68.9	78.5	7 1.0		
Current								alvad)		Α
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5		5	10
2,000	1.5	2.0	2.1	2.4	2.8	3.2	3.6	4.0	4.5	5.0
2,000	1.5	2.0	2.1	3.2	3.7	4.2	-	4.0 5.2	4.5 5.8	5.0
3,000	2.5	3.0	3.2	3.6	4.2	4.2	4.7 5.6	6.2	5.0	
3,500	3.0	3.6	3.8	4.3	4.2 5.0	4.9 5.7	6.5	0.2		
				4.3	5.0	5.7	0.5			14//14/
COP (EN			,					-	-	W/W
rpm∖°C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	0.90	1.02	1.06	1.15	1.31	1.48	1.67	1.87	2.08	2.29
2,500	0.87	0.97	1.01	1.09	1.24	1.41	1.60	1.80	2.02	
3,000	0.75	0.90	0.95	1.06	1.22	1.39	1.58	1.78		
3,500	0.73	0.84	0.89	1.00	1.17	1.36	1.55			
COP (AS	HRAE))								W/W
rpm∖°C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	1.10	1.25	1.31	1.42	1.61	1.82	2.06	2.31	2.57	2.84
2,500	1.07	1.19	1.24	1.34	1.53	1.74	1.97	2.23	2.50	
3,000	0.93	1.11	1.17	1.30	1.50	1.72	1.95	2.20		
3,500	0.89	1.03	1.09	1.23	1.44	1.68	1.91			
Test condition	ons		EN	12900/0	CECOMA	F AS	HRAE			
Condensing			55			55				
Ambiant on	d aution	and tomp		°C		20	°C			



3,000	1.17	
3,500	1.09	1
Test condition	EN 55'	
Ambient and	. 32	°C
Liquid tempe Static coolin 1 Watt = 0.8	55'	°C

Compressor speed

Resistor

(R1) Ω

0

173 450

865

1696

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

Motor

speed rpm AEO 2,000

2,500

3,000

3,500

Contr.circ.

current mA

2

Electronic

unit

101110400

withAFO

32°C 32°C

Accessories

Devices	BD35F
Standard automobile fuse	Not
DIN 7258 15A	deliverable
	from Danfoss
Mounting accessories	
Bolt joint for one compressor	118-1917
Bolt joint in quantities	118-1918
Snap on in quantities	118-1919

Wire dimensions

S AWG	ize Cross section		ength* eration	Max le 24V op	
Gauge	mm²	ft.	m	ft.	m
12	2.5	8	2.5	16	5
12	4	13	4	26	8
10	6	19.5	6	39	12
8	10	32.8	10	65.6	20
*Length between battery and electronic unit					

Operational	orrore	shown by	(ontional)
Operational	enus	SHOWITD	(UDUUUIIAI)

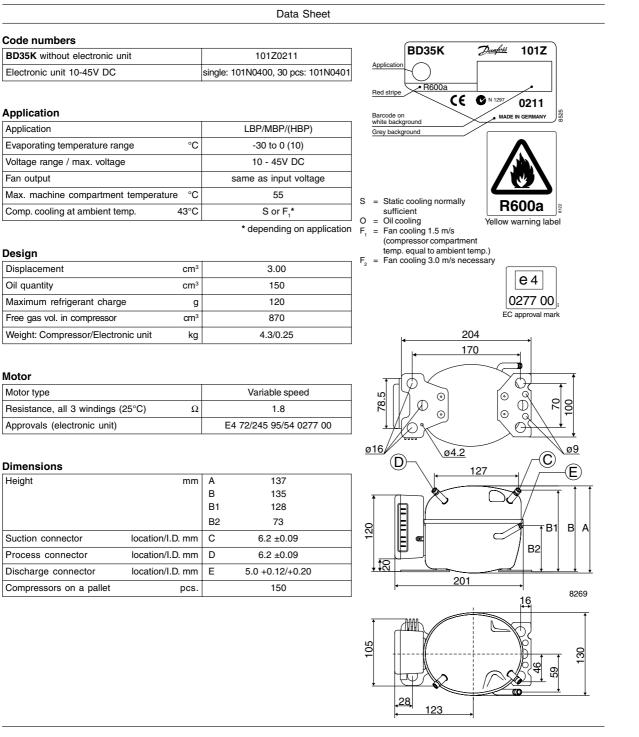
Number of flashes	Error type
5	Thermal cut-out of electronic unit (If the refrigeration system has been too hea- vily loaded, or if the ambient temperature is high, the electronic unit will run too hot).
4	Minimum motor speed error (If the refrigeration system is too heavily lo- aded, the motor cannot maintain minimum speed at approximately 1,850 rpm).
3	Motor start error (The rotor is blocked or the differential pres- sure in the refrigeration system is too high (>5 bar)).
2	Fan over-current cut-out (The fan loads the electronic unit with more than $1A_{\text{peak}}$).

2	
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CD.46.E1.02

Danfoss

BD35K Direct Current Compressor for Solar Applications (for stationary use only) R600a 10 - 45V

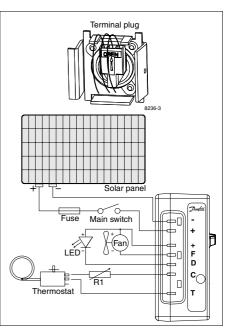


July 2003

Danfoss

Capacity (EN 12000/CECOMAE)

Capacity	(EN 12	2900/CI	ECOMA	AF)						watt
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	13.2	21.0	23.8	29.7	39.6	51.0	64.0	79.1	96.3	116
2,500	16.8	25.5	28.8	35.6	47.5	61.3	77.5	96.2	118	
3,000	20.7	30.5	34.3	42.3	56.3	72.9	92.4	115		
3,500	24.9	36.0	40.2	49.3	65.1	83.8	106			
Capacity	(ASHF	RAE)								watt
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	16.0	25.5	29.0	36.1	48.2	62.1	78.0	96.4	118	142
2,500	20.4	31.0	35.0	43.4	57.8	74.7	94.4	117	144	
3,000	25.2	37.1	41.7	51.4	68.5	88.7	113	140		
3,500	30.3	43.8	49.0	59.9	79.2	102	129			
Power co	onsum	otion								watt
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	18.5	22.5	23.9	26.4	30.3	34.2	38.0	41.8	45.7	49.6
2,500	23.8	28.5	30.0	32.9	37.2	41.5	45.8	50.2	54.9	
3,000	29.5	35.9	38.0	41.8	47.4	52.9	58.6	64.6		
3,500	35.1	42.7	45.2	49.7	56.4	63.0	69.7			
Current	consur	nption	(for 24V a	applicatio	ons the fo	llowing r	nust be h	alved)		Α
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	1.54	1.88	1.99	2.20	2.53	2.85	3.17	3.48	3.81	4.13
2,500	1.98	2.37	2.50	2.75	3.10	3.46	3.82	4.19	4.58	
3,000	2.46	2.99	3.16	3.48	3.95	4.41	4.88	5.38		
3,500	2.93	3.56	3.76	4.15	4.70	5.25	5.81			
COP (EN	12900	/CECO	MAF)							W/W
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	0.71	0.93	1.00	1.12	1.31	1.49	1.69	1.89	2.11	2.34
2,500	0.71	0.90	0.96	1.08	1.28	1.48	1.69	1.92	2.15	
3,000	0.70	0.85	0.90	1.01	1.19	1.38	1.58	1.78		
3,500	0.71	0.84	0.89	0.99	1.15	1.33	1.52			
COP (AS	HRAE)									W/W
rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	10
2,000	0.87	1.13	1.21	1.37	1.59	1.82	2.05	2.31	2.57	2.86
2,500	0.86	1.09	1.17	1.32	1.55	1.80	2.06	2.34	2.62	
3,000	0.85	1.03	1.10	1.23	1.44	1.68	1.92	2.17		
3,500	0.86	1.03	1.08	1.21	1.40	1.62	1.85			
Test condition					ECOMA		HRAE			
Condensing			55			55				



lest conditions Condensing temperature Ambient and suction gas temp. Liquid temperature Static cooling, 12V DC 1 Watt = 0.86 kcal/h preliminary data

Compressor speed

Resistor

(R1)

Ω

0

173

450 865

1696

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

Electronic

unit

101110400

with AFO

32°C 55°C

Contr.circ

current

mΑ

6

5

4

3

2

Motor

speed

rpm

AEO

2,000 2,500

3,000

3,500

55°C 32°C 32°C

Accessories

Devices	BD35K
Standard automobile fuse DIN 7258 15A	Not deliverable from Danfoss
Mounting accessories Bolt joint for one compressor Bolt joint in quantities Snap on in quantities	118-1917 118-1918 118-1919

Wire dimensions

whe unichoiona						
Size		Max le	ength*	Max length*		
AWG	Cross section	12V op	eration	24V op	eration	
Gauge	mm ²	ft.	m	ft.	m	
12	2.5	8	2.5	16	5	
12	4	13	4	26	8	
10	6	19.5	6	39	12	
8	10	32.8	10	65.6	20	
*I enoth between battery and electronic unit						

Operational errors shown by LED (optional)

Number of flashes	Error type
5	Thermal cut-out of electronic unit (If the refrigeration system has been too hea- vily 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 lo- aded, the motor cannot maintain minimum speed at approximately 1,850 rpm).
3	Motor start error (The rotor is blocked or the differential pres- sure in the refrigeration system is too high (>5 bar)).
2	Fan over-current cut-out (The fan loads the electronic unit with more than $1A_{\text{peak}}$).



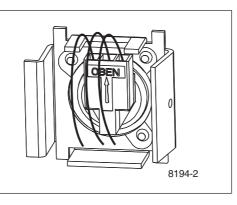
Data stamping

- The data stamping is placed on the top of the compressor, e.g. Z02007 (6 characters) 114A01F (7 characters) Composition of line 1

 - **Z0200**:Compressor type information (101Z0200 = Z0200) internal Danfoss code
 - 7: Composition of line 2
 - 11: Production week
 - 4: Production year
 - A: Production day
 - A = Monday, B = Tuesday, C = Wednesday, etc.
 - 01: Production hour 00 to 23 or shift code -1, -2, -3
 - Danfoss Compressors internal production location code F: A to G: Germany / K to N: Slovenia / R, S: Mexico

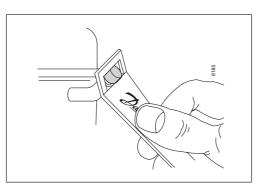
For the electronic unit, the code for date of manufacture is located on the printed circuit board, visible through the opening on the backside of the housing, where the cables get out.

Mounting the electronic unit



The cable plug of the electronic unit is mounted on the pins of the current lead-in on the compressor. Then the electronic unit itself is mounted on the bracket of the compressor. At first the left side is mounted, then the right side is pressed over the screw on the bracket. The electronic unit snaps on to the bracket and is now securely mounted on the compressor.

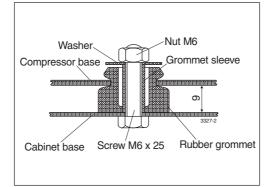
In case the electronic unit must be removed from the compressor, the screw has to be loosened.



The compressor is equipped with DANCON connectors which consist of a thick-walled, copperplated steel tube with high corrosion resistance, and a solderability equal to that of conventional copper connectors.

DANCON connectors are equipped with an aluminium cap (Capsolut) which gives a tight sealina.

The seal cap is easily removed with an ordinary pair of pliers or with a special tool.



Mounting accessories for BD compressors are supplied as a screw and nut assembly 118-1917. Each assembly 118-1917 is supplied in a bag containing four screws, nuts, washers, grommet sleeves and rubber grommets for mounting one compressor. The screw and nut assembly can be obtained in quantities under code no 118-1918.

Filter drier selection

Mounting accessories

Only filter driers which are declared by the manufacturer to be suitable for mobile applications must be used in refrigeration systems with BD35F, BD50F and BD80F compressors. Filter material powder ending up in the compressor will lead to excessive wear of the piston and transmission parts, and metal particles deposited in the motor windings will cause the compressor to stop because the electric signal back to the electronic unit is disturbed.

Connectors

<u>Danfoss</u>





BD50F / Electronic Unit 101N0210

BD50F / Electronic Unit 101N0300



BD50F / Electronic Unit 101N0220



BD35F Solar / Electronic Unit 101N0400



BD35K Solar / Electronic Unit 101N0400



BD80F / Electronic Unit 101N0280

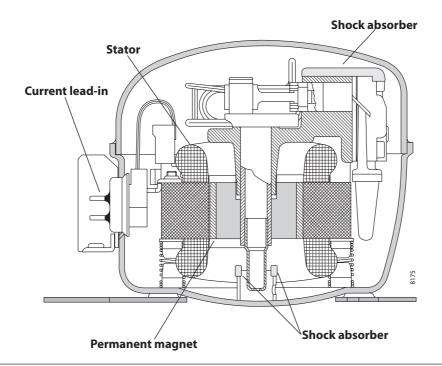


Code no	Description
101Z0200	Standard compressor, mm tube connectors, UL recognized
101Z0210	Standard compressor, mm tube connectors
101Z0204	Same as 101Z0200, inch tube connectors, UL recognized
101Z0211	For stationary use only, mainly solar applications, mm tube connectors
101Z1220	Standard compressor, mm tube connectors, UL recognized
101Z0203	Same as 101Z1220, inch tube connectors, UL recognized
101Z0280	Standard compressor, mm tube connectors
	101Z0200 101Z0210 101Z0204 101Z0211 101Z1220 101Z0203

Electronic Single Pack	Code no	Description
Electronic standard	101N0210	for BD35F/BD50F, speed setting, battery protection
Electronic EMI	101N0220	for BD35F/BD50F, radiation extra shielded, speed setting, battery protection
Electronic extended EMI	101N0900	for BD35F/BD50F, radiation extra shielded, conduction extra shielded,
		speed setting, battery protection
Electronic AEO	101N0300	for BD35F/BD50F, Adaptive Energy Optimization, speed setting, battery protection
Electronic solar	101N0400	for BD35F/BD35K, optimized for direct solar panel operation, speed setting
Electronic BD50F high start	101N0230	for BD50F only, extra high start performance, speed setting, battery protection
Electronic BD80F	101N0280	for BD80F only, Adaptive Energy Optimization, speed setting, battery protection

Electronic I-pack	Code no	Description
Electronic standard	101N0211	for BD35F/BD50F, speed setting, battery protection, 30 pcs.
Electronic EMI	101N0221	for BD35F/BD50F, radiation extra shielded, speed setting, battery protection, 30 pcs.
Electronic AEO	101N0301	for BD35F/BD50F, Adaptive Energy Optimization, speed setting, battery protection, 30 pcs.
Electronic solar	101N0401	for BD35F/BD35K, optimized for direct solar panel operation, speed setting, 30 pcs.
Electronic BD50F high start	101N0231	for BD50F only, extra high start performance, speed setting, battery protection, 30 pcs.
Electronic BD80F	101N0281	for BD80F only, Adaptive Energy Optimization, speed setting, battery protection, 28 pcs.

Compressor sectional view



Danfoss





The Danfoss product range for the refrigeration and air conditioning industry

Appliance Controls

General temperature controls for the home appliance industry. The product range comprises CFC-free electromechanical and electronic thermostats for refrigerators and freezers produced to customer specifications as well as service thermostats for all refrigeration and freezing appliances.

Commercial Compressors

Large hermetic reciprocating and scroll compressor technologies for commercial air conditioning and refrigeration. The compressors and condensing units are used in a large array of applications in both businesses. This ranges from water chillers, large packaged air conditioners as well as medium and low temperature refrigeration systems for food storage and processing.

Danfoss Compressors

Hermetic compressors and fan-cooled condensing units for refrigerators, freezers and light commercial applications such as bottle coolers and display counters. Danfoss also produces compressors for heating pump systems as well as 12 and 24 volt compressors for refrigerators and freezers used in mobile applications and solar power. The division has a leading position within energy utilisation, noise filtering and know-how

Refrigeration and air conditioning controls

A comprehensive and highly reputed range of self-acting valves, electronic valves and regulators as well as system protectors and line components for the refrigeration and air conditioning market. These products include thermostatic expansion valves, solenoid valves, thermostat and pressure controls, modulation pressure regulators, filter driers, shut-off valves, sight glasses, check valves, non-return valves and water valves. Decentralised electronic systems for full regulation and control of refrigeration applications are also developed and produced at Danfoss.

Industrial Controls

Products and customer specific solutions for industrial monitoring and controls systems based on the principles of pressure and temperature measurement, electrical power and fluid control. Products include a wide range of automatic controls for process control and regulation such as contactors and motor starters, electrically, pneumatically and temperature activated valves as well as temperature and pressure transmitters and switches.

> Danfoss Compressors GmbH Mads Clausen Str. 7 D-24939 Flensburg / Germany www.danfoss.com/compressors

about environment-friendly compressors.

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