MAKING MODERN LIVING POSSIBLE

R134a • R600a • R290

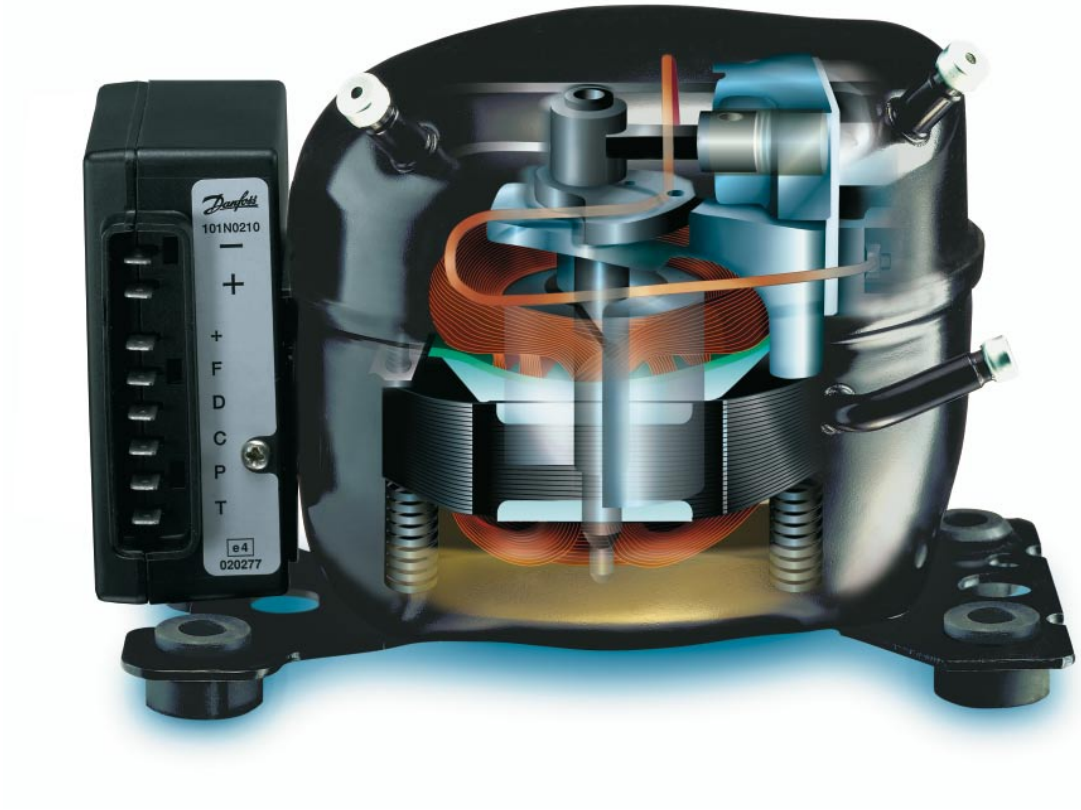
Danfoss BD Compressors

Direct current & multivoltage applications

12-24 V DC • 100-240 V AC, 50/60 Hz

REFRIGERATION &
AIR CONDITIONING DIVISION

Collection of datasheets


101N0210
F
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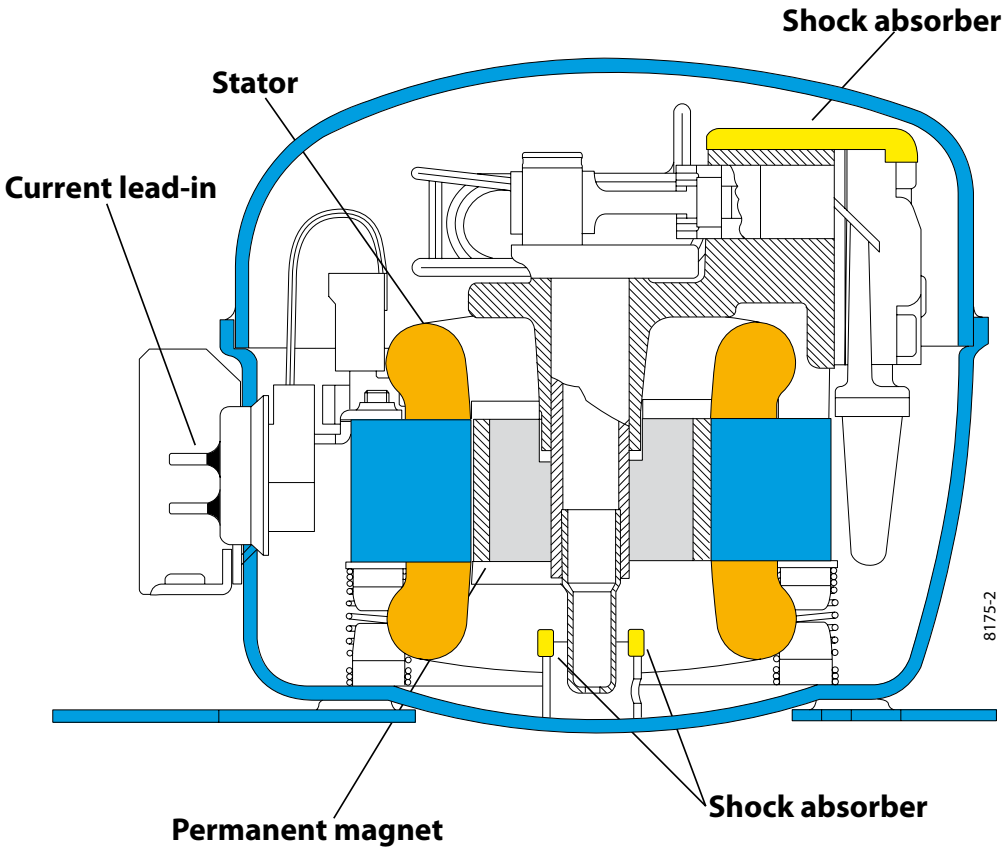

Shock absorber
Stator
Current lead-in
8175-2
Shock absorber
Permanent magnet

Contents

General

Danfoss variable speed refrigeration compressors type **BD35F**, **BD50F**, **BD80F** and **BD250GH** are designed for connection to 12V and 24V DC power supply and for refrigerant R134a (CF_3-CH_2F).
The compressors are intended especially for use in mobile applications, e.g. cooling boxes, boats, caravans, trucks, vans and buses. 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 using either capillary tube or TEV as the throttling device.

The compressors **BD35K** and **BD100CN** are especially designed for refrigeration systems using isobutane, refrigerant R600a (C4H10) and propane, refrigerant R290 (C3H8), respectively, as can be seen from the individual type label information.
R600a and R290 are classified as flammable refrigerants of class A3 according to ANSI/ASHRAE 34. Accordingly, special safety regulations must be complied with. A special Test Schedule has been integrated in the European Standards EN 60335-2-24 for domestic and EN 60335-2-89 for commercial appliances and in the corresponding international standards IEC 60335-2-24 and IEC 60335-2-89.
The compressors **BD35K** and **BD100CN** must only and exclusively be used in appliances certified for flammable refrigerants 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 flammable refrigerants.
These compressors are designed for stationary use only.

The BD compressor concept includes an electronic unit which features overload protection, battery protection; fan, LED, lamp connections; load dump and *Adapative Energy Optimizing*. 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.

Acoustic noise & tilt angle

In addition to being especially quiet in operation - approx. 35db(A) at 3000 rpm, the compressors have a high COP value and 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

Data stamping

Danfoss Compressors have a manufacturing date code stamping on the front of the housing. The content of the coding is 2 lines, with 6 and 7 characters each, according to the example below.

Z02007 (6 characters)

117A01F (7 characters)

Composition of line 1

Z0200: Compressor type information (101Z0200 = Z0200)

7: internal Danfoss code

Composition of line 2

11: Production week

7: Production year

A: Production day

A = Monday, B = Tuesday, C = Wednesday, , D=Thursday, etc.

01: Production hour 00 to 23 or shift code -1, -2, -3

F: Danfoss Compressors internal production location code

A to G	Germany, A until week 50/2005 D until week 35/2006
K to N	Slovenia
A, D, R	Slovakia, A from week 01/2006 D from week 38/2006 R from week 01/2005

In addition the production location code will in the future be marked - *for export reasons (outside EU)* - with the country of origin on the type label.

Example for the barcode on the printed circuit board (inside the electronic unit):

0727200983 (10 characters)

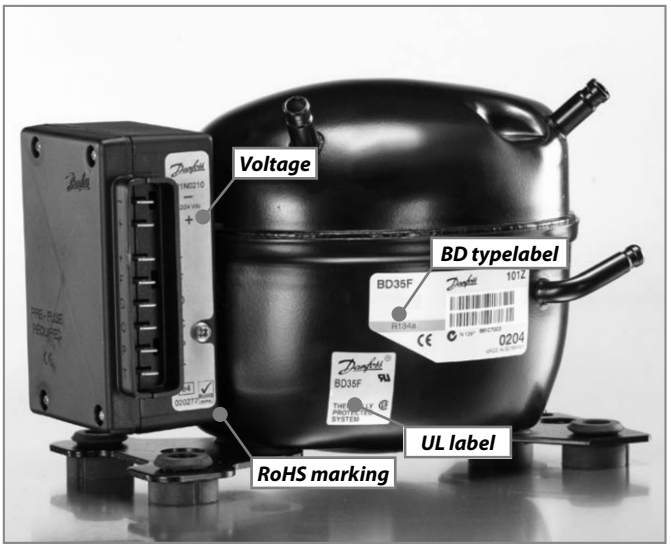
072: Production day

7: Production year

2: Number of lot

00983: Number of electronic unit

Label design



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.

All BD compressors are designed to meet specifications according to CE requirements. Furthermore they are designed to meet the automotive e–standard.

In addition we have VDE and UL/CSA approval on most products (see table below for further information).

Nominal voltage has been removed and moved to the electronic unit.
LBP/MBP marking has also been removed. VDE marking will not appear on the label due to the fact that the compressor can be applied with non VDE approved electronic units.
The label on the electronic unit contains the nominal supply voltage. Located between + and – terminal. The AC/DC electronic contains in addition the applied nominal AC voltage. Voltage on the UL label has been removed and moved to the electronic unit.

All changes have been made from approx. June/July 2006

VDE/UL/CSA approvals

Compressors		Electronic Units				
		Standard	EMI	Extended EMI	AEO	Solar
		101N0210	101N0220	101N0900	101N0300	101N0400
BD35F mm	101Z0200	**VDE/UL/CSA**	**VDE/UL/CSA**		**UL/CSA**	**UL/CSA**
BD35F inch	101Z0204	**VDE/UL/CSA**	**VDE/UL/CSA**		**UL/CSA**	**UL/CSA**
BD35K (R600a)	101Z0211					
BD50F mm	101Z1220	**VDE/UL/CSA**	**VDE/UL/CSA**		**UL/CSA**	
BD50F inch	101Z0203	**VDE/UL/CSA**	**VDE/UL/CSA**		**UL/CSA**	
BD80F	101Z0280					
BD250GH	101Z0400					
BD250GH Twin	101Z0500					
BD100CN (R290)	101Z0401					

Compressors		Electronic Units			
		AC/DC conv.	High start	High speed	Automotive
		101N0500	101N0230	101N0280	101N0600
BD35F mm	101Z0200	**VDE/UL/CSA**			
BD35F inch	101Z0204	**VDE/UL/CSA**			
BD35K (R600a)	101Z0211				
BD50F mm	101Z1220	**VDE/UL/CSA**	**UL/CSA**		
BD50F inch	101Z0203	**VDE/UL/CSA**	**UL/CSA**		
BD80F	101Z0280			**UL/CSA**	
BD250GH	101Z0400			**UL/CSA**	
BD250GH Twin	101Z0500			**UL/CSA**	
BD100CN (R290)	101Z0401				

VDE/UL/CSA = Combination possible, VDE or UL or CSA approval

= Combination possible, but no approval

= Combination not possible

Warnings (BD35K, BD100CN)

Yellow warning label

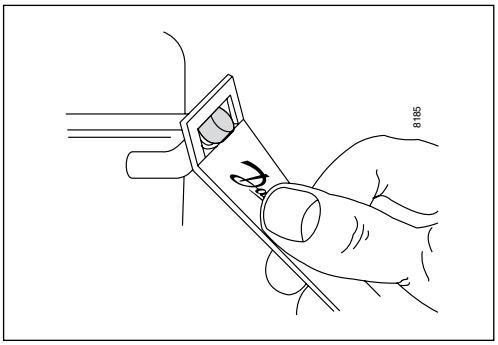
R600a is flammable in concentrations of air between approximately 1.5% and 8.5% by volume (LEL lower explosion limit and UEL upper explosion limit). An ignition source at a temperature higher than 460°C is needed for a combustion to occur.
Isobutane is significantly different from R12 and R134a. This means that compressors for R600a cannot be used with R12 or R134a.

Yellow warning label

R290 is flammable in concentrations of air between approximately 2.1% and 9.5% by volume (LEL lower explosion limit and UEL upper explosion limit). An ignition source at a temperature higher than 470°C is needed for a combustion to occur.

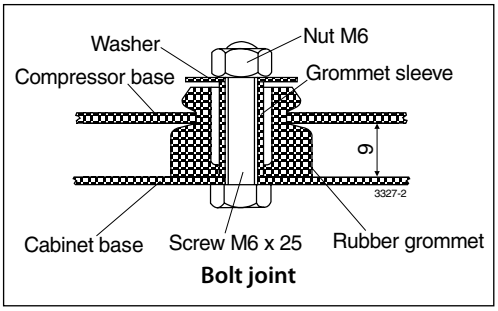
No high potential test nor start tests must be carried out while the compressor is under vacuum.
No attempt must be made to start the compressor without a complete starting device.
Allow the compressor to reach a temperature above 10°C before starting the first time in order to avoid starting problems.
Anti-freeze agents must not be used in the compressors as such agents are damaging to several of the materials used. In particular, the ethyl or methyl alcohol contents of such anti-freeze agents have a destructive effect on the synthetic motor insulation.

Connectors

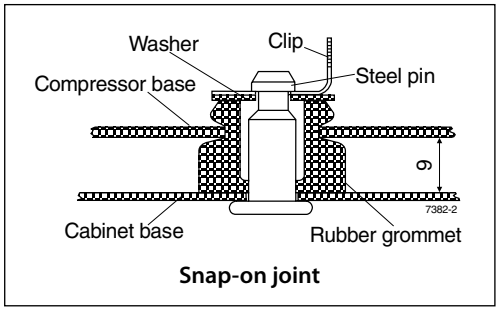


The compressor is equipped with DANCON connectors which consist of a thick-walled, copperplated steel tube with high corrosion resistance, and a solderability equal to that of conventional copper connectors.
DANCON connectors are equipped with an aluminium cap (Capsolut) which gives a tight sealing.
The seal cap is easily removed with an ordinary pair of pliers or with a special tool.

Mounting accessories



Bolt joint



Snap-on joint

The mounting accessories for the compressors are available in two versions, with bolt joint or snap-on joint. The rubber grommets are designed for the 16 mm holes of the baseplate.

Bolt joint for one compressor in a bag	118-1917
Bolt joint in quantities	118-1918
Snap-on in quantities	118-1919

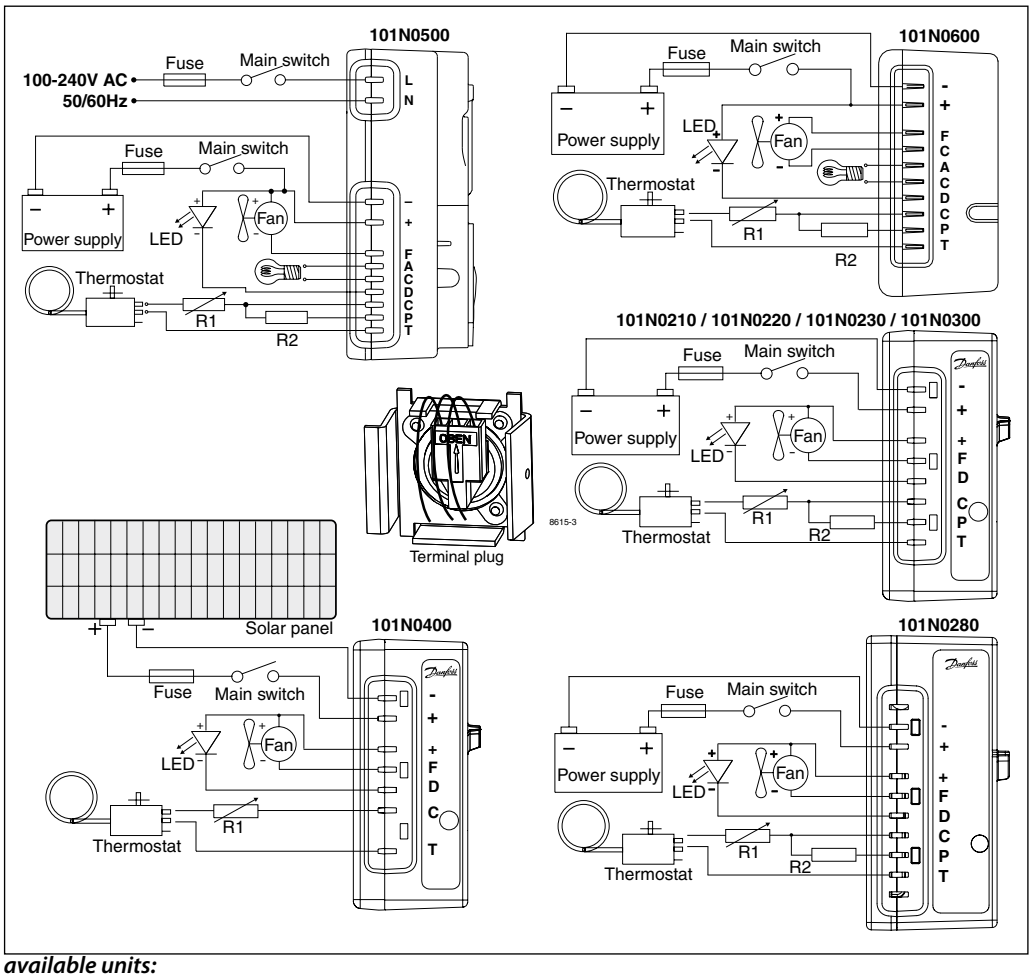
Filter drier selection

Only filter driers which are declared by the manufacturer to be suitable for mobile applications must be used in refrigeration systems with BD 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.

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 7. 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.
If the chassis is used as a conductor, a proper connection between cable and chassis must be established.
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 to avoid the battery from being drained.

Electronic units & wiring



available units:

BD35F: 101N0210, 101N0220, 101N0300, 101N0400, 101N0500, 101N0600
BD50F: 101N0210, 101N0220, 101N0230, 101N0300, 101N0500
BD80F: 101N0280
BD250GH: 101N280,
BD250/250GH: 2 x 101N0280
BD35K: 101N0400, 101N0210, 101N0220
BD100CN: 101N0280

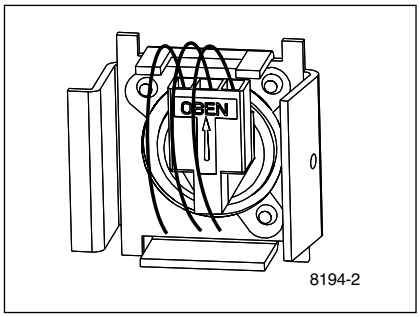
Voltage range

BD35/50/80F/250GH/100CN: 12V DC systems: 10.4V (9.6V min.) - 17V max. ;
24V DC systems: 22.8V (21.3V min) - 31.5V max.
BD35F/BD35K: Solar systems: 10V - 45V, no battery protection.
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 9.
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 220kΩ 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.
BD35/50F: AC power supply systems: Nominal voltages from 100 to 240V AC 50/60Hz. 85V min. - 265V max., 50/60Hz. Power consumption is limited to 100W with the BD50F compressors. Earth connection required.

Electronic unit 101N0230

In applications providing pressure equalization before compressor start and operating in ambient conditions below 32°C (90°F), electronic unit 101N0210 is appropriate for both the BD35F and BD50F compressors. Electronic unit 101N0230 is offered for use with Danfoss BD50F compressors to provide additional starting torque for the BD50F compressor. Electronic unit 101N0230 is not suitable for use with the BD35F compressor. The BD50F has a stronger motor than the BD35F and can tolerate the higher start current furnished by the 101N0230 electronic unit.

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 dismantled.
Earth connection (via compressor baseplate) can be used if required.

Cable dimensions

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

BD35/50F & BD35K:

Size		Max. length* 12V operation		Max. length* 24V operation	
Cross section	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 an electronic unit**

BD35/50F AC operation:

Cross section min. 0.75 mm² or AWG 18

BD80F

Size		Max. length* 12V operation		Max. length* 24V operation	
Cross section	AWG				
[mm²]	[Gauge]	[m]	[ft.]	[m]	[ft.]
6	10	2.5	8	5	16

BD250GH

Size		Max. length* 12V operation		Max. length* 24V operation	
Cross section	AWG				
[mm²]	[Gauge]	[m]	[ft.]	[m]	[ft.]
8	8	2.5	8	5	16

***Length between battery an electronic unit**

Compressor speed

Without any resistor in the control circuit, the compressor will run with a fixed speed of **2,000/2500 rpm** when the thermostat is switched on, depending on the electronic unit version (see tables below).
Other fixed speeds in the range between **2,000/2,500** and **3,000/3,100/3,800** or **3,500/4,400rpm** can be obtained when a resistor (R1) is installed between terminal C and P to adjust the current of the contol circuit (please see wiring diagrammes page 6).
In AEO (Adaptive Energy Optimizing) speed mode the BD compressor will always adapt its speed to the actual cooling demand.

Compressor	Electronit unit Code number	Resistor (R1) [Ω]	Motor speed [rpm]	Control circuit current [mA]
BD35F	**101N0210 101N0220 101N0500 101N0600**	0	2,000	5
		277	2,500	4
		692	3,000	3
		1523	3,500	2
BD35F	**101N0300 101N0400 with AEO**	0	AEO	6
		173	2,000	5
		450	2,500	4
		865	3,000	3
		1696	3,500	2
BD50F	**101N0210 101N0220 101N0230 101N0500**	0	2,000	5
		277	2,500	4
		692	3,000	3
		1523	3,500	2
BD50F	**101N0300 with AEO**	0	AEO	6
		173	2,000	5
		450	2,500	4
		865	3,000	3
		1696	3,500	2
BD35K	**101N0400 with AEO**	0	AEO	6
		173	2,000	5
		450	2,500	4
		865	3,000	3
		1696	3,500	2
BD80F BD100CN BD250GH BD250/250GH	**101N0280 with AEO**	0	AEO	6
		203	2,500	5
		451	3,100	4
		867	3,800	3
		1700	4,400	2

Thermostat connection

BD compressors can operate with normal mechanical type thermostats as used in refrigeration appliances, or with electronic 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 to the electronic unit.
A system with no stand-by power consumption can be established if the thermostat is replaced by a jumper between the terminals C and T, and the main switch is replaced by a thermostat. In this case the full current to the compressor flows through the thermostat, which must be rated accordingly with a leakage current of approx. 4mA

Fan connection

If a fan is to be used, it must be connected to the electronic unit terminals + and F. On electronic unit 101N0600 a fan must be connected to C andF.
Always use a 12V fan, also in 24V systems, as the electronic unit will automatically reduce the applied voltage to 12V for the fan.
Using the special solar electronic unit 101N0400, the fan runs with input voltage always.
The max. load on the electronic unit is $0.5A_{average}$ or $1A_{peak}$. The fan is allowed to start with a higher current for the first 2 seconds.
If the fan becomes overloaded, both fan and compressor will be cut out by the overload protection.

Lamp connection

A 12V DC 5 Watt lamp can be connected between the terminals A and C on electronic unit 101N0500 and 101N0600. The output voltage between the terminals A and C is always regulated to 12V DC. A 12V DC lamp must be used for both 12V and 24V power supply systems. The lamp output can supply a continuous current of $0.5A_{average}$

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):

BD35/50F, BD35K

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 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).

BD80F, BD100CN, BD250GH, BD250/250GH

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 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).

Troubleshooting

To diagnose why a compressor comes to an unintended stop, it is recommended to have a 10mA Light Emitting Diode (LED) installed between the terminals + and D, please see page 3 and 4. Provided that the electronic unit is properly connected to the power supply, and the thermostat is on, the number of flashes emitted by the LED will give a hint about the reason for the interruption of the compressor operation.
The motor windings can be checked for defects by measuring the resistance between the current lead-in pins. If the measured values between all 3 pins are approximately the same, the motor is most likely all right.
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 overload protection is activated, the compressor enters a cycle in which it attempts to start at approximately 60 seconds intervals until a successful start is achieved.

Overload protections

The compressor overload and start protection cuts off power to the compressor if the compressor speed drops below approximately 1,850 rpm (BD35F/BD50F/BD35K) or 2,450 rpm (BD80F/BD250GH/BD100CN) or if this motor speed is not reached during the start sequence. Possible reasons for overload protection activating could be excess refrigeration system pressures during operation or an excessive pressure differential. The fan overload protection stops the compressor and fan if the fan current exceeds $0.5A_{average}$ or $1A_{peak}$.
If the electronic unit heat sink senses a temperature >100°C it will cause the compressor to stop. Restart will occur automatically when the temperature has dropped. (<80°C, with 60 seconds additional delay).
If a fan is installed, it will continue to run if the compressor stops due to overload or electronic unit overheating.

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 approximately 60 seconds 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

To ensure sufficient battery power for correct compressor operation or to avoid permanent damage to the battery because of heavy discharge, the BD electronic unit has integrated battery protection (except electronic unit 101N0400).
The compressor is stopped and restarted again according to the dedicated voltage limits measured on the + and - terminals of the electronic unit.
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.

Standard battery protection settings (no connection C - P)

12V cut-out [V]	12V cut-in [V]	24V cut-out [V]	24V cut-in [V]
10.4	11.7	22.8	24.2

Optional battery protections settings

Resistor (R2)	12V cut-out	12V cut-in	12V max.	24V cut-out	24 V cut-in	24V max.
[kΩ]	[V]	[V]	Voltage [V]	[V]	[V]	Voltage [V]
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

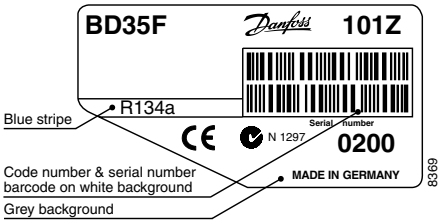
tolerances: ± 0.3V DC

BD35F Compressor with Electronic Unit 101N0500

BD35F Direct Current Compressor R134a, 12-24V DC , 10-45V DC Solar & 100-240V AC 50/60Hz

General

Code number (without electronic units)	101Z0200
Electronic unit 12-24V DC - standard	single: 101N0210, 30 pcs: 101N0211
Electronic unit 12-24V DC - with metal shielding	single: 101N0220, 30 pcs: 101N0221
Electronic unit 12-24V DC - with AEO	single: 101N0300, 30 pcs: 101N0301
Electronic unit 10-45V - for solar applications	single: 101N0400, 30 pcs: 101N0401
Electronic unit 12-24V DC & 100-240V AC 50/60Hz	single: 101N0500, 36 pcs: 101N0501
Electronic unit 12-24V DC - for automotive applications	single: 101N0600, 30 pcs: 101N0601
Approved compressor - electronic unit combinations	refer to *Technical Info* DEHC.EI.100.C
Additional approvals	e4, CE, C-Tick
Compressors on pallet	150



Approval mark

Application

Application		LBP/MBP/HBP
Evaporating temperature	°C	-30 to 0 (10)
Voltage range (DC & AC)		12-24V DC & 100-240V AC 50/60Hz
		10-45V DC for solar applications
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	S
38°C	S	S	S
43°C	S	S	S
Remarks on application: Fan cooling F_1 depending on application and speed.			

S = Static cooling normally sufficient
O = Oil cooling
F_1 = Fan cooling 1.5 m/s (compressor compartment temperature equal to ambient temperature)
F_2 = Fan cooling 3.0 m/s necessary
SG = Suction gas cooling normally sufficent
– = not applicable in this area

Motor

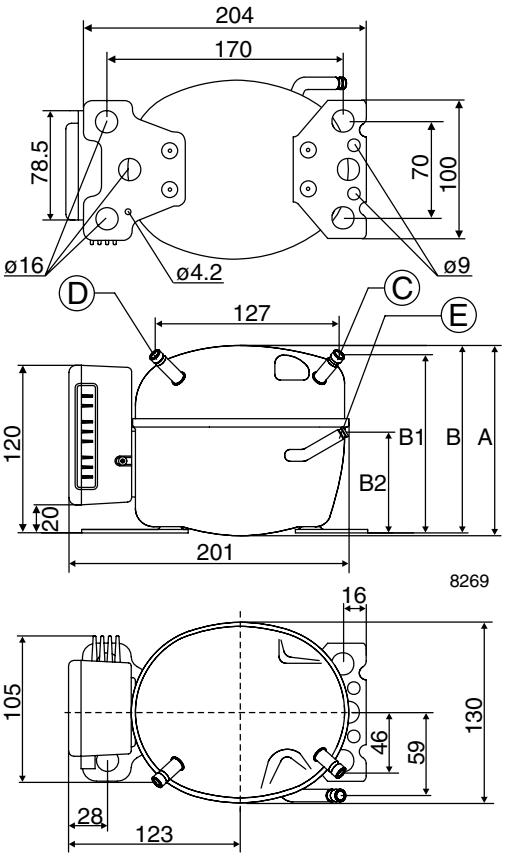
Motor type		Variable speed
Resistance, all 3 windings (25°C)	Ω	2.2

Design

Displacement	cm^3	2.00
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	4.3/0.25

Dimensions

Height	mm	A	137
		B	135
		B1	128
		B2	73
Suction connector	location/I.D. mm | angle	C	6.2 | 41.5°
Process connector	location/I.D. mm | angle	D	6.2 | 45°
Discharge connector	location/I.D. mm | angle	E	5.0 | 21°
Connector tolerance	I.D. mm		±0.09, on 5.0 +0.12/+0.20



Standard battery protection settings (no connection C - P)

12V cut-out [V]	12V cut-in [V]	24V cut-out [V]	24V cut-in [V]
10.4	11.7	22.8	24.2

Optional battery protections settings (not possible with electronic unit 101N0400)

Resistor (R2) [kΩ]	12V cut-out [V]	12V cut-in [V]	12V max. Voltage [V]	24V cut-out [V]	24 V cut-in [V]	24V max. Voltage [V]
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

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	15.8	23.9	26.9	33.1	43.8	56.6	71.7	89.9	111	122	136	
2,500	20.2	29.9	33.5	41.2	54.6	70.7	89.7	112	139	152		
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 LBP) 12V DC static cooling **watt**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000	19.5	29.4	33.1	40.7	54.0	69.8	88.6	111	137	151	169	
2,500	24.9	36.8	41.3	50.7	67.3	87.1	111	139	172	189		
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 consumption 12V DC static cooling **watt**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000	17.6	23.4	25.3	28.7	33.6	38.3	43.0	48.0	53.4	56.0	59.5	
2,500	23.3	30.9	33.3	37.8	44.1	50.2	56.2	62.3	68.7	71.7		
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 consumption (for 24V applications the following must be halfed) 12V DC static cooling **A**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000	1.5	2.0	2.1	2.4	2.8	3.2	3.6	4.0	4.5	4.67	5.0	
2,500	1.9	2.6	2.8	3.2	3.7	4.2	4.7	5.2	5.8	5.98		
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 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	0.90	1.02	1.06	1.15	1.31	1.48	1.67	1.87	2.08	2.17	2.29	
2,500	0.87	0.97	1.01	1.09	1.24	1.41	1.60	1.80	2.02	2.12		
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 (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	1.10	1.25	1.31	1.42	1.61	1.82	2.06	2.31	2.57	2.70	2.84	
2,500	1.07	1.19	1.24	1.34	1.53	1.74	1.97	2.23	2.50	2.63		
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					

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 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 $1A_{peak}$).
1	**Battery protection cut-out** (The voltage is outside the cut-out setting).

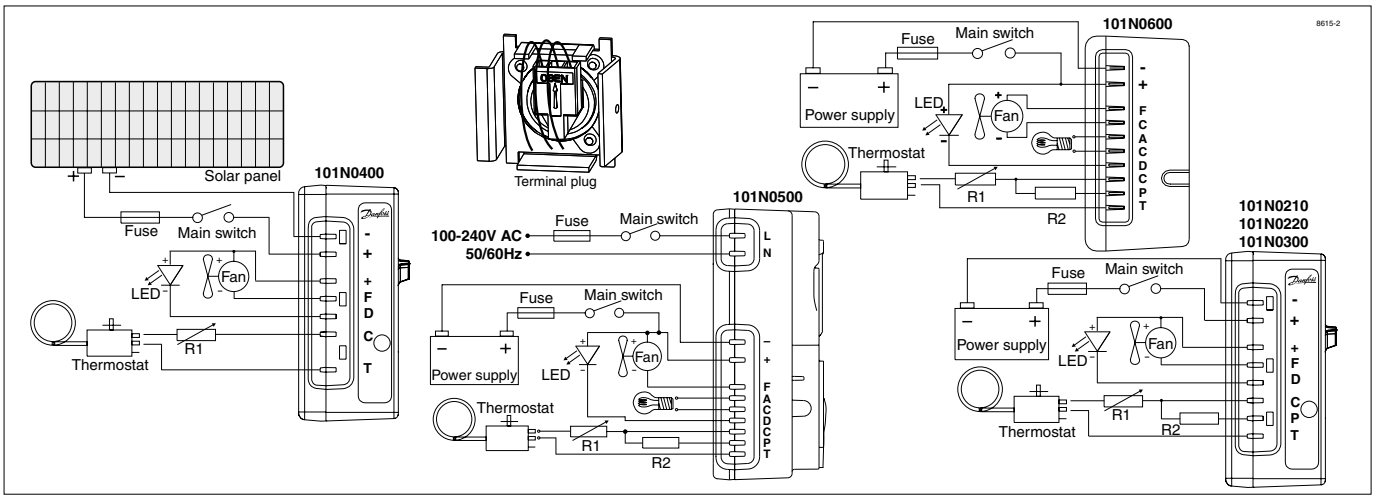
Wire Dimensions DC

Size Cross section	Size AWG	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 an electronic unit**

Wire dimensions AC

Cross section min. 0.75 mm² or AWG 18



Compressor speed

Electronit unit Code number	Resistor (R1) [Ω]	Motor speed [rpm]	Control circuit current [mA]
101N0210 101N0220 101N0500 101N0600	0	2,000	5
	277	2,500	4
	692	3,000	3
	1523	3,500	2
101N0300 101N0400 with AEO	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.

Test conditions	EN 12900/CECOMAF	ASHRAE
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

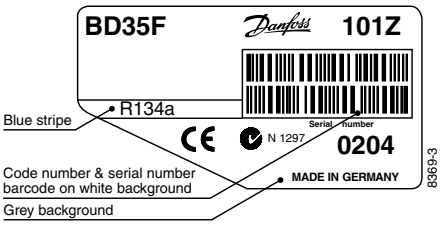
Accessories for	BD35F	Code number
Bolt joint for one compressor	Ø: 16 mm	118-1917
Bolt joint in quantities	Ø: 16 mm	118-1918
Snap-on in quantities	Ø: 16 mm	118-1919
Remote kit (without cable)		105N9210
AC line cord (UL approved/VDE approved)		105N9520/30
DC usage: Std. automobile fuse12V: 15A / 24V: 7.5A Main switch: rated to min. 20A		Not deliverable from Danfoss
AC usage: Fuse 100-240V: 4A / Main switch: min. 6A		

Datasheet:
DEHC.ED.100.D3.02 / January 2007

BD35F Direct Current Compressor (Inch Connectors), R134a, 12-24V DC, 10-45V DC Solar & 100-240V AC 50/60Hz

Compressors

Code number (without electronic units)	101Z0204
Electronic unit 12-24V DC - standard	single: 101N0210, 30 pcs: 101N0211
Electronic unit 12-24V DC - with metal shielding	single: 101N0220, 30 pcs: 101N0221
Electronic unit 12-24V DC - with AEO	single: 101N0300, 30 pcs: 101N0301
Electronic unit 10-45V - for solar applications	single: 101N0400, 30 pcs: 101N0401
Electronic unit 12-24V DC & 100-240V AC 50/60Hz	single: 101N0500, 36 pcs: 101N0501
Electronic unit 12-24V - for automotive applications	single: 101N0600, 30 pcs: 101N0601
Approved compressor - electronic unit combinations	refer to *Technical Info* DEHC.EI.100.C
Additional approvals	e4, CE, C-Tick
Compressors on pallet	150



Approval mark

Application

Application		LBP/MBP/HBP
Evaporating temperature	°F	-20 to 50
Voltage range (DC & AC)		12-24V DC & 100-240V AC 50/60Hz
		10-45V DC for solar applications
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: Fan cooling F_1 depending on application and speed.			

S = Static cooling normally sufficient
O = Oil cooling
F_1 = Fan cooling 1.5 m/s (compressor compartment temperature equal to ambient temperature)
F_2 = Fan cooling 3.0 m/s necessary
SG = Suction gas cooling normally sufficent
– = not applicable in this area

Motor

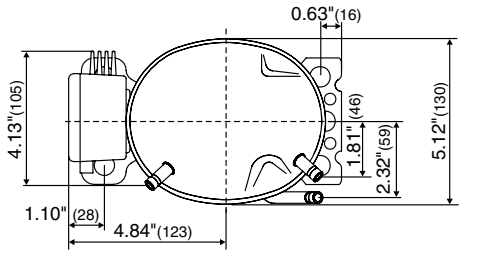
Motor type		Variable speed
Resistance, all 3 windings (25°C)	Ω	2.2

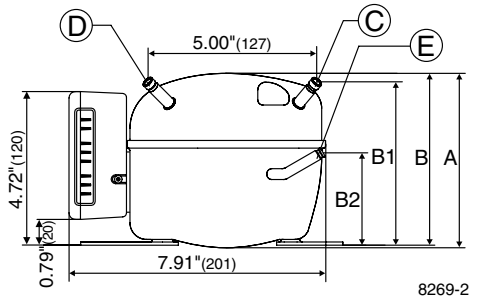
Design

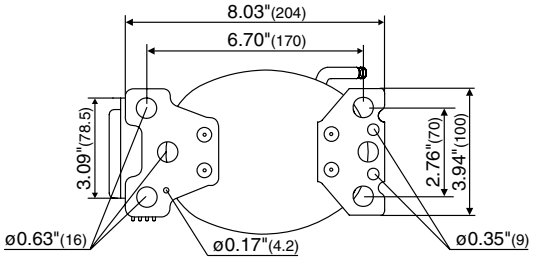
Displacement	cu.in.	0.12
Oil quantity (type)	fl.oz.	5.1 (polyolester)
Maximum refrigerant charge	oz.	10.5
Free gas volume in compressor	fl.oz.	29.6
Weight - Compressor/Electronic unit	lbs.	9.5/0.55

Dimensions

Height	inch	A	5.39
		B	5.32
		B1	5.04
		B2	2.87
Suction connector	location/I.D. in. | angle	C	0.252-0259 | 41.5°
Process connector	location/I.D. in. | angle	D	0.252-0259 | 45°
Discharge connector	location/I.D. in | angle	E	0.202-0.205 | 21°







Standard battery protection settings (no connection C - P)

12V cut-out [V]	12V cut-in [V]	24V cut-out [V]	24V cut-in [V]
10.4	11.7	22.8	24.2

Optional battery protections settings (not possible with electronic unit 101N0400)

Resistor (R2) [kΩ]	12V cut-out [V]	12V cut-in [V]	12V max. Voltage [V]	24V cut-out [V]	24 V cut-in [V]	24V max. Voltage [V]
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

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	74	101	113	159	214	238	280	361	458	471	514	575
2,500	95	127	142	199	268	298	351	452	574	586	643	
3,000	104	138	155	222	307	344	411	535	681			
3,500	119	153	171	248	349	396	473	620				

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	17.5	23.9	26.8	37.6	50.6	56.6	66.4	85.5	109	111	122	136
2,500	22.2	29.9	33.4	46.9	63.2	70.7	83.0	107	136	139	152	
3,000	24.5	32.4	36.4	52.3	72.4	81.7	97.0	126	161			
3,500	27.9	35.9	40.3	58.5	82.5	93.6	112	147				

Power consumption 12V DC static cooling **watt**

rpm \ °F	-20	-13	-10	0	10	14	20	30	40	41	45	50
2,000	19.1	23.5	25.3	30.8	36.1	38.3	41.3	46.6	52.5	53.4	55.7	59.1
2,500	25.2	31.0	33.3	40.7	47.4	50.2	54.0	60.7	67.7	68.7	71.5	
3,000	31.0	35.8	38.0	45.9	54.5	58.4	63.4	72.2	80.6			
3,500	37.5	42.9	45.4	54.5	64.4	68.9	74.9	85.7				

Current consumption (for 24V applications the following must be halfed) 12V DC static cooling **A**

rpm \ °F	-20	-13	-10	0	10	14	20	30	40	41	45	50
2,000	1.59	1.96	2.10	2.57	3.01	3.19	3.44	3.89	4.37	4.45	4.64	4.93
2,500	2.10	2.58	2.77	3.38	3.95	4.18	4.49	5.05	5.63	5.73	5.95	
3,000	2.61	3.01	3.19	3.86	4.58	4.89	5.32	6.06	6.76			
3,500	3.14	3.58	3.79	4.55	5.38	5.74	6.25	7.15				

COP (ASHRAE LBP) 12V DC static cooling **Btu/Wh**

rpm \ °F	-20	-13	-10	0	10	14	20	30	40	41	45	50
2,000	3.88	4.30	4.48	5.16	5.93	6.24	6.80	7.74	8.73	8.82	9.23	9.73
2,500	3.75	4.09	4.26	4.89	5.64	5.93	6.50	7.46	8.47	8.53	9.00	
3,000	3.36	3.86	4.08	4.83	5.63	5.90	6.48	7.41	8.44			
3,500	3.16	3.56	3.77	4.56	5.42	5.73	6.31	7.23				

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	0.92	1.02	1.06	1.22	1.40	1.48	1.60	1.82	2.06	2.08	2.17	2.29
2,500	0.89	0.97	1.01	1.15	1.33	1.41	1.53	1.76	2.00	2.02	2.12	
3,000	0.79	0.90	0.96	1.13	1.32	1.40	1.52	1.74	1.98			
3,500	0.75	0.84	0.89	1.07	1.28	1.36	1.49	1.70				

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 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 $1A_{peak}$).
1	**Battery protection cut-out** (The voltage is outside the cut-out setting).

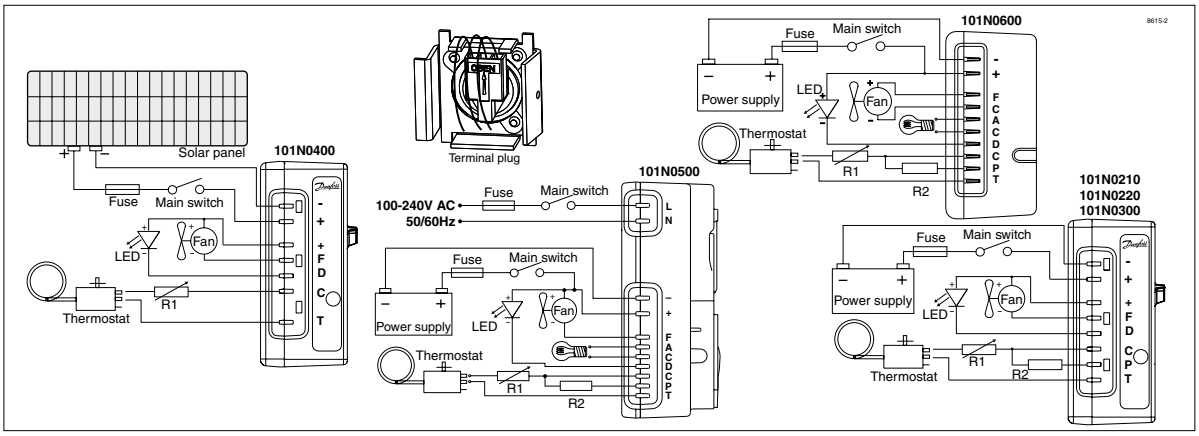
Wire Dimensions DC

Size AWG	Size Cross section	Max. length* 12V operation		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	20	6	39	12
8	10	33	10	66	20

***Length between battery an electronic unit**

Wire dimensions AC

Cross section min. AWG 18 or 0.75 mm^2



Compressor speed

Electronit unit Code number	Resistor (R1) [Ω]	Motor speed [rpm]	Control circuit current [mA]
101N0210 101N0220 101N0500 101N0600	0	2,000	5
	277	2,500	4
	692	3,000	3
	1523	3,500	2
101N0300 101N0400 with AEO	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.

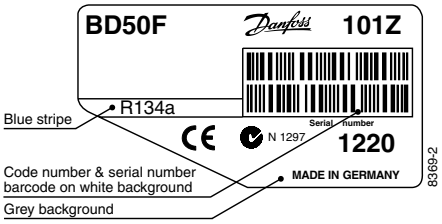
Test conditions	ASHRAE	EN 12900/CECOMAF
Condensing temperature	130°F	131°F
Ambient temperature	90°F	90°F
Suction gas temperature	90°F	90°F
Liquid temperature	90°F	no subcooling

Accessories for	BD35F	Code number
Bolt joint for one compressor	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
AC line cord (UL approved/VDE approved)		105N9520/30
DC usage: Std. automobile fuse12V: 15A / 24V: 7.5A Main switch: rated to min. 20A		Not deliverable from Danfoss
AC usage: Fuse 100-240V: 4A / Main switch: min. 6A		

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	single: 101N0210, 30 pcs: 101N0211
Electronic unit 12-24V DC - with metal shielding	single: 101N0220, 30 pcs: 101N0221
Electronic unit 12-24V DC - with AEO	single: 101N0300, 30 pcs: 101N0301
Electronic unit 12-24V DC & 100-240V AC 50/60Hz	single: 101N0500, 36 pcs: 101N0501
Approved compressor - electronic unit combinations	refer to *Technical Info* DEHC.EI.100.C
Additional approvals	e4, CE, C-Tick
Compressors on pallet	150



Application

Application		LBP/MBP/HBP
Evaporating temperature	°C	-30 to 0 (10)
Voltage range (DC & AC)		12-24V DC & 100-240V AC 50/60Hz
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 F_1 depending on application and speed.			

S = Static cooling normally sufficient
O = Oil cooling
F_1 = Fan cooling 1.5 m/s (compressor compartment temperature equal to ambient temperature)
F_2 = Fan cooling 3.0 m/s necessary
SG = Suction gas cooling normally sufficent
– = not applicable in this area

Motor

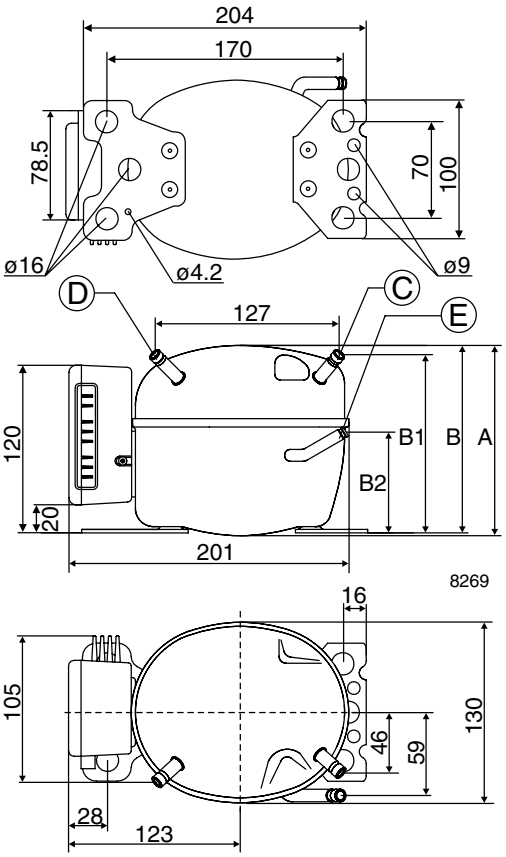
Motor type		Variable speed
Resistance, all 3 windings (25°C)	Ω	1.8

Design

Displacement	cm³	2.50
Oil quantity (type)	cm³	150 (polyolester)
Maximum refrigerant charge	g	300
Free gas volume in compressor	cm³	870
Weight - Compressor/Electronic unit	kg	4.3/0.25

Dimensions

Height	mm	A	137
		B	135
		B1	128
		B2	73
Suction connector	location/I.D. mm | angle	C	6.2 | 41.5°
Process connector	location/I.D. mm | angle	D	6.2 | 45°
Discharge connector	location/I.D. mm | angle	E	5.0 | 21°
Connector tolerance	I.D. mm		±0.09, on 5.0 +0.12/+0.20



Standard battery protection settings (no connection C - P)

12V cut-out [V]	12V cut-in [V]	24V cut-out [V]	24V cut-in [V]
10.4	11.7	22.8	24.2

Optional battery protections settings

Resistor (R2)	12V cut-out	12V cut-in	12V max.	24V cut-out	24 V cut-in	24V max.
[kΩ]	[V]	[V]	Voltage [V]	[V]	[V]	Voltage [V]
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

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	20.8	30.0	33.6	41.6	55.9	72.6	91.9	114	138*	150*	165*	
2,500	25.9	37.3	41.8	51.4	68.4	88.9	113	142*	175*	191*		
3,000	30.9	44.8	50.2	61.7	82.2	107	136*	169*				
3,500	36.7	52.2	58.3	71.4	94.9	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	25.6	37.0	41.5	51.4	69.0	89.8	114	141	171*	186*	205*	
2,500	31.9	46.0	51.5	63.4	84.5	110	140	176*	217*	237*		
3,000	38.1	55.3	61.9	76.2	101	132	168*	210*				
3,500	45.2	64.4	71.9	88.2	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	26.0	32.7	34.9	39.2	45.8	52.6	60.0	68.0	76.9*	81.2*	87.0*	
2,500	32.2	41.4	44.5	50.3	59.0	67.7	76.4	85.4*	94.9*	99.2*		
3,000	38.9	50.3	54.0	61.0	71.2	81.3	91.5*	102*				
3,500	47.0	59.0	63.0	70.7	82.6	95.0*	108*					

Current consumption (for 24V applications the following must be halfed) 12V DC static cooling **A**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000	2.16	2.69	2.88	3.26	3.85	4.49	5.15	5.85	6.58*	6.91*	7.35*	
2,500	2.69	3.40	3.65	4.12	4.86	5.61	6.37	7.15*	7.94*	8.29*		
3,000	3.33	4.16	4.44	5.00	5.87	6.75	7.65*	8.57*				
3,500	4.02	4.89	5.20	5.83	6.83	7.90*	9.03*					

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	0.80	0.92	0.96	1.06	1.22	1.38	1.53	1.67	1.79*	1.84*	1.90*	
2,500	0.80	0.90	0.94	1.02	1.16	1.31	1.48	1.66*	1.84*	1.92*		
3,000	0.79	0.89	0.93	1.01	1.15	1.31	1.48*	1.66*				
3,500	0.78	0.88	0.93	1.01	1.15	1.30*	1.45*					

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	0.99	1.13	1.19	1.31	1.51	1.71	1.90	2.07	2.23*	2.29*	2.36*	
2,500	0.99	1.11	1.16	1.26	1.43	1.62	1.83	2.05*	2.29*	2.39*		
3,000	0.98	1.10	1.15	1.25	1.43	1.62	1.83*	2.05*				
3,500	0.96	1.09	1.14	1.25	1.42	1.60*	1.79*					

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

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 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 $1A_{peak}$).
1	**Battery protection cut-out** (The voltage is outside the cut-out setting).

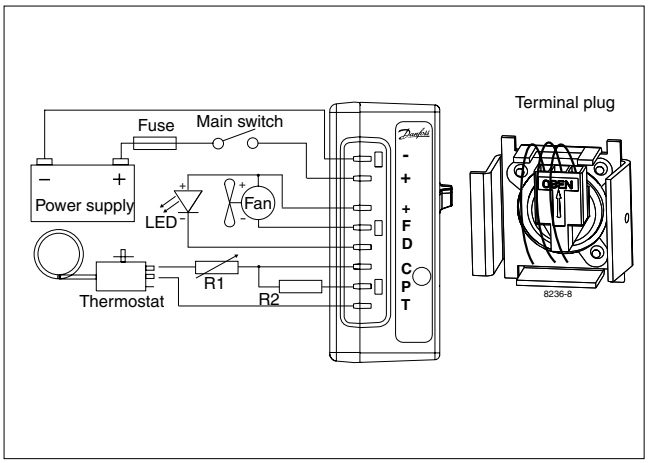
Wire Dimensions DC

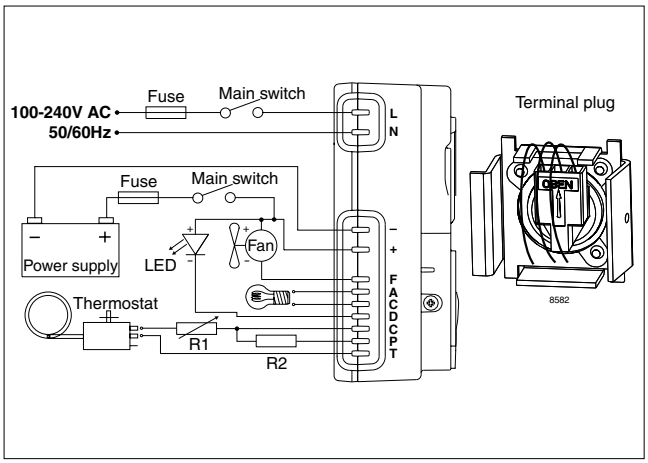
Size Cross section	Size AWG	Max. length* 12V operation		Max. length* 24V operation	
[mm²]	[Gauge]	[m]	[ft.]	[m]	[ft.]
2.5	12	2.5	8	5	16
4	12	4	13	8	26
6	10	6	20	12	39
10	8	10	33	20	66

***Length between battery an electronic unit**

Wire dimensions AC

Cross section min. 0.75 mm² or AWG 18





Compressor speed

Electronit unit Code number	Resistor (R1) [Ω]	Motor speed [rpm]	Control circuit current [mA]
101N0210 101N0220 101N0500	0	2,000	5
	277	2,500	4
	692	3,000	3
	1523	3,500	2
101N0300 with AEO	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.

Test conditions	EN 12900/CECOMAF	ASHRAE
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

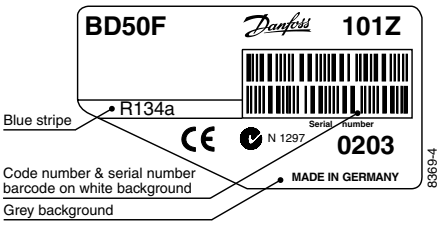
Accessories for	BD50F	Code number
Bolt joint for one compressor	Ø: 16 mm	118-1917
Bolt joint in quantities	Ø: 16 mm	118-1918
Snap-on in quantities	Ø: 16 mm	118-1919
Remote kit (without cable)		105N9210
AC line cord (UL approved/VDE approved)		105N9520/30
DC usage: Std. automobile fuse12V: 15A / 24V: 7.5A Main switch: rated to min. 20A		Not deliverable from Danfoss
AC usage: Fuse 100-240V: 4A / Main switch: min. 6A		

Datasheet:
DEHC.ED.100.E2.02 / June 2006

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

Compressors

Code number (without electronic units)	101Z0203
Electronic unit 12-24V DC - standard	single: 101N0210, 30 pcs: 101N0211
Electronic unit 12-24V DC - with metal shielding	single: 101N0220, 30 pcs: 101N0221
Electronic unit 12-24V DC - with AEO	single: 101N0300, 30 pcs: 101N0301
Electronic unit 12-24V DC & 100-240V AC 50/60Hz	single: 101N0500, 36 pcs: 101N0501
Approved compressor - electronic unit combinations	refer to *Technical Info* DEHC.EI.100.C
Additional approvals	e4, CE, C-Tick
Compressors on pallet	150



Approval mark

Application

Application		LBP/MBP/HBP
Evaporating temperature	°F	-20 to 50
Voltage range (DC & AC)		12-24V DC & 100-240V AC 50/60Hz
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_1
38°C	S	S	F_1
43°C	S	S	F_1
Remarks on application: Fan cooling F_1 depending on application and speed.			

S = Static cooling normally sufficient
O = Oil cooling
F_1 = Fan cooling 1.5 m/s (compressor compartment temperature equal to ambient temperature)
F_2 = Fan cooling 3.0 m/s necessary
SG = Suction gas cooling normally sufficent
– = not applicable in this area

Motor

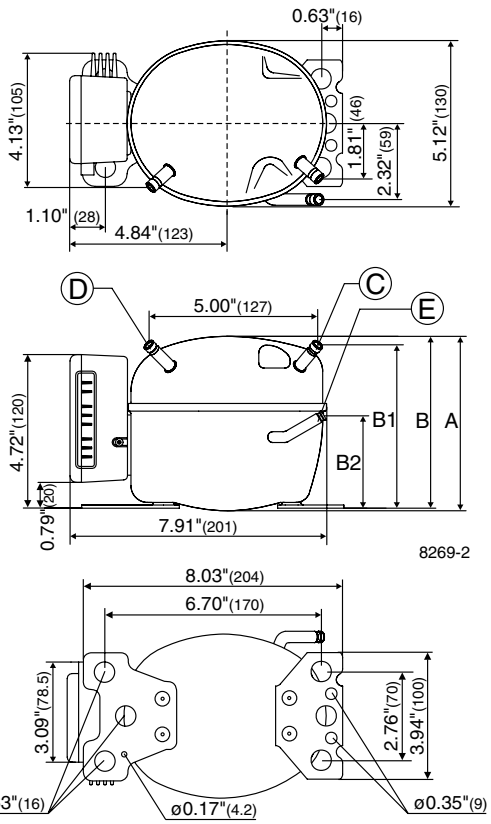
Motor type		Variable speed
Resistance, all 3 windings (25°C)	Ω	1.8

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.	9.5/0.55

Dimensions

Height	inch	A	5.39
		B	5.32
		B1	5.04
		B2	2.87
Suction connector	location/I.D. in. | angle	C	0.252-0259 | 41.5°
Process connector	location/I.D. in. | angle	D	0.252-0259 | 45°
Discharge connector	location/I.D. in | angle	E	0.202-0.205 | 21°



Standard battery protection settings (no connection C - P)

12V cut-out [V]	12V cut-in [V]	24V cut-out [V]	24V cut-in [V]
10.4	11.7	22.8	24.2

Optional battery protections settings

Resistor (R2)	12V cut-out	12V cut-in	12V max.	24V cut-out	24 V cut-in	24V max.
[kΩ]	[V]	[V]	Voltage [V]	[V]	[V]	Voltage [V]
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

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	95	126	142	201	273	308	359	458	571	583	632*	697*
2,500	119	157	176	247	335	375	442	570	723*	740	809*	
3,000	142	189	211	297	402	450	529	682*	863*			
3,500	167	220	245	343	464	518*	612*	790*				

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	22.6	30.0	33.6	47.7	64.9	72.6	85.2	109	135	138*	150*	165*
2,500	28.2	37.3	41.7	58.5	79.3	88.9	105	135	171*	175*	191*	
3,000	33.7	44.8	50.1	70.4	95.2	107	125	161*	204*			
3,500	39.8	52.2	58.2	81.3	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	27.4	32.5	34.6	41.7	49.0	52.6	56.8	65.4	75.1	76.9*	80.4*	86.2*
2,500	34.3	41.4	44.3	54.0	63.4	67.7	73.0	82.8	93.1*	94.9*	98.6*	
3,000	41.4	50.1	53.7	65.2	76.2	81.3	87.4	98.9*	111*			
3,500	49.6	58.8	62.6	75.5	88.7	95.0*	103*	119*				

Current consumption (for 24V applications the following must be halfed) 12V DC static cooling **A**

rpm \ °F	-20	-13	-10	0	10	14	20	30	40	41	45	50
2,000	2.28	2.69	2.87	3.50	4.18	4.49	4.90	5.65	6.45	6.58*	6.87*	7.29*
2,500	2.86	3.41	3.65	4.45	5.26	5.61	6.10	6.94	7.81*	7.94*	8.25*	
3,000	3.52	4.16	4.43	5.37	6.33	6.75	7.31	8.32	9.34*			
3,500	4.20	4.88	5.18	6.24	7.39	7.90*	8.61*	9.91*				

COP (ASHRAE LBP) 12V DC static cooling **Btu/Wh**

rpm \ °F	-20	-13	-10	0	10	14	20	30	40	41	45	50
2,000	3.49	3.89	4.09	4.81	5.57	5.83	6.32	7.00	7.60	7.63*	7.86*	8.09*
2,500	3.47	3.81	3.97	4.58	5.28	5.52	6.05	6.89	7.76*	7.77*	8.21*	
3,000	3.43	3.77	3.93	4.55	5.27	5.52	6.05	6.89	7.76*			
3,500	3.37	3.74	3.91	4.54	5.23	5.46*	5.94*	6.66*				

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	0.82	0.92	0.96	1.13	1.31	1.38	1.48	1.64	1.78	1.79*	1.84*	1.90*
2,500	0.82	0.90	0.94	1.08	1.24	1.31	1.42	1.62	1.82	1.89*	1.93*	
3,000	0.81	0.89	0.93	1.07	1.24	1.31	1.42	1.62	1.82*			
3,500	0.80	0.88	0.92	1.07	1.23	1.30*	1.40*	1.56*				

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

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 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 $1A_{peak}$).
1	**Battery protection cut-out** (The voltage is outside the cut-out setting).

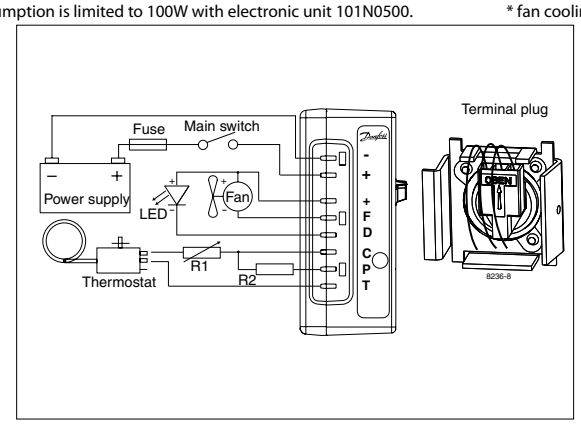
Wire Dimensions DC

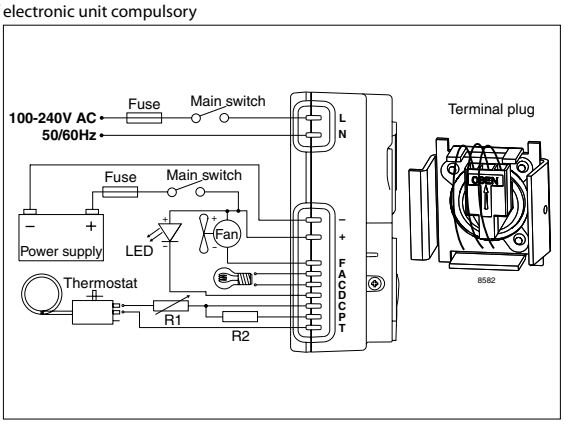
Size AWG	Cross section	Max. length* 12V operation		Max. length* 24V operation	
[Gauge]	[mm²]	[ft.]	[m]	[ft.]	[m]
12	2.5	8	2.5	16	5
12	4	13	4	26	8
10	6	20	6	39	12
8	10	33	10	66	20

***Length between battery an electronic unit**

Wire dimensions AC

Cross section min. AWG 18 or 0.75 mm²





Compressor speed

Electronit unit Code number	Resistor (R1) [Ω]	Motor speed [rpm]	Control circuit current [mA]
101N0210 101N0220 101N0500	0	2,000	5
	277	2,500	4
	692	3,000	3
	1523	3,500	2
101N0300 with AEO	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.

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

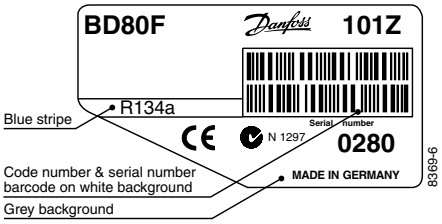
Accessories for	BD50F	Code number
Bolt joint for one compressor	Ø: 5/8 in.	118-1917
Bolt joint in quantities	Ø: 5/8 in.	118-1918
Snap-on in quantities	Ø: 5/8 in.	118-1919
Remote kit (without cable)		105N9210
AC line cord (UL approved/VDE approved)		105N9520/30
DC usage: Std. automobile fuse12V: 15A / 24V: 7.5A Main switch: rated to min. 20A		Not deliverable from Danfoss
AC usage: Fuse 100-240V: 4A / Main switch: min. 6A		

Datasheet:
DEHC.ED.100.M2.22 / June 2006

BD80F
Direct Current Compressor
R134a, 12-24V

General

Code number (without electronic units)	101Z0280
Electronic unit (with integrated fan cooling)	single: 101N0280, 28 pcs: 101N0281
Approved compressor - electronic unit combinations	refer to *Technical Info* DEHC.EI.100.C
Additional approvals	e4, CE, C-Tick
Compressors on pallet	150



Approval mark

Application

Application		LBP
Evaporating temperature	°C	-30 to -5
Voltage range/max. voltage	VDC	12-24/31.5
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	–	–
38°C	S	–	–
43°C	S	–	–
Remarks on application:			

S = Static cooling normally sufficient
O = Oil cooling
F_1 = Fan cooling 1.5 m/s (compressor compartment temperature equal to ambient temperature)
F_2 = Fan cooling 3.0 m/s necessary
SG = Suction gas cooling normally sufficent
– = not applicable in this area

Motor

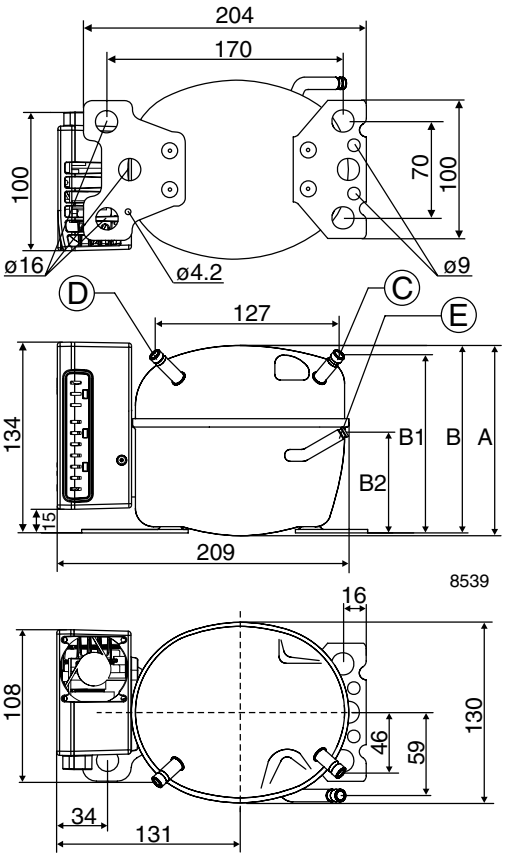
Motor type		Variable speed
Resistance, all 3 windings (25°C)	Ω	1.8

Design

Displacement	cm^3	3.00
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	4.4/0.3

Dimensions

Height	mm	A	137
		B	135
		B1	128
		B2	73
Suction connector	location/I.D. mm | angle	C	6.2 | 41.5°
Process connector	location/I.D. mm | angle	D	6.2 | 45°
Discharge connector	location/I.D. mm | angle	E	5.0 | 21°
Connector tolerance	I.D. mm	±0.09, on 5.0 +0.12/+0.20	



Standard battery protection settings (no connection C - P)

12V cut-out [V]	12V cut-in [V]	24V cut-out [V]	24V cut-in [V]
10.4	11.7	22.8	24.2

Optional battery protections settings

Resistor (R2)	12V cut-out	12V cut-in	12V max.	24V cut-out	24 V cut-in	24V max.
[kΩ]	[V]	[V]	Voltage [V]	[V]	[V]	Voltage [V]
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

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
2,500	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 LBP) 12V DC static cooling **watt**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
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 consumption 12V DC static cooling **watt**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
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 consumption (for 24V applications the following must be halfed) 12V DC static cooling **A**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
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 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
2,500	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 (ASHRAE LBP) 12V DC static cooling **W/W**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,500	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					

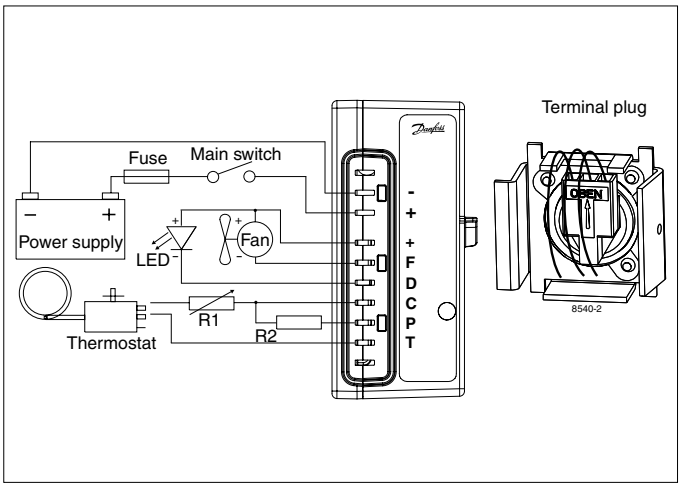
Operational errors shown by LED (optional)

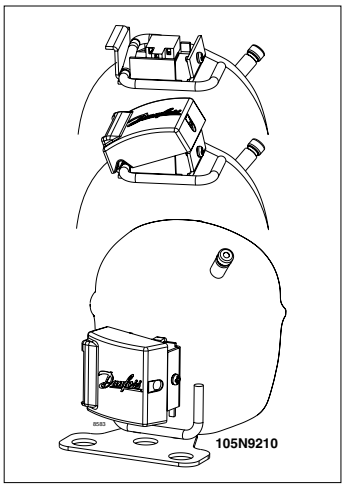
Number of flashes	Error type
5	**Thermal cut-out of electronic unit** (If the refrigeration system has been too heavily loaded, or if the ambient temperature is high, the electronic unit will run too hot).
4	**Minimum motor speed error** (If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed at approximately 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).

Wire Dimensions

Size		Max. length* 12V operation		Max. length* 24V operation	
Cross section	AWG				
[mm²]	[Gauge]	[m]	[ft.]	[m]	[ft.]
6	10	2.5	8	5	16

***Length between battery an electronic unit**





Compressor speed

Electronit unit Code number	Resistor (R1) [Ω]	Motor speed [rpm]	Control circuit current [mA]
101N0280 with AEO	0	AEO	6
	203	2,500	5
	451	3,100	4
	867	3,800	3
	1700	4,400	2

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

Test conditions	EN 12900/CECOMAF	ASHRAE
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	BD80F	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
Remote kit (without cable)		105N9210
Standard automoblie fuse DIN 7258	12V: 30A 24V: 15A	Not deliverable from Danfoss
Main switch	rated to min. 30A	

Datasheet:
DEHC.ED.100.A4.02 / June 2006

BD250GH
Direct Current Compressor
R134a, 12-24V

General

Code number (without electronic units)	101Z0400
Electronic unit (with integrated fan cooling)	single: 101N0280, 28 pcs: 101N0281
Approved compressor - electronic unit combinations	refer to *Technical Info* DEHC.EI.100.C
Additional approvals	e4, CE, C-Tick
Compressors on pallet	150

Application

Application		LBP/MBP/HBP
Evaporating temperature	°C	-25 to 15
Voltage range/max. voltage	VDC	12-24/31.5
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	S
38°C	S	S	S
43°C	S	S	S
Remarks on application:			

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	4.4/0.3

Dimensions

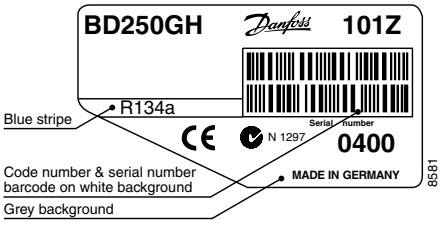
Height	mm	A	137
		B	135
		B1	128
		B2	73
Suction connector	location/I.D. mm | angle	C	6.2 | 41.5°
Process connector	location/I.D. mm | angle	D	6.2 | 45°
Discharge connector	location/I.D. mm | angle	E	5.0 | 21°
Connector tolerance	I.D. mm	±0.09, on 5.0 +0.12/+0.20	

Standard battery protection settings (no connection C - P)

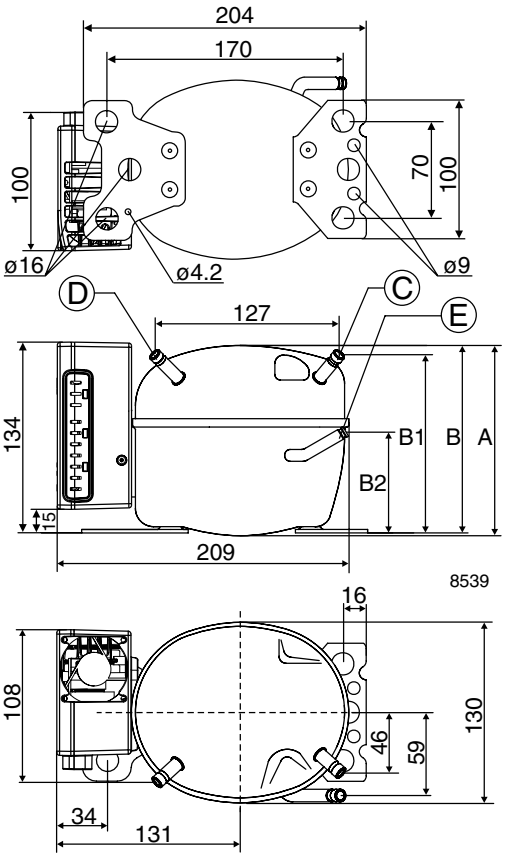
12V cut-out [V]	12V cut-in [V]	24V cut-out [V]	24V cut-in [V]
10.4	11.7	22.8	24.2

Optional battery protections settings

Resistor (R2)	12V cut-out	12V cut-in	12V max.	24V cut-out	24 V cut-in	24V max.
[kΩ]	[V]	[V]	Voltage [V]	[V]	[V]	Voltage [V]
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



S = Static cooling normally sufficient
O = Oil cooling
F_1 = Fan cooling 1.5 m/s (compressor compartment temperature equal to ambient temperature)
F_2 = Fan cooling 3.0 m/s necessary
SG = Suction gas cooling normally sufficent
– = not applicable in this area



Capacity (EN 12900 Household/CECOMAF) 12V DC static cooling **watt**

rpm \ °C	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15
2,500	38.0	42.6	52.3	69.7	90.6	107	115	145	179	196	219	264
3,100	46.2	51.6	63.2	83.8	109	128	138	173	214	234	262	316
3,800	56.0	62.5	76.5	101	131	154	167	208	257	281	314	379
4,400	62.9	70.7	87.0	116	149	175	189	236	290	316	353	425

Capacity (ASHRAE LBP) 12V DC static cooling **watt**

rpm \ °C	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15
2,500	47.0	52.6	64.7	86.2	112	132	143	180	222	243	272	329
3,100	57.1	63.8	78.1	104	134	158	171	215	266	291	325	394
3,800	69.2	77.3	94.6	125	162	191	206	258	319	349	390	471
4,400	78.0	87.6	108	143	185	216	234	292	360	393	438	528

Power consumption 12V DC static cooling **watt**

rpm \ °C	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15
2,500	40.7	43.4	48.9	57.6	66.7	72.9	76.1	85.5	94.7	98.7	104	112
3,100	50.7	54.0	60.4	70.7	81.7	89.3	93.3	105	118	124	132	145
3,800	63.0	67.1	75.1	87.9	102	111	116	132	150	158	169	190
4,400	72.7	77.7	87.6	103	120	131	138	157	179	189	203	230

Current consumption (for 24V applications the following must be halfed) 12V DC static cooling **A**

rpm \ °C	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15
2,500	3.40	3.62	4.08	4.80	5.56	6.07	6.34	7.12	7.89	8.22	8.64	9.35
3,100	4.23	4.50	5.03	5.89	6.81	7.44	7.77	8.79	9.85	10.34	10.97	12.12
3,800	5.25	5.59	6.26	7.33	8.47	9.27	9.70	11.04	12.49	13.18	14.09	15.83
4,400	6.05	6.47	7.30	8.59	9.97	10.94	11.46	13.10	14.91	15.77	16.92	19.18

COP (EN 12900 Household/CECOMAF) 12V DC static cooling **W/W**

rpm \ °C	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15
2,500	0.93	0.98	1.07	1.21	1.36	1.46	1.52	1.69	1.89	1.98	2.11	2.36
3,100	0.91	0.96	1.05	1.18	1.33	1.43	1.48	1.64	1.81	1.89	1.99	2.17
3,800	0.89	0.93	1.02	1.15	1.29	1.38	1.43	1.57	1.72	1.78	1.86	1.99
4,400	0.87	0.91	0.99	1.12	1.25	1.33	1.37	1.50	1.62	1.67	1.74	1.85

COP (ASHRAE LBP) 12V DC static cooling **W/W**

rpm \ °C	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15
2,500	1.16	1.21	1.33	1.50	1.68	1.82	1.89	2.11	2.36	2.48	2.64	2.96
3,100	1.13	1.18	1.30	1.47	1.65	1.78	1.85	2.05	2.26	2.36	2.49	2.73
3,800	1.10	1.15	1.26	1.43	1.60	1.72	1.78	1.96	2.14	2.22	2.32	2.50
4,400	1.07	1.13	1.23	1.39	1.55	1.65	1.71	1.87	2.02	2.09	2.17	2.31

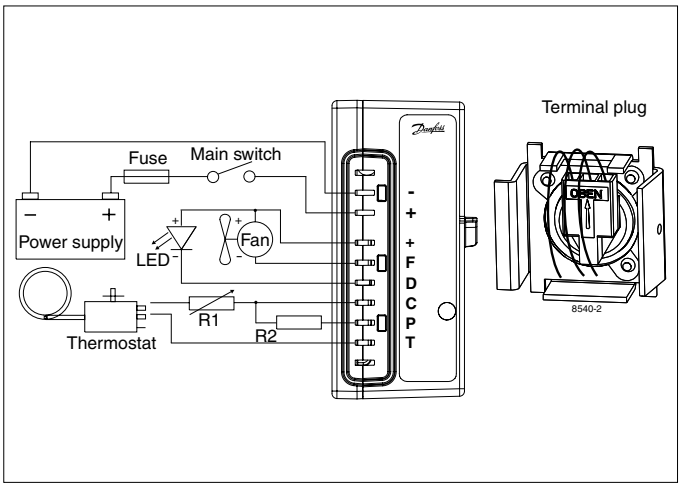
Operational errors shown by LED (optional)

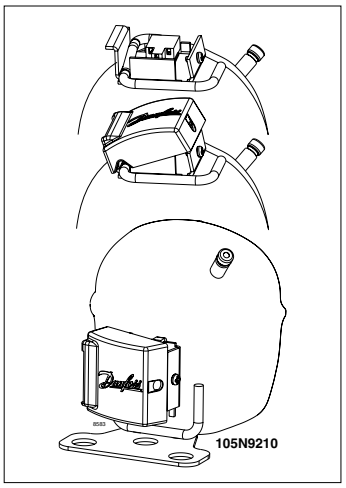
Number of flashes	Error type
5	**Thermal cut-out of electronic unit** (If the refrigeration system has been too heavily loaded, or if the ambient temperature is high, the electronic unit will run too hot).
4	**Minimum motor speed error** (If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed at approximately 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).

Wire Dimensions

Size		Max. length* 12V operation		Max. length* 24V operation	
Cross section	AWG				
[mm²]	[Gauge]	[m]	[ft.]	[m]	[ft.]
8	8	2.5	8	5	16

***Length between battery an electronic unit**





Compressor speed

Electronit unit Code number	Resistor (R1) [Ω]	Motor speed [rpm]	Control circuit current [mA]
101N0280 with AEO	0	AEO	6
	203	2,500	5
	451	3,100	4
	867	3,800	3
	1700	4,400	2

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

Test conditions	EN 12900/CECOMAF	ASHRAE
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

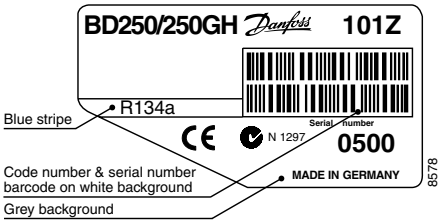
Accessories for	BD250GH	Code number
Bolt joint for one compressor	Ø: 16 mm	118-1917
Bolt joint in quantities	Ø: 16 mm	118-1918
Snap-on in quantities	Ø: 16 mm	118-1919
Remote kit (without cable)		105N9210
Standard automoblie fuse DIN 7258	12V: 30A 24V: 15A	Not deliverable from Danfoss
Main switch	rated to min. 30A	

Datasheet:
DEHC.ED.100.C2.02 / June 2006

BD250/250GH
Direct Current Twin Compressor
R134a, 12-24V

General

Code number (without electronic units)	101Z0500
Electronic unit (with integrated fan cooling, 2 pcs. required)	single: 101N0280, 28 pcs: 101N0281
Remote kit (2 pcs. required)	105N9210 (without cable)
Approved compressor - electronic unit combinations	refer to *Technical Info* DEHC.EI.100.C
Additional approvals	e4, CE, C-Tick
Compressors on pallet	40



Approval mark

Application

Application		LBP/MBP/HBP
Evaporating temperature	°C	-25 to 15
Voltage range/max. voltage	VDC	12-24/31.5
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	S
38°C	S	S	S
43°C	S	S	S
Remarks on application:			

S = Static cooling normally sufficient
O = Oil cooling
F_1 = Fan cooling 1.5 m/s (compressor compartment temperature equal to ambient temperature)
F_2 = Fan cooling 3.0 m/s necessary
SG = Suction gas cooling normally sufficent
– = not applicable in this area

Motor

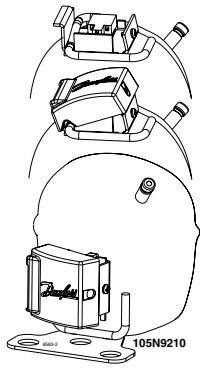
Motor type		Variable speed
Resistance, all 3 windings (25°C)	Ω	1.8

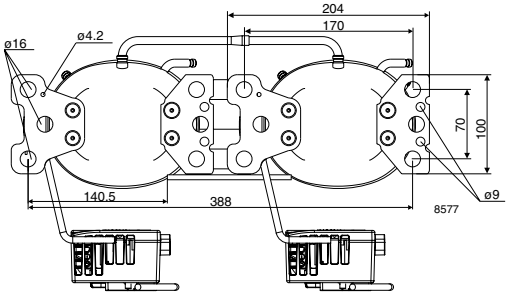
Design

Displacement	cm^3	2 x 2.50
Oil quantity (type)	cm^3	400 (polyolester)
Maximum refrigerant charge	g	600
Free gas volume in compressor	cm^3	2 x 870
Weight - Compressor/Electronic unit	kg	8.8/2 x 0.3

Dimensions

Height	mm	A	137
		B	135
		B1	128
		B2	73
Suction connector	location/I.D. mm | angle	C	6.2 | 41.5°
Process connector	location/I.D. mm | angle	D	6.2 | 45°
Discharge connector	location/I.D. mm | angle	E	5.0 | 21°
Connector tolerance	I.D. mm	±0.09, on 5.0 +0.12/+0.20	



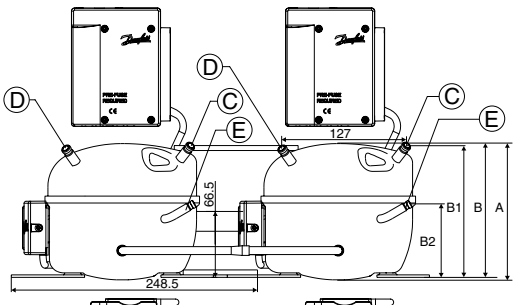


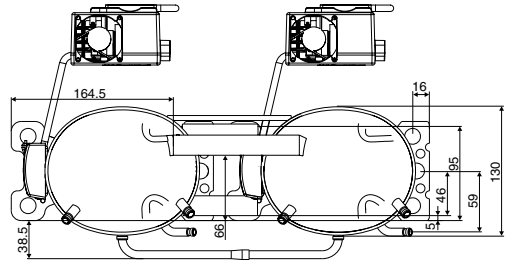
Standard battery protection settings (no connection C - P)

12V cut-out [V]	12V cut-in [V]	24V cut-out [V]	24V cut-in [V]
10.4	11.7	22.8	24.2

Optional battery protections settings

Resistor (R2) [kΩ]	12V cut-out [V]	12V cut-in [V]	12V max. Voltage [V]	24V cut-out [V]	24 V cut-in [V]	24V max. Voltage [V]
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





Capacity (EN 12900 Household/CECOMAF) 12V DC static cooling **watt**

rpm \ °C	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15
2,500	76.0	85.1	105	139	181	213	231	290	358	392	438	529
3,100	92.5	103	126	168	217	255	277	347	429	469	524	633
3,800	112	125	153	203	262	308	333	417	514	562	627	757
4,400	126	141	174	231	299	349	378	471	580	633	705	849

Capacity (ASHRAE LBP) 12V DC static cooling **watt**

rpm \ °C	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15
2,500	94.0	105	129	172	224	264	286	359	444	486	544	658
3,100	114	128	156	207	269	316	343	430	532	582	651	787
3,800	138	155	189	251	325	381	413	517	638	698	779	942
4,400	156	175	216	286	370	433	468	584	719	785	876	1057

Power consumption 12V DC static cooling **watt**

rpm \ °C	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15
2,500	81.5	86.9	97.8	115	134	146	152	171	189	197	207	224
3,100	102	108	121	141	163	179	187	211	237	248	263	291
3,800	126	134	150	176	203	222	233	265	300	316	338	380
4,400	145	155	175	206	239	263	275	314	358	379	406	460

Current consumption (for 24V applications the following must be halfed) 12V DC static cooling **A**

rpm \ °C	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15
2,500	6.79	7.24	8.15	9.61	11.12	12.15	12.68	14.24	15.79	16.45	17.28	18.69
3,100	8.46	8.99	10.07	11.79	13.61	14.88	15.54	17.58	19.71	20.68	21.93	24.25
3,800	10.51	11.18	12.52	14.65	16.94	18.54	19.40	22.07	24.99	26.35	28.17	31.66
4,400	12.11	12.95	14.60	17.19	19.94	21.88	22.93	26.20	29.82	31.54	33.85	38.35

COP (EN 12900 Household/CECOMAF) 12V DC static cooling **W/W**

rpm \ °C	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15
2,500	0.93	0.98	1.07	1.21	1.36	1.46	1.52	1.69	1.89	1.98	2.11	2.36
3,100	0.91	0.96	1.05	1.18	1.33	1.43	1.48	1.64	1.81	1.89	1.99	2.17
3,800	0.89	0.93	1.02	1.15	1.29	1.38	1.43	1.57	1.72	1.78	1.86	1.99
4,400	0.87	0.91	0.99	1.12	1.25	1.33	1.37	1.50	1.62	1.67	1.74	1.85

COP (ASHRAE LBP) 12V DC static cooling **W/W**

rpm \ °C	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15
2,500	1.16	1.21	1.33	1.50	1.68	1.82	1.89	2.11	2.36	2.48	2.64	2.96
3,100	1.13	1.18	1.30	1.47	1.65	1.78	1.85	2.05	2.26	2.36	2.49	2.73
3,800	1.10	1.15	1.26	1.43	1.60	1.72	1.78	1.96	2.14	2.22	2.32	2.50
4,400	1.07	1.13	1.23	1.39	1.55	1.65	1.71	1.87	2.02	2.09	2.17	2.31

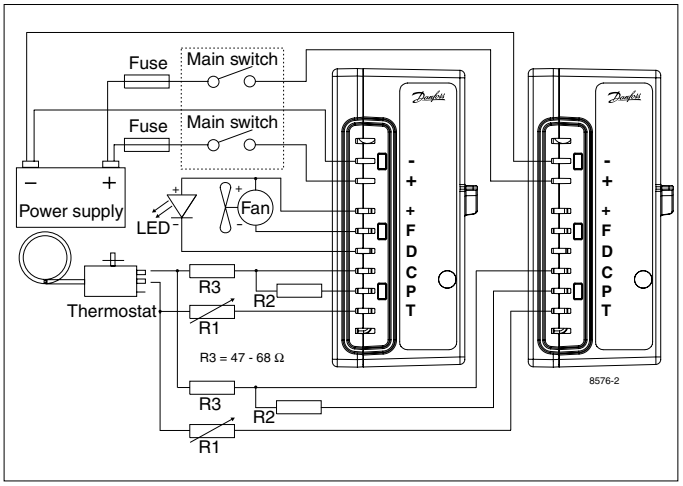
Operational errors shown by LED (optional)

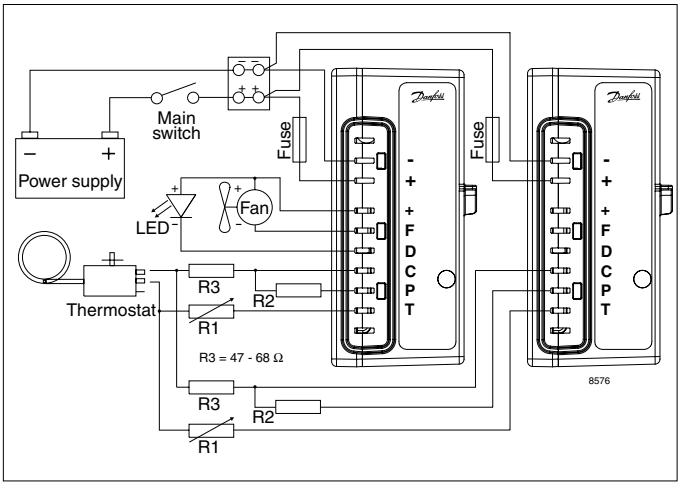
Number of flashes	Error type
5	**Thermal cut-out of electronic unit** (If the refrigeration system has been too heavily loaded, or if the ambient temperature is high, the electronic unit will run too hot).
4	**Minimum motor speed error** (If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed at approximately 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).

Wire Dimensions

Size		Max. length* 12V operation		Max. length* 24V operation	
Cross section	AWG				
[mm²]	[Gauge]	[m]	[ft.]	[m]	[ft.]
2 wires					
8	8	2.5	8	5	16
1 wire with terminal block					
8	8	1	3	2	7

***Length between battery an electronic unit**





Compressor speed

Electronit unit Code number	Resistor (R1) [Ω]	Motor speed [rpm]	Control circuit current [mA]
101N0280 with AEO	0	AEO	6
	203	2,500	5
	451	3,100	4
	867	3,800	3
	1700	4,400	2

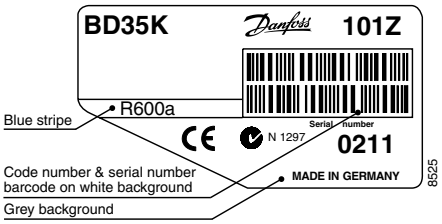
In AEO (Adaptive Energy Optimizing) speed mode the BD compressor will always adapt its speed to the actual cooling demand.

Test conditions	EN 12900/CECOMAF	ASHRAE
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	BD250/250GH	Code number
Bolt joint for one compressor	Ø: 16 mm	118-1900
Bolt joint in quantities	Ø: 16 mm	118-1901
Snap-on in quantities	Ø: 16 mm	118-1902
Standard automoblie fuse DIN 7258	12V: 30A 24V: 15A	Not deliverable from Danfoss
Main switch	rated to min. 30A	

Datasheet:
DEHC.ED.100.B2.02 / June 2006

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



Yellow warning label

S = Static cooling normally sufficient
O = Oil cooling
F_1 = Fan cooling 1.5 m/s (compressor compartment temperature equal to ambient temperature)
F_2 = Fan cooling 3.0 m/s necessary
SG = Suction gas cooling normally sufficent
– = not applicable in this area

General

Code number (without electronic units)	101Z0211
Electronic unit 10-45V - for solar applications	single: 101N0400, 30 pcs: 101N0401
Electronic unit 12-24V DC - standard	single: 101N0210, 30 pcs: 101N0211
Electronic unit 12-24V DC - with metal shielding	single: 101N0220, 30 pcs: 101N0221
Approved compressor - electronic unit combinations	refer to *Technical Info* DEHC.EI.100.C
Additional approvals	e4, CE, C-Tick
Compressors on pallet	150

Application

Application		LBP/MBP/(HBP)
Evaporating temperature	°C	-30 to 0 (10)
Voltage range	VDC	10-45
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	S
38°C	S	S	S
43°C	S	S	S
Remarks on application: Fan cooling F_1 depending on application and speed.			

Motor

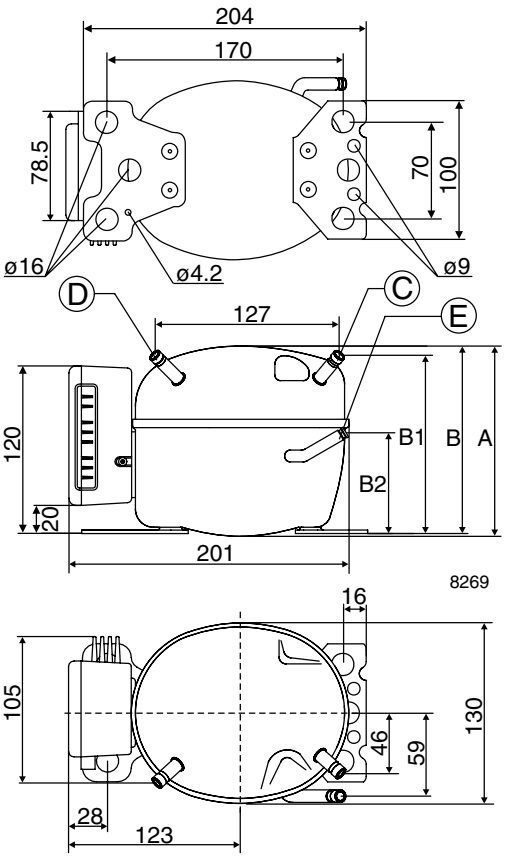
Motor type		Variable speed
Resistance, all 3 windings (25°C)	Ω	1.8

Design

Displacement	cm^3	3.00
Oil quantity (type)	cm^3	150 (polyolester)
Maximum refrigerant charge	g	120
Free gas volume in compressor	cm^3	870
Weight - Compressor/Electronic unit	kg	4.3/0.25

Dimensions

Height	mm	A	137
		B	135
		B1	128
		B2	73
Suction connector	location/I.D. mm | angle	C	6.2 | 41.5°
	material | comment		Cu-plated steel | Al caps
Process connector	location/I.D. mm | angle	D	6.2 | 45°
	material | comment		Cu-plated steel | Al caps
Discharge connector	location/I.D. mm | angle	E	5.0 | 21°
	material | comment		Cu-plated steel | Al caps
Oil cooler connector	location/I.D. mm | angle	F	–
	material | comment		–
Connector tolerance	I.D. mm		±0.09, on 5.0 +0.12/+0.20
Remarks:			



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	13.2	21.0	23.8	29.7	39.6	51.0	64.0	79.1	96.3	105	116	
2,500	16.8	25.5	28.8	35.6	47.5	61.3	77.5	96.2	118	128		
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 (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	16.0	25.5	29.0	36.1	48.2	62.1	78.0	96.4	118	128	142	
2,500	20.4	31.0	35.0	43.4	57.8	74.7	94.4	117	144	157		
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 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	22.5	23.9	26.4	30.3	34.2	38.0	41.8	45.7	47.4	49.6	
2,500	23.8	28.5	30.0	32.9	37.2	41.5	45.8	50.2	54.9	57.1		
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 consumption (for 24V applications the following must be halfed) 12V DC static cooling **A**

rpm \ °C	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2	10	15
2,000	1.54	1.88	1.99	2.20	2.53	2.85	3.17	3.48	3.81	3.95	4.13	
2,500	1.98	2.37	2.50	2.75	3.10	3.46	3.82	4.19	4.58	4.76		
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 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	0.71	0.93	1.00	1.12	1.31	1.49	1.69	1.89	2.11	2.21	2.34	
2,500	0.71	0.90	0.96	1.08	1.28	1.48	1.69	1.92	2.15	2.25		
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 (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	0.87	1.13	1.21	1.37	1.59	1.82	2.05	2.31	2.57	2.70	2.86	
2,500	0.86	1.09	1.17	1.32	1.55	1.80	2.06	2.34	2.62	2.74		
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					

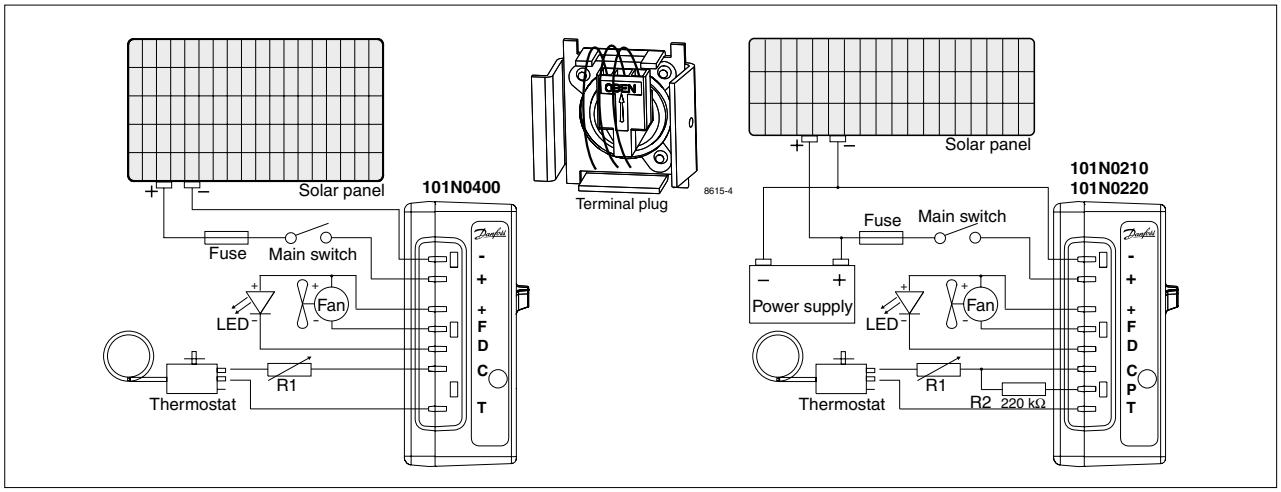
Operational errors shown by LED (optional)

Number of flashes	Error type
5	**Thermal cut-out of electronic unit** (If the refrigeration system has been too 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 $1A_{peak}$).
1	**Battery protection cut-out** (The voltage is outside the cut-out setting).

Wire Dimensions DC

Size		Max. length* 12V operation		Max. length* 24V operation	
Cross section	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 an electronic unit**



Compressor speed

Electronit unit Code number	Resistor (R1) [Ω]	Motor speed [rpm]	Control circuit current [mA]
101N0400 with AEO	0	AEO	6
	173	2,000	5
	450	2,500	4
	865	3,000	3
	1696	3,500	2
101N0210 101N0220	0	2,000	5
	277	2,500	4
	692	3,000	3
	1523	3,500	2

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

Test conditions	EN 12900/CECOMAF	ASHRAE
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

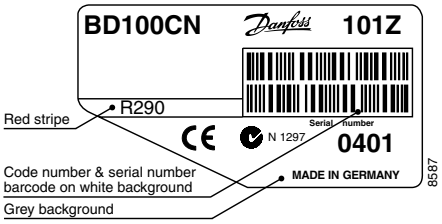
Accessories for	BD35K	Code number
Bolt joint for one compressor	Ø: 16 mm	118-1917
Bolt joint in quantities	Ø: 16 mm	118-1918
Snap-on in quantities	Ø: 16 mm	118-1919
Remote kit (without cable)		105N9210
Standard automoblie fuse	12V: 30A	Not deliverable from Danfoss
DIN 7258	24V: 15A	
Main switch	rated to min. 30A	

Datasheet:
DEHC.ED.100.G3.02 / April 2007

BD100CN
Direct Current Compressor (for stationary use only), R290, 12-24V

General

Code number (without electronic units)	101Z0401
Electronic unit (with integrated fan cooling)	single: 101N0280, 28 pcs: 101N0281
Approved compressor - electronic unit combinations	refer to *Technical Info* DEHC.EI.100.C
Additional approvals	e4, CE, C-Tick
Compressors on pallet	150



Yellow warning label

Application

Application		LBP
Evaporating temperature	°C	-40 to -10
Voltage range/max. voltage	VDC	12-24/31.5
Max. condensing temperature continuous (short)	°C	55 (65)
Max. winding temperature continuous (short)	°C	125 (135)

Cooling requirements

Application	LBP	MBP	HBP
32°C	S	–	–
38°C	S	–	–
43°C	S	–	–
Remarks on application:			

S = Static cooling normally sufficient
O = Oil cooling
F_1 = Fan cooling 1.5 m/s (compressor compartment temperature equal to ambient temperature)
F_2 = Fan cooling 3.0 m/s necessary
SG = Suction gas cooling normally sufficent
– = not applicable in this area

Motor

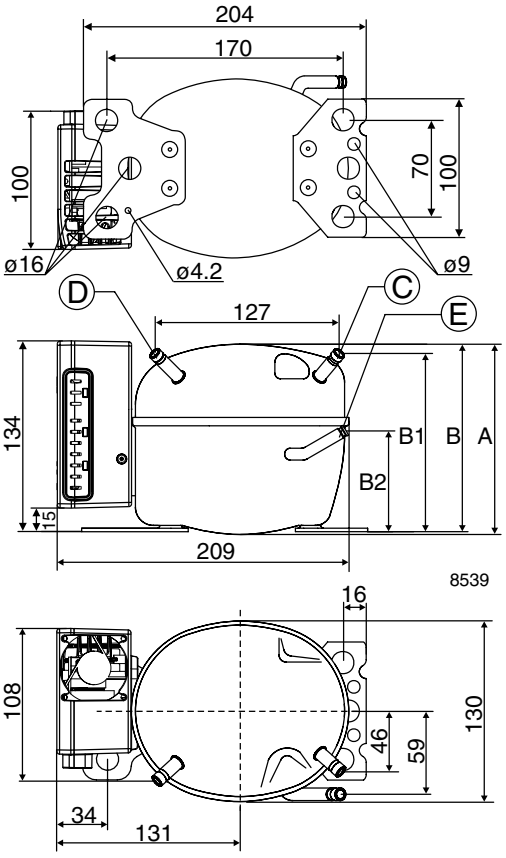
Motor type		Variable speed
Resistance, all 3 windings (25°C)	Ω	1.8

Design

Displacement	cm^3	2.00
Oil quantity (type)	cm^3	150 (polyolester)
Maximum refrigerant charge	g	120
Free gas volume in compressor	cm^3	870
Weight - Compressor/Electronic unit	kg	4.3/0.3

Dimensions

Height	mm	A	137
		B	135
		B1	128
		B2	73
Suction connector	location/I.D. mm | angle	C	6.2 | 41.5°
Process connector	location/I.D. mm | angle	D	6.2 | 45°
Discharge connector	location/I.D. mm | angle	E	5.0 | 21°
Connector tolerance	I.D. mm	±0.09, on 5.0 +0.12/+0.20	



Standard battery protection settings (no connection C - P)

12V cut-out [V]	12V cut-in [V]	24V cut-out [V]	24V cut-in [V]
10.4	11.7	22.8	24.2

Optional battery protections settings

Resistor (R2) [kΩ]	12V cut-out [V]	12V cut-in [V]	12V max. Voltage [V]	24V cut-out [V]	24 V cut-in [V]	24V max. Voltage [V]
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

Capacity (EN 12900 Household/CECOMAF) 12V DC static cooling **watt**

rpm \ °C	-40	-35	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2
2,500	30.6	40.2	51.9	66.0	71.4	82.9	103	126				
3,100	36.0	49.0	64.6	83.0	90.0	105	130	160				
3,800	40.5	56.6	75.6	98.0	106	124	154	189				
4,400	44.6	62.4	83.4	108	117	137	170	209				

Capacity (ASHRAE LBP) 12V DC static cooling **watt**

rpm \ °C	-40	-35	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2
2,500	34.1	44.8	57.9	73.6	79.7	92.5	115	141				
3,100	40.1	54.6	72.0	92.6	100	117	145	178				
3,800	45.1	63.1	84.3	109	119	138	172	211				
4,400	49.7	69.6	93.0	121	131	153	190	233				

Power consumption 12V DC static cooling **watt**

rpm \ °C	-40	-35	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2
2,500	35.7	39.8	44.8	50.5	52.5	56.4	62.3	67.8				
3,100	41.9	48.9	56.3	64.0	66.7	71.8	79.4	86.5				
3,800	48.7	58.6	68.6	78.5	81.8	88.1	97.5	106				
4,400	57.4	69.1	80.8	92.5	96.4	104	115	125				

Current consumption (for 24V applications the following must be halfed) 12V DC static cooling **A**

rpm \ °C	-40	-35	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2
2,500	2.97	3.32	3.74	4.21	4.38	4.70	5.19	5.65				
3,100	3.49	4.07	4.69	5.34	5.56	5.98	6.61	7.20				
3,800	4.06	4.88	5.71	6.54	6.82	7.35	8.12	8.86				
4,400	4.78	5.76	6.74	7.71	8.04	8.66	9.58	10.44				

COP (EN 12900 Household/CECOMAF) 12V DC static cooling **W/W**

rpm \ °C	-40	-35	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2
2,500	0.86	1.01	1.16	1.31	1.36	1.47	1.65	1.86				
3,100	0.86	1.00	1.15	1.30	1.35	1.46	1.64	1.85				
3,800	0.83	0.97	1.10	1.25	1.30	1.41	1.58	1.78				
4,400	0.78	0.90	1.03	1.17	1.22	1.32	1.48	1.66				

COP (ASHRAE LBP) 12V DC static cooling **W/W**

rpm \ °C	-40	-35	-30	-25	-23.3	-20	-15	-10	-5	0	5	7.2
2,500	0.96	1.13	1.29	1.46	1.52	1.64	1.84	2.08				
3,100	0.96	1.12	1.28	1.45	1.51	1.63	1.83	2.06				
3,800	0.93	1.08	1.23	1.39	1.45	1.57	1.77	1.99				
4,400	0.87	1.01	1.15	1.30	1.36	1.47	1.65	1.86				

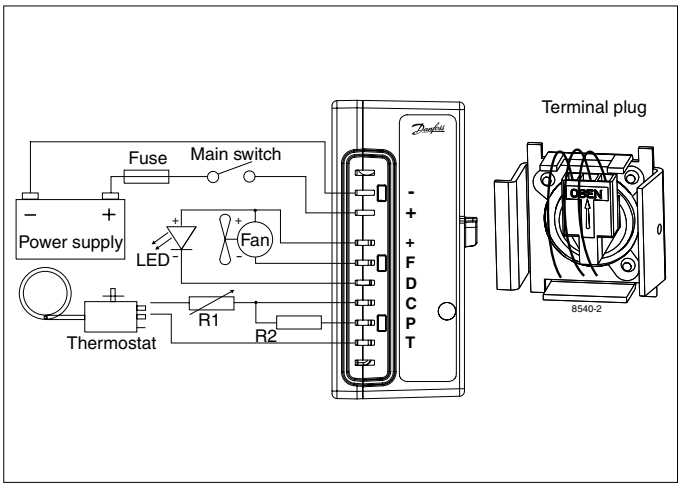
Operational errors shown by LED (optional)

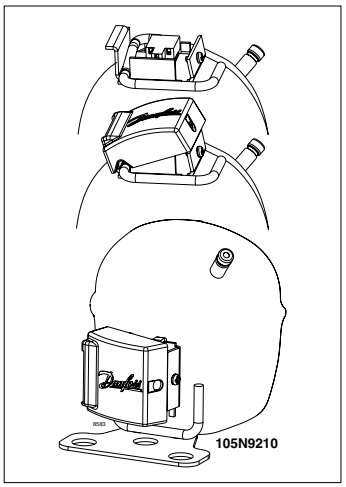
Number of flashes	Error type
5	**Thermal cut-out of electronic unit** (If the refrigeration system has been too heavily loaded, or if the ambient temperature is high, the electronic unit will run too hot).
4	**Minimum motor speed error** (If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed at approximately 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).

Wire Dimensions

Size		Max. length* 12V operation		Max. length* 24V operation	
Cross section	AWG				
[mm²]	[Gauge]	[m]	[ft.]	[m]	[ft.]
6	10	2.5	8	5	16

***Length between battery an electronic unit**





Compressor speed

Electronit unit Code number	Resistor (R1) [Ω]	Motor speed [rpm]	Control circuit current [mA]
101N0280 with AEO	0	AEO	6
	203	2,500	5
	451	3,100	4
	867	3,800	3
	1700	4,400	2

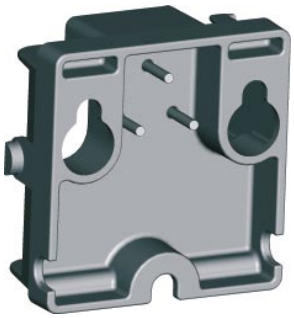
In AEO (Adaptive Energy Optimizing) speed mode the BD compressor will always adapt its speed to the actual cooling demand.

Test conditions	EN 12900/CECOMAF	ASHRAE
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

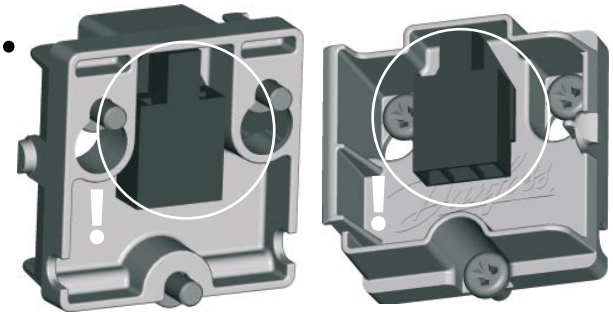
Accessories for	BD100CN	Code number
Bolt joint for one compressor	Ø: 16 mm	118-1917
Bolt joint in quantities	Ø: 16 mm	118-1918
Snap-on in quantities	Ø: 16 mm	118-1919
Remote kit (without cable)		105N9210
Standard automoblie fuse DIN 7258	12V: 30A 24V: 15A	Not deliverable from Danfoss
Main switch	rated to min. 30A	

Datasheet:
DEHC.ED.100.H2.02 / June 2006

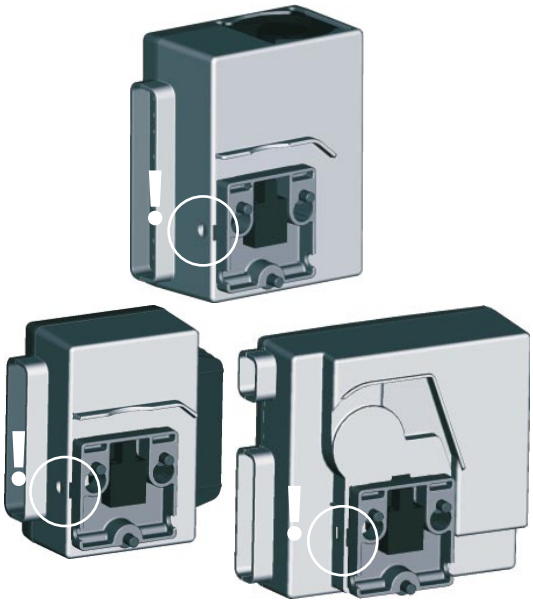
I.



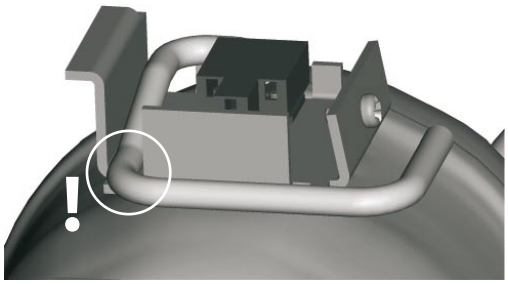
II.



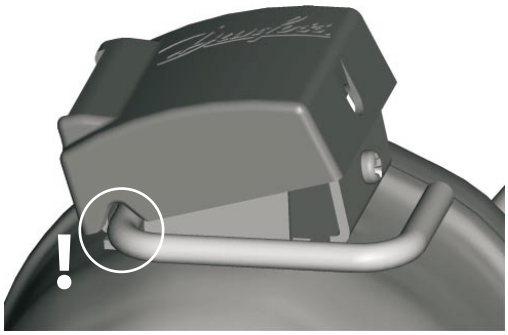
III.



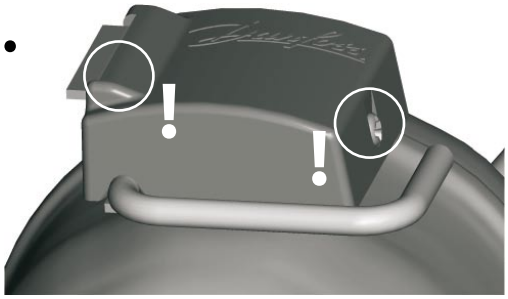
I.



II.



III.



Remote kit for BD compressors

BD code numbers

Compressors	Code number	Description
BD35F mm standard	101Z0200	standard compressor, mm tube connectors, UL recognized
BD35F inch	101Z0204	same as 101Z0200, inch tube connectors, UL recognized
BD35K (R600a)	101Z0211	for stationary use only, mainly solar applications, mm tube connectors
BD50F mm	101Z1220	standard compressor, mm tube connectors, UL recognized
BD50F inch	101Z0203	same as 101Z1220, inch tube connectors, UL recognized
BD80F mm	101Z0280	standard compressor, mm tube connectors, UL recognized
BD250GH	101Z0400	mm tube connectors, HBP compressor
BD250GH Twin	101Z0500	mm tube connectors, HBP compressor
BD100CN (R290)	101Z0401	mm tube connectors, LBP compressor

Electronic Single Pack	Code number	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 filtered, 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 w. AC/DC converter	101N0500	for BD35F/BD50F, speed setting, battery protection, integrated AC/DC converter
Electronic BD50F high start	101N0230	for BD50F only, extra high start performance, speed setting, battery protection
Electronic high speed	101N0280	for BD80F/BD250GH/etc., Adaptive Energy Optimization, speed setting, battery protection
Electronic automotive	101N0600	for BD35F, CISPR 25 class 5 approved, speed setting, battery protection, lamp output
Remote kit without cable	105N9210	bracket, cover and two plugs
AC line cord (UL approved)	105N9520	for electronic unit with AC/DC converter
AC line cord (VDE approved)	105N9530	for electronic unit with AC/DC converter

Electronic I - Pack	Code number	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 w. AC/DC converter	101N0501	for BD35F/BD50F, speed setting, battery protection, integrated AC/DC converter, 36 pcs.
Electronic BD50F high start	101N0231	for BD50F only, extra high start performance, speed setting, battery protection, 30 pcs.
Electronic high speed	101N0281	for BD80F/BD250GH/etc., Adaptive Energy Optimization, speed setting, battery protection, 28 pcs.
Electronic automotive	101N0601	for BD35F, CISPR 25 class 5 approved, speed setting, battery protection, lamp output, 30 pcs.
Remote kit without cable	105N9200	bracket, cover and two plugs, 200 pcs.
AC line cord (UL approved)	105N9521	for electronic unit with AC/DC converter, 80 pcs.
AC line cord (VDE approved)	105N9531	for electronic unit with AC/DC converter, 80 pcs.

Accessories

Remote kit, *mounted*

Remote kit, *parts*
(cable assembly not shown)

Electronic unit with AC/DC converter
with L-N socket for AC line cord

AC line cord, *single packs*

AC line cord
UL/VDE approved versions

AC line cord, *AC plug*

BD100CN
R290, -40°C, -10°C evap.
Stationary freezer application, not approved for vehicles, solar powered systems, ice cream boxes up to 200 l, pharmaceutical applications, 260 W cooling capacity.

BD250GH & BD250/250GH (Twin)
R134a, -30°C, +15°C evap.
Dedicated for cabin cooling in trucks during night-times, very silent operation, 850 W cooling capacity.

BD35K
R600a, -30°C, +10°C evap.
Stationary application, solar-powered vaccine coolers etc., 100-200 l coolers, 15-120 W cooling capacity.

BD35F multivoltage
R134a, 30°C, -10°C evap.
All mobile applications for portable boxes, boats, trucks etc., 15-120 W cooling capacity, can be powered with AC and DC, 85-265 V AC 50/60 Hz, 12-24 V DC, automatic selection between AC and DC.

BD35F with EMI electronic
Designed for boats and trucks if risk of electric inference with radio and navigation equipment, 15-140 W cooling capacity.

BD35F/50F/80F Basic
R134a, -30°C, -10°C evap.
All mobile applications for port-able boxes, boats, trucks etc., 5-140/20-180/35-220 W cooling capacity.

Second to none

Danfoss BD compressors mean: extraordinary performance at minimum power consumption, superbly silent running, reliable operation even when tilted up to 30 degrees, problem-free operation at 12/24 volts and more than 25 years' of experience in mobile refrigeration. Transport-stable, speed/capacity stable, multifunctional electronic, silent, high COP and compact design.

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