Danfoss BD35F Electronic Unit Compressors Instructions

Contents

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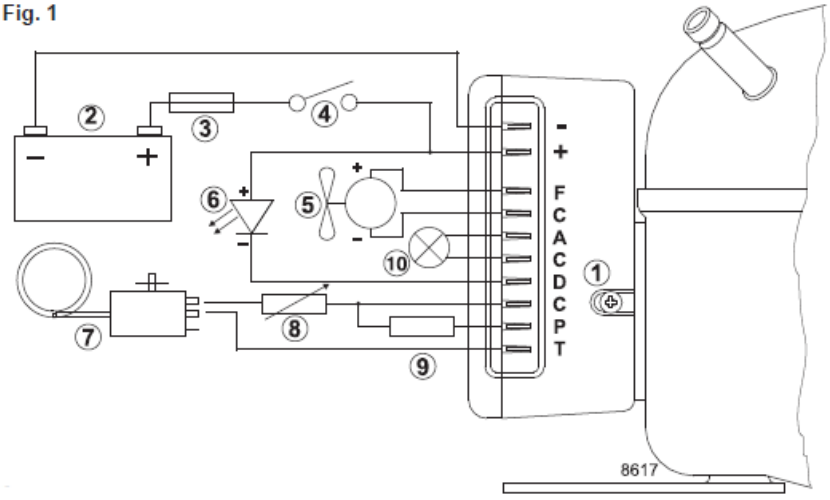
Instructions

Electronic Unit (Automotive Applications) for BD35F Compressors, 101N0600, 12- 24V DC

The electronic unit is a dual voltage device. This means that the same unit can be used in both 12V and 24V power supply systems. Maximum voltage is 17V for a 12V system and 31.5V for a 24V power supply system. Max. The ambient temperature is 55°C. The electronic unit has a builtin thermal protection that is actuated and stops compressor operation if the electronic unit temperature gets too high.

Installation (Fig. 1)
Connect the terminal plug from the electronic unit to the compressor terminal. Mount the elec tro nic unit on the compressor by snapping the cover over the screw head (1).

Fig. 1



Size AWG Gauge	Size Cross section mm²	Max length* 12V DC operation ft.	Max length* 12V DC operation m	Max length* 24V DC operation ft.	Max length* 24V DC operation 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

Fig. 2 *Length between battery and electronic unit

Power supply (Fig. 1)

The electronic unit must always be connected directly to the battery poles (2). Connect the plus to + and the minus

to -, otherwise, the electronic unit will not work. The electronic unit is protected against reverse battery connection.
For protection of the installation, a fuse (3) must be mounted on the + cable as close to the battery as possible.
15A fuse for 12V and 7.5A fuse for 24V circuits are recommended.
If a main switch (4) is used, it should be rated to a minimum current of min. 20A.
The wire dimensions in Fig. 2 must be observed. Avoid extra junctions in the power supply system to prevent voltage drop from affecting the battery protection setting.

Battery protection

(Fig. 1)

The compressor stops and restarts again according to the designated voltage limits measured on the + and – terminals of the electronic unit.
The standard settings for 12V and 24V power supply systems appear from **Fig. 3.**

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

Fig. 3

Other settings **(Fig. 4)** are optional if a connection which includes a resistor (9) is established between terminals C and P.

Optional battery protection settings Fig. 4

Resistor (9) kΩ	12V cut-out V	12V cut-in V	12V max. Voltage	24V cut-out V	24V cut-in V	24V max. Voltage
0	9.6	10.9	17.0	21.3	22.7	31.5
1.6	9.7	11.0	17.0	21.5	22.9	31.5
2.4	9.9	11.1	17.0	21.8	23.2	31.5
3.6	10.0	11.3	17.0	22.0	23.4	31.5
4.7	10.1	11.4	17.0	22.3	23.7	31.5
6.2	10.2	11.5	17.0	22.5	23.9	31.5
8.2	10.4	11.7	17.0	22.8	24.2	31.5
11	10.5	11.8	17.0	23.0	24.5	31.5
14	10.6	11.9	17.0	23.3	24.7	31.5
18	10.8	12.0	17.0	23.6	25.0	31.5
24	10.9	12.2	17.0	23.8	25.2	31.5
33	11.0	12.3	17.0	24.1	25.5	31.5
47	11.1	12.4	17.0	24.3	25.7	31.5
82	11.3	12.5	17.0	24.6	26.0	31.5
220	9.6	10.9				31.5

Thermostat (Fig. 1)
The thermostat (7) is connected between the terminals C and T. Without any resistor in the control circuit, the compressor will run with a fi xed speed of 2,000 rpm when the thermostat is switched on.
Other fixed compressor speeds in the range between 2,000 and 3,500 rpm can be obtained when a resistor (8) is installed to adjust the current (mA) of the control circuit. Resistor values for various motor speeds appear from **Fig. 5**

Compressor speed

Electronic unit	Resistor (8) Ω (calculated)	Motor speed rpm	Contr.circ. current mA
101N0600	0 277 692 1523	2,000 2,500 3,000 3,500	5 4 3 2

Fig. 5

Fan, optional (Fig. 1)
A fan (5) can be connected between the terminals C and F. Since the output voltage between the terminals C and F is always regulated to 12V, a 12V fan must be used for both 12V and 24V power supply systems.
The fan output can supply a continous current of 0.5Aavg. A higher current draw is allowed for 2 seconds during start.

Lamp, optional (Fig.1)
The 10W power should be split on fan and lamp (10) output (5W each) or 10W only on fan or lamp output.

Fan	Lamp
5 watt	5 watt
10 watt	0 watt
0 watt	10 watt
both outputs: 12V DC, 0-5W	

LED (optional, Fig. 1)
A 10mA light emitting diode (LED) (6) can be connected between the terminals + and D.
In case the electronic unit records an operational error, the diode will fl ash a number of times. The number of flashes depends on what kind of operational error was recorded. Each fl ash 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.

Number of lashes	Error type
5	**Thermal cutout 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 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 cutout** (The fan loads the electronic unit with more than 1Apeak).
1	**Battery protection cutout** (The voltage is outside the cutout setting).
Constant LED light	**Safe mode** (The unit is out of specification, but will still be running as long as possible).

VDE/UL Approvals for BD Compressors

Approved Compressor – Electronic Unit Combinations

Compressors		Electronic Units					
		Standard	*EM/*	*High start*	*High speed*	*AEO*	*AEO EM/*
		101N0210	101N0220	101N0230	101N0290	101N0300	101N0320
BD35F mm	101Z0200	**UL**	**UL**			**UL**	
BD35F inch	101Z0204	**UL**	**UL**			**UL**	
BD35K (R600a)	101Z0211						
BD50F mm	101Z1220	**UL**	**UL**	**UL**		**UL**	
BD50F inch	101Z0203	**UL**	**UL**	**UL**		**UL**	
BD80F mm	101Z0280						
BD250GH	101Z0400						
BD250GH Twin	101Z0500						
BD100CN (R290)	101Z0401						

Compressors		Electronic Units					
		Solar	*AC/DC converter*	*Automotive*	*Automotive*	*Telecommunication*	*Extended EM/*
		101N0400	101N0500	101N0600	101N0630	101N0730	101N0900
BD35F mm	101Z0200	**UL**	**VDE/UL**				
BD35F inch	101Z0204	**UL**	**VDE/UL**				
BD35K (R600a)	101Z0211						
BD50F mm	101Z1220		**VDE/UL**				
BD50F inch	101Z0203		**VDE/UL**				
BD250GH (48V)	101Z0402					**UL**	

VDE/UL	= Combination possible, VDE or UL approval
	= Combination possible, but no approval
	= Combination not possible

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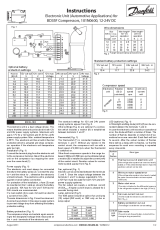
Documents / Resources

	Danfoss BD35F Electronic Unit Compressors [pdf] Instructions 101N0600, BD35F Electronic Unit Compressors, BD35F, Electronic Unit Compressors, Unit Compressors, Compressors

References

- Compressors for refrigeration, A/C and heating | Danfoss
- User Manual