

Instructions



Electronic Unit (Solar Applications) for BD35F & BD35K Compressors, 101N0400 (10-30V DC) & 101N0410 (20-45V DC)

Fig. 1

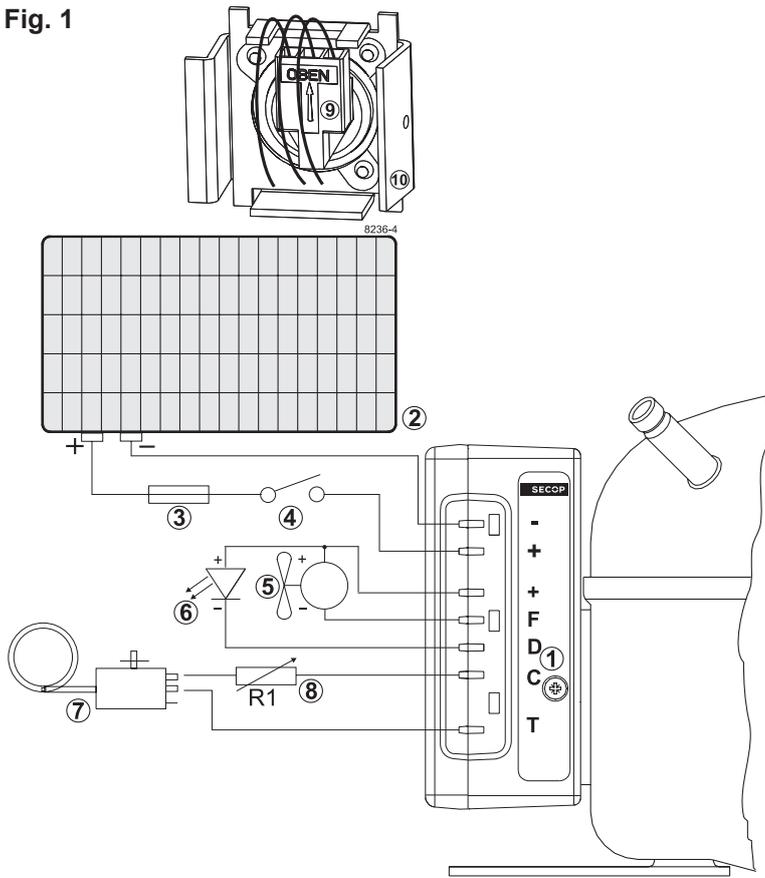


Fig. 2

Accessories

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

Wire dimensions

AWG Gauge	Size Cross section mm ²	Max length*		Max length*	
		12V operation		24V operation	
		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 and electronic unit

Compressor speed

Electronic unit	Resistor (R1) Ω (calculated)	Motor speed rpm	Contr.circ. current mA
101N0400 101N0410 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.

ENGLISH

The electronic units are intended for solar panels. They can operate within a voltage range from 10 to 45V DC (101N0400: 10-30V DC, 101N0410: 20-45V DC). Max. ambient temperature is 55°C. The electronic units have a built-in thermal protection which is actuated and stops compressor operation if the electronic unit temperature gets too high.

Installation (Fig. 1)

Connect the terminal plug (9) from the electronic unit to the compressor terminal (10). Mount the electronic unit on the compressor by snapping the cover over the screw head (1).

Power supply (Fig. 1)

The electronic unit must always be connected directly to the solar panel 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 during installation, a fuse (3) must be mounted in the + cable as close to the solar panel as possible. A 15A fuse is recommended. If a main switch (4) is used, it should be rated to a current of min. 20A. The "Wire dimensions" in Fig. 2 must be observed.

Thermostat (Fig. 1)

The thermostat (7) is connected between the terminals C and T. With the thermostat directly connected to terminal C the electronic unit will adjust its speed to the actual cooling demand. 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 table "Compressor speed" (Fig. 2).

Fan (optional, Fig. 1)

A fan (5) can be connected between the terminals + and F. Connect the plus to + and the minus to F. Since the output voltage between the terminals + and F is equal to the supply voltage. A fan that can handle the voltage range of the solar panel must be chosen.

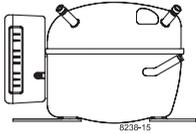
Low light conditions

In order to improve the start performance of the compressor in low light conditions, a 100.000 µF capacitor can be added to the supply lines of the electronic. This helps to reduce failed starts. In general it is recommended to prevent compressor and electronic from starting more than ten times an hour / 240 times per day. This can be done either with the capacitor, or with a light sensor which interrupts either the power supply lines or Thermostat lines and thus disables compressor start attempts in low light conditions. Alternatively a time switch or a microcontroller can also be used to prevent more than 240 starts per day.

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 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.

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 0.5A _{avg}).



Instructions

Electronic Units for BD Compressors



VDE/UL Approvals for BD Compressors

Approved Compressor - Electronic Unit Combinations

Compressors		Electronic Units					
		<i>Standard</i>	<i>High start</i>	<i>High speed</i>	<i>AEO EMI</i>	<i>AEO high start</i>	<i>AC/DC converter</i>
		101N0212	101N0230	101N0290	101N0320	101N0330	101N0500
BD35F mm	101Z0200						VDE/UL
BD35F inch	101Z0204						VDE/UL
BD35F-B	101Z0205						VDE/UL
BD35F-HD mm	101Z0206						
BD35F-HD inch	101Z0207						
BD35K (R600a)	101Z0211						
BD50F mm	101Z1220		UL				VDE/UL
BD50F inch	101Z0203		UL				VDE/UL
BD80F mm	101Z0280						
BD80CN (R290)	101Z0403		UL				
BD100CN (R290)	101Z0401						
BD250GH.2 (12/24V)	101Z0406						
BD250GH.2 (48V)	101Z0405						

Compressors		Electronic Units					
		<i>Solar</i>	<i>Solar</i>	<i>Automotive</i>	<i>Automotive</i>	<i>Automotive</i>	<i>Telecommunication</i>
		101N0400	101N0410	101N0600	101N0630	101N0650	101N0732
BD35F mm	101Z0200	UL					
BD35F inch	101Z0204	UL					
BD35F-B	101Z0205						
BD35F-HD mm	101Z0206						
BD35F-HD inch	101Z0207						
BD35K (R600a)	101Z0211						
BD50F mm	101Z1220						
BD50F inch	101Z0203						
BD80F mm	101Z0280						
BD80CN (R290)	101Z0403						
BD100CN (R290)	101Z0401						
BD250GH.2 (12/24V)	101Z0406						
BD250GH.2 (48V)	101Z0405						UL

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

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