

Instructions

Electronic Unit (Automotive Applications) for BD35F Compressors, 101N0630, 12-24V DC

SECOP

Fig. 1

Optional battery protection settings

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

Fig. 2

Harness Connector
(not supplied by Secop)
Brand: AMP D-3100S Standard Series
Supplier Name: TYCO ELECTRONICS
Item Code: 1-178288-8

Wire dimensions

Size AWG Gauge	Cross section mm ²	Max length* 12V DC operation		Max length* 24V DC 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

Standard battery protection settings

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

Fig. 3

Compressor speed

Electronic unit	Resistor (8) Ω (calculated)	Motor speed rpm	Contr.circ. current mA
101N0630	0	2,000	5
	277	2,500	4
	692	3,000	3
	1523	3,500	2

Fig. 5

ENGLISH

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. ambient temperature is 55°C. The electronic unit has 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 from the electronic unit to the compressor terminal. 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 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 in 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 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 decided 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.

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

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 fixed 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.

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 continuous current of **0.5A_{avg}**. 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.

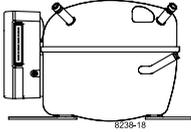
Fan	Lamp
5 watt	5 watt
10 watt	0 watt
0 watt	10 watt
<i>both outputs: 12V DC, 0-5W</i>	

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 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).
Constant LED light	Safe mode (The unit is out of specification, but will still be running as long as possible).



Instructions

Electronic Units for BD Compressors

SECO P

UL/CB/VDE Approvals for BD Compressors

Approved Compressor - Electronic Unit Combinations

Compressors		Electronic Units						
		<i>Standard</i>	<i>AEO</i>	<i>High speed</i>	<i>Solar</i>	<i>AC/DC converter</i>	<i>Automotive</i>	<i>Telecommunication</i>
		101N0212	101N0340	101N0390	101N0420	101N0510	101N0650	101N0732
BD35F mm	101Z0200		UL / CB / VDE		CB / VDE	UL / VDE	UL / CB / VDE	
BD35F inch	101Z0204		UL / CB / VDE		CB / VDE	UL / VDE	UL / CB / VDE	
BD35F-B	101Z0205		UL / CB / VDE		CB / VDE	UL / VDE	UL / CB / VDE	
BD35F-HD.2	101Z0216						UL / CB / VDE	
BD35K (R600a)	101Z0211		UL / CB / VDE		CB / VDE	CB / VDE	UL / CB / VDE	
BD50F mm	101Z1220		UL / CB / VDE			UL / VDE	UL / CB / VDE	
BD50F inch	101Z0203		UL / CB / VDE			UL / VDE	UL / CB / VDE	
BD50K (R600a)	101Z0213							
BD80F	101Z0280							
BD80CN (R290)	101Z0403		UL / CB / VDE			UL	UL / CB / VDE	
BD100CN (R290)	101Z0401							
BD250GH.2 (12/24V)	101Z0406							
BD250GH.2 (48V)	101Z0405							UL

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

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