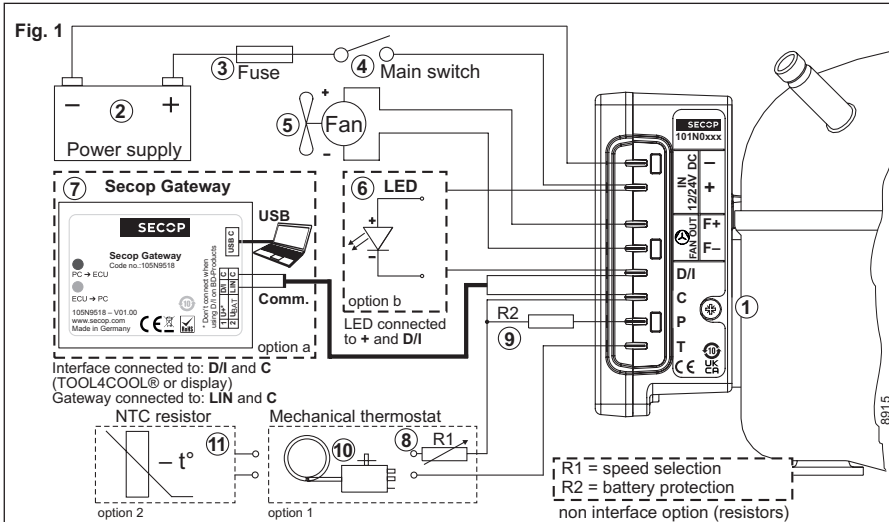


Instructions

Electronic Unit for BD35F/50F/35K/80CN
Compressors, 101N0242, 101N0680/682, 12/24V DC

SECCOP



Optional battery protection settings Fig. 4

Resistor (R2) [kΩ]	12V cut-out [V]	12V cut-in [V]	12V max. [V]	24V cut-out [V]	24V cut-in [V]	24V max. [V]
0	9.6	10.9	17.0	21.3	22.6	31.5
1.6	9.7	11.0	17.0	21.5	22.8	31.5
2.4	9.9	11.1	17.0	21.8	23.1	31.5
3.6	10.0	11.3	17.0	22.0	23.3	31.5
4.7	10.1	11.4	17.0	22.3	23.6	31.5
6.2	10.2	11.5	17.0	22.5	23.8	31.5
11	10.5	11.8	17.0	23.0	24.4	31.5
14	10.6	11.9	17.0	23.3	24.6	31.5
18	10.8	12.0	17.0	23.6	24.9	31.5
24	10.9	12.2	17.0	23.8	25.1	31.5
33	11.0	12.3	17.0	24.1	25.4	31.5
47	11.1	12.4	17.0	24.3	25.6	31.5
82	11.3	12.5	17.0	24.6	25.9	31.5
220	9.6	10.9				31.5

- 101N0242** Standard version
- 101N0680** Automotive version with lower leakage current and improved EMI
- 101N0682** Automotive version with integrated tilt sensor

Wire Dimensions DC

Cross section [mm ²]	AWG [Gauge]	12V operation		24V operation	
		Max. length* [m]	Max. length* [ft.]	Max. length* [m]	Max. length* [ft.]
2.5	13	2.5	8	5	16
4	12	4	13	8	26
6	10	6	20	12	39
10	8	10	33	20	66

Fig. 2 *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

Electronit unit Code number	Resistor (R1) [Ω] calculated values	Motor speed [rpm]
101N0242 101N0680	0	2,000
	277	2,500
	692	3,000
	1523	3,500

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 43°C. The electronic unit has a built-in thermal protection which is actuated and stops compressor operation if the electronic unit temperature rises above the specified limit.

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

The electronic unit must always be connected directly to the battery poles (2). The electronic unit is protected against reverse battery connection. A fuse (3) must be mounted in the battery + cable as close to the battery as possible. 15A fuse for 12V and 7.5A fuse for 24V circuits is mandatory. If a main switch (4) is used, the main switch 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

The compressor stops and restarts according to the voltage measured on the + and - terminals of the electronic unit. The factory defaults appear from Fig. 3. Other settings (Fig. 4) are possible via connecting an optional resistor R2 (9) between terminals C and P. In solar direct drive applications without a battery a 220 kΩ resistor is recommended.

Thermostat and speed selection

Either an NTC (electrical thermostat, 11) or a mechanical thermostat (10) can be connected between the terminals C and T.

If an NTC is used, the set point and speed can be set via a communication interface between terminals C and D/I.

If a mechanical thermostat is used without any series resistor R1 (8), the compressor will run with a fixed speed of **2,000 rpm**.

Other fixed compressor speeds in the range between 2,000 and 3,500 rpm can be obtained by installing a series resistor R1 between the thermostat and C connection. Resistor values for various motor speeds appear from Fig. 5.

Fan (optional)

A fan (5) can be connected between the terminals F+ and F-. **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 configurable ramp-up behavior allows a wide range of demanding fans to be started and operated reliably. During the ramp-up, a higher start current is allowed.

Communication interface (option a).

A PC can be connected through the Secop Gateway (7) to the communication interface between terminal D/I and C. The software TOOL4COOL® allows you to modify the systems parameters and displays several measurements. TOOL4COOL® supports mass production templates.

Alternatively a customer specific controller (e.g. display) can be connected to adjust the settings like set point and speed during operation.

LED (option b)

A 10mA light emitting diode (LED) (6) can be connected between the terminals + and D/I.

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.

Operational errors

Error code or LED flashes	Error type
	Can be read out in the software TOOL4COOL®
6	Thermostat failure (If the NTC thermistor is short-circuit or has no connection).
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	Too many start attempts or fan over current (Too many compressor or fan starts in short time or fan current higher than 0.5A _{avg}).
1	Battery protection cut-out (The voltage is outside the cut-out setting).

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