



Instructions

Electronic Unit for BD350GH Compressor, 101N0715, 24V DC



Fig. 1

Operational errors

Error code	Error type
	Can be read out in the software TOOL4COOL®
6	Thermostat failure (If the NTC thermistor is short-circuit or has no connection, the electronic unit will enter manual mode).
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).
2	Fan over-current cut-out (The evaporator fan loads the electronic unit with more than 1.8A _{peak} / the condenser fan loads it with more than 2.5A _{peak}).
1	Battery protection cut-out (The voltage is outside the cut-out setting).

Fig. 4

Wire Dimensions

Cross section [mm ²]	Size		Max. length* 24V operation	
	AWG [Gauge]		[m]	[ft.]
2 x 4	11		1.5	4.92
2 x 6	9		2	6.60
2 x 10	7		4	13.12

*Length between battery and electronic unit

Battery protection settings

Voltage (0.1 steps)	Min. value	Default	Max. value
Cut out VDC	19.0	21.1	27.0
Cut in diff. VDC	0.5	3.9	10.0

Fig. 3

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The electronic unit is a single voltage device. This means that the unit can only be used with 24V DC power supply systems. Maximum voltage is 31.5 V DC, max. ambient temperature is 55°C. The electronic unit has a built-in thermal protection which is actuated and stops the compressor operation if the electronic unit temperature becomes too high (100°C / 212°F on the PCB). It can be connected to a PC through the *Secop One Wire/LIN Gateway* communication interface (9) on the terminals I, + and C. Communication gateway modules incl. communication cables can be ordered at Secop.

The PC interface allows for making different settings and reading out several measurements by using the software tool TOOL4COOL® supplied by Secop (must be ordered separately).

Installation (Fig. 1)

Connect the terminal plug from the electronic unit to the compressor terminal (10). Mount the electronic unit on the compressor and fix it with the two screws (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 during installation, a fuse (3) must be mounted in the + cable as close to the battery as possible. It is recommended to use 30A fuses for 24V circuits.

If a main switch (4) is used, it should be rated to a current of min. 50A. 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. Special supply cables can be ordered as accessories (Molex type 42816-0212).

Battery protection (Fig. 3)

The compressor stops and restarts again according to the chosen voltage limits measured on the + and - terminals of the electronic unit. The standard settings for the power supply systems are shown in Fig. 3. Other settings are set through the communication interface.

Thermostat (Fig. 1)

The thermostat is connected between the terminals C and T. Either a NTC (electrical thermostat) (8) or a mechanical thermostat can be connected (7). Three different thermostat modes can be chosen in the software – “Auto” (both NTC and mechanical), “NTC” or “Mechanical”. Standard setting is “Auto”. In case of using a NTC the set point in the range between -25° C and 40° C is set with the software and the temperature can also be seen by using the interface. When using the “Auto” setting in the software it is not possible to obtain NTC failures, so it is recommended to set the thermostat mode to “NTC” when using a NTC.

Speed selection

Speed can be set through the *Secop One Wire/LIN Gateway* communication interface (9).

With factory settings, the compressor will run with a fixed speed of **4,000 rpm** when the thermostat is switched on.

Other fixed compressor speeds and start speeds in the range between 2,500 and 4,000 rpm can be obtained when changing the speed settings in the software.

A start delay in the range from 2-240 sec. (factory setting 4 sec.) after thermostat cut-in can also be chosen.

Fan (Fig. 1)

An evaporator fan (60W) (6) can be connected between the terminals + and Fe and a condenser fan (40W) (5) between + and Fc. Connect the plus to + and the minus to Fe or Fc.

If both fans are used, the settings in the software have to be adapted, including specifying the voltage used (12V or 24V). The factory setting is *no fans* and 24V. The unit has to be restarted when these settings have been changed.

If fans are used without adapting the software settings, the fans will run but no error signal will be sent in case of fan failure.

It is also possible to set a start delay on the fans in the range from 0-240 sec. Factory settings for the evaporator fan is 6 sec. and for the condenser fan 0 sec.

Fan speed can be adjusted through the interface from 40-100%.

Error handling

If the electronic unit records an operational error, the error can be read out in the software. Error codes are defined as shown in Fig. 4.