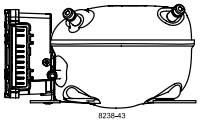

TOOL4COOL®
Flexible control settings

Instructions

Electronic Unit for BD1.4F-VSD Compressor, 101N2120, 12-24V DC

SECOP

Fig. 1

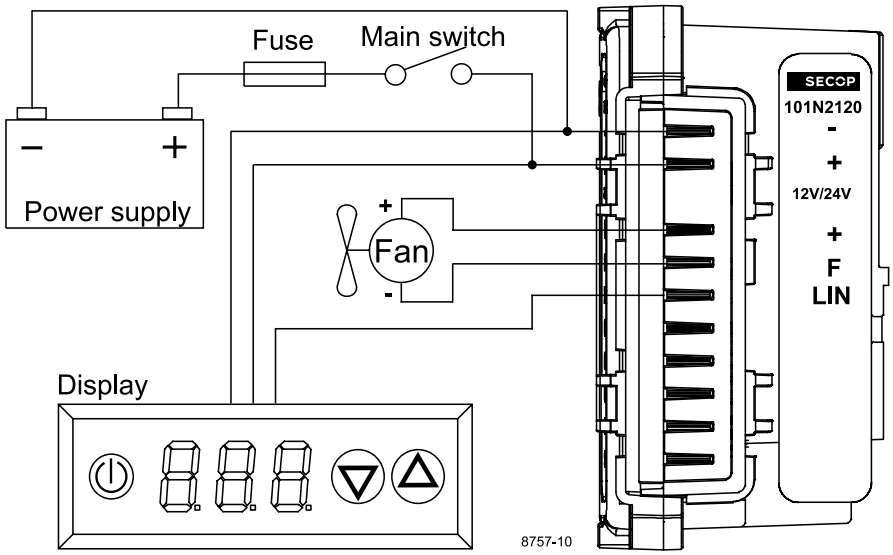

Fig. 2

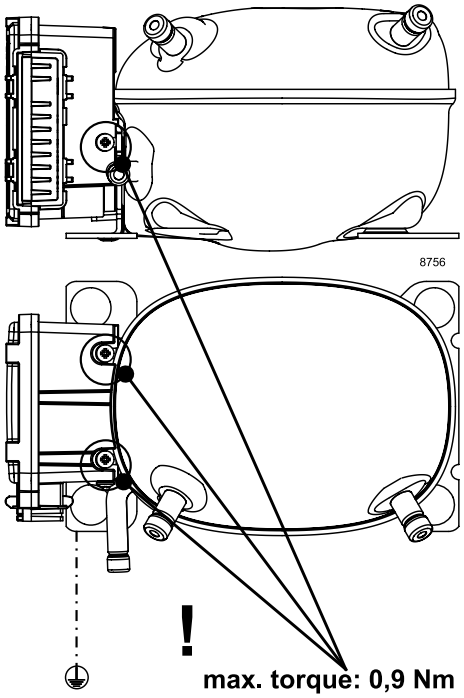

Fig. 3

Wire Dimensions DC

Size		Max. length* 12V operation		Max. length* 24V operation	
Cross section	AWG				
[mm²]	[Gauge]	[m]	[ft.]	[m]	[ft.]
2.5	12	2.5	8	5	16
4	12	4	13	8	26
6	10	6	20	12	39
10	8	10	33	20	66

*Length between battery and electronic unit

ENGLISH

The electronic unit is a dual voltage device. This means that the same unit can be used in 12V or 24V power supply systems. Maximum voltage is 17V for a 12V system and 34V 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 (100°C/212°F on the PCB).
It is equipped with a LIN transceiver, to communicate with a customer specific display. The software protocol running in the interface is Modbus. Parameters are available on request.

Installation (Fig. 2)
Mount the electronic unit directly on the compressor plug and fix it with screws.

Power supply (Fig. 1)
The electronic unit must always be connected directly to the battery poles. 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 must be mounted in the + cable as close to the battery as possible.
A 15A fuse must be used in 12V and 24V systems.
If a main switch is used, it should be rated to a current of min. 20A.
The wire dimensions in Fig. 3 must be observed.
Avoid extra junctions in the power supply system to prevent voltage drop from affecting the battery protection setting.
After stopping the communication and floating the LIN Bus, the unit will enter sleep mode, after the adjustable communication timeout. In this mode, the unit will consume max 50µA.

Compressor operation
All parameters can be accessed and changed via the LIN interface. This includes compressor on and off operation, compressor speed / cooling capacity, battery protection values as well as event and error logs.
After starting the compressor the compressor will start with a start speed of 2.500 rpm for the first 30s as a default setting and change to the requested speed afterwards.

Fan (Fig. 1)
A fan can be connected between the terminals +(F) and F. Connect the plus to +(F) and the minus to F. Since the output voltage between the terminals +(F) 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 power of $6W_{avg}$. A higher current draw is allowed for 2 seconds during start.
Fan settings can be adjusted via communication interface. The factory default setting in the controller is: *Detect missing fan - Disabled.*
The unit has to be restarted when these settings have been changed. If a fan is used without adapting the settings, the fan 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 fan in the range from 0-240 sec. but only if a fan is connected and not running.
Factory default setting for a fan is 0 seconds.
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 via communication interface.