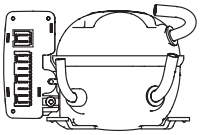


TOOL4COOL®

Instructions

Electronic Unit for MB3CKV Compressors
101N2742, 24V DC

SECOP

Fig. 1

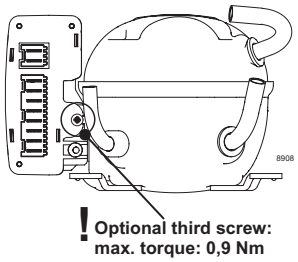
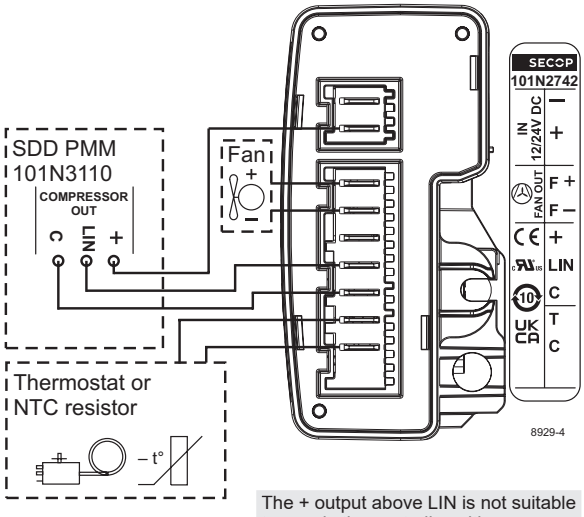


Fig. 2



The + output above LIN is not suitable to supply the controller with power.
It is a unprotected output, directly connect to battery +.
Rated max. current: 1A

Fig. 3

Operational errors

Error code	Error type Can be read out in the software **TOOL4COOL®**
7	**Communication error** (Communication of customer display stopped for 15 minutes (default)).
6	**Thermostat failure** (If a NTC thermistor is short-circuit or has no connection, the electronic unit will enter manual mode).
5	**Thermal cut-out of electronic unit** (PCB temperature exceeds minimum or maximum limits).
4	**Minimum motor speed error** (If the refrigeration system is too heavily loaded, the motor cannot maintain minimum speed at approximately 2,150 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 is overloading the electronic unit).
1	**Battery protection cut-out** (The voltage is outside the cut-out setting).

Recommended RAST connector types

Power Supply	2-circuit	Molex: 945504102
Fan	2-circuit	Molex: 945504202
Display/Communication	3-circuit	Molex: 932504023
Thermostat Machine Compartment	3-circuit	Molex: 932504003

Crimp connectors 6.3 mm | 1/4 inch

Cable Diameter	Connector
0.5 mm² - 0.75 mm²	Molex: 945180100
0.75 mm² - 2.5 mm²	Molex: 945180201
for 2 wires 1.5 - 3.0 mm² total	Molex: 945180400

Wire dimensions DC

Size		Max. length 24V operation*	
Cross section	AWG	Cables longer than 5 meters are not supported	
[mm²]	[Gauge]	[m]	[ft.]
2.5	12	5	16

*Length between battery and electronic unit

Periphery

SDD Power Management Module	101N3110
Thermistor multi-pack	105N9615

ENGLISH

This electronic unit is intended for use in a solar direct drive system (SDD) as a motor control unit for the SDD Power Management Module (SDD PMM) 101N3110.
Its battery protection functionality is deactivated when connected to a solar direct drive power management system.
Although the electronic unit 101N2742 is compatible with TOOL4COOL®, it is not intended to be used stand-alone, but only in combination with the 101N3110.

Installation (Fig. 1)
Attach the electronic unit by pressing it linearly onto compressor Fusite® connector and brackets. Press until both screwheads snap in place. Optionally the unit can be secured against excessive vibration with a third screw.

Power supply (Fig. 2)
The electronic unit shall be used with SDD Power Management Module (SDD PMM) 101N3110 as a power supply.
Connect the two units according drawing in Fig. 1. Do not supply the electronic unit via the + pin above LIN. The + pin is a power output and supplies any periphery with input power up to 1A load. The connector can not be used to supply the unit with power.

Solar start optimization
To extend the operating time of a solar direct drive application, this electronic unit has a starting algorithm optimized for solar direct drive. Its starting current demand is reduced by building up the torque differently, allowing the unit to start already with morning sun.

Battery protection
The battery protection function of the electronic unit is deactivated by the solar drive power management system. The electronic unit is intended for operation without a battery.

Thermostat (Fig. 2)
The thermostat is connected between the terminals C and T. Either a NTC (electrical thermostat) or a mechanical thermostat can be connected. 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 -40ºC and 40ºC 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.

Fan (Fig. 2)
A fan can be connected to the FAN OUT terminals. Connect the plus to F+ (FAN OUT) and the minus to F-.
Since the output voltage between the terminals F+ (FAN OUT) 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 $6W_{avg}$.
Fan settings can be adjusted via TOOL4COOL®. It is also possible to set a start delay on the fan in the range from 0 – 240 sec.. Factory default setting for a fan is 0 seconds. Fan speed can be adjusted through the interface from 40 – 100%.

Error handling (Fig. 3)
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. 3
The electronit unit does not have a LED function.

Machine compartment temperature
The electronic unit disables the compressor operation in case its PCB exceeds the maximum limits. The electronic unit does not limit the compressor to operate in its released conditions. It must be ensured the machine compartment temperature does not exceed the compressors maximum ratings, otherwise it might be damaged.
Min. PCB temperature: -10°C (14°F)
Max. PCB temperature: 110°C (230°F)
Please refer to the compressor datasheet regarding operating conditions and machine compartment temperature.