

Sipcon 3 Service



REMBE® Research+Technology Center GmbH

Zur Heide 39, D-59929 Brilon, Germany

www.rembe-rtc.de info@rembe-rtc.de

Cesana AG

Baiergasse 56, CH-4126 Bettingen, Switzerland

www.cesana-ag.ch info@cesana-ag.ch

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Please read this note!



Attention: Please read this safety instruction carefully!

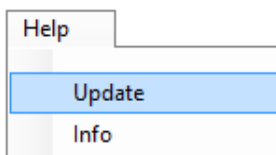
1. PC-Software

1.1 Update



We urgently recommend the free update to the current software version as preparation for all of the following work. The manuals will also be updated.

- Your PC is connected to the internet. You can run the **Internet** update directly.
- Your PC is **not** connected to the Internet and you are a participant in the CaRo calibration round-robin test. Insert the supplied USB stick and enter the directory **USB drive: \Update** under **Drive** and start the update.

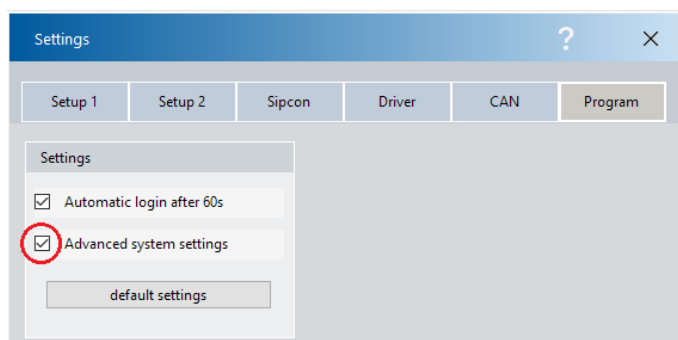


- Your PC1 is **not** connected to the internet.
Install a new Sipcon program on a PC2 connected to the Internet and then copy all of the following files from PC2 to the corresponding directory on PC1:
Sipcon8.exe, Update.dat, Update_c.exe, *.pdf, *.rtf

2. Sipcon 3

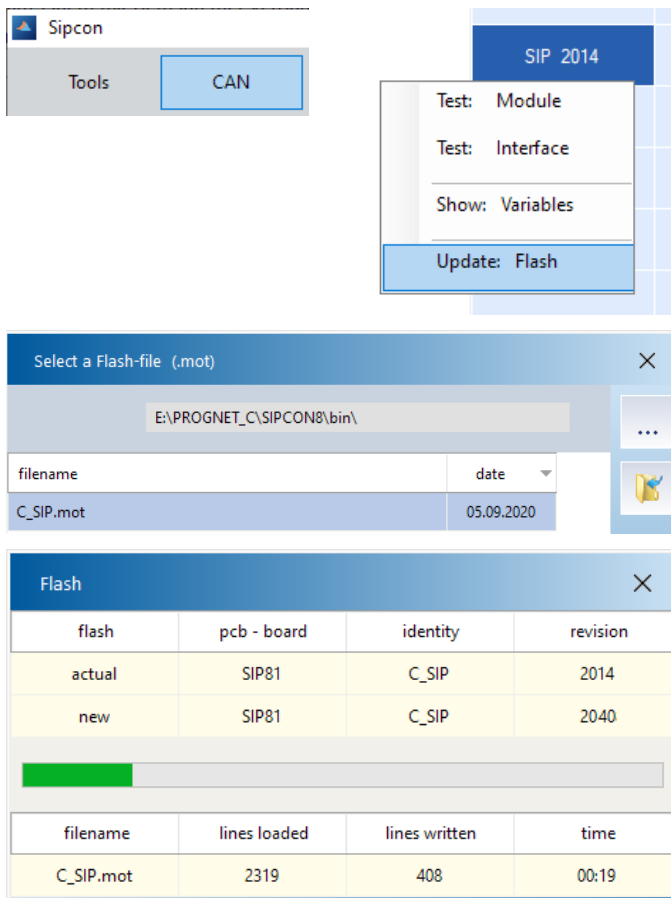


To allow access to the system settings, go to **Settings / Program**
Activate **advanced system settings**.



2.1 Flash programming

The Sipcon3 control program can possibly be updated after an update.



The flash files are in the SIPCON directory.

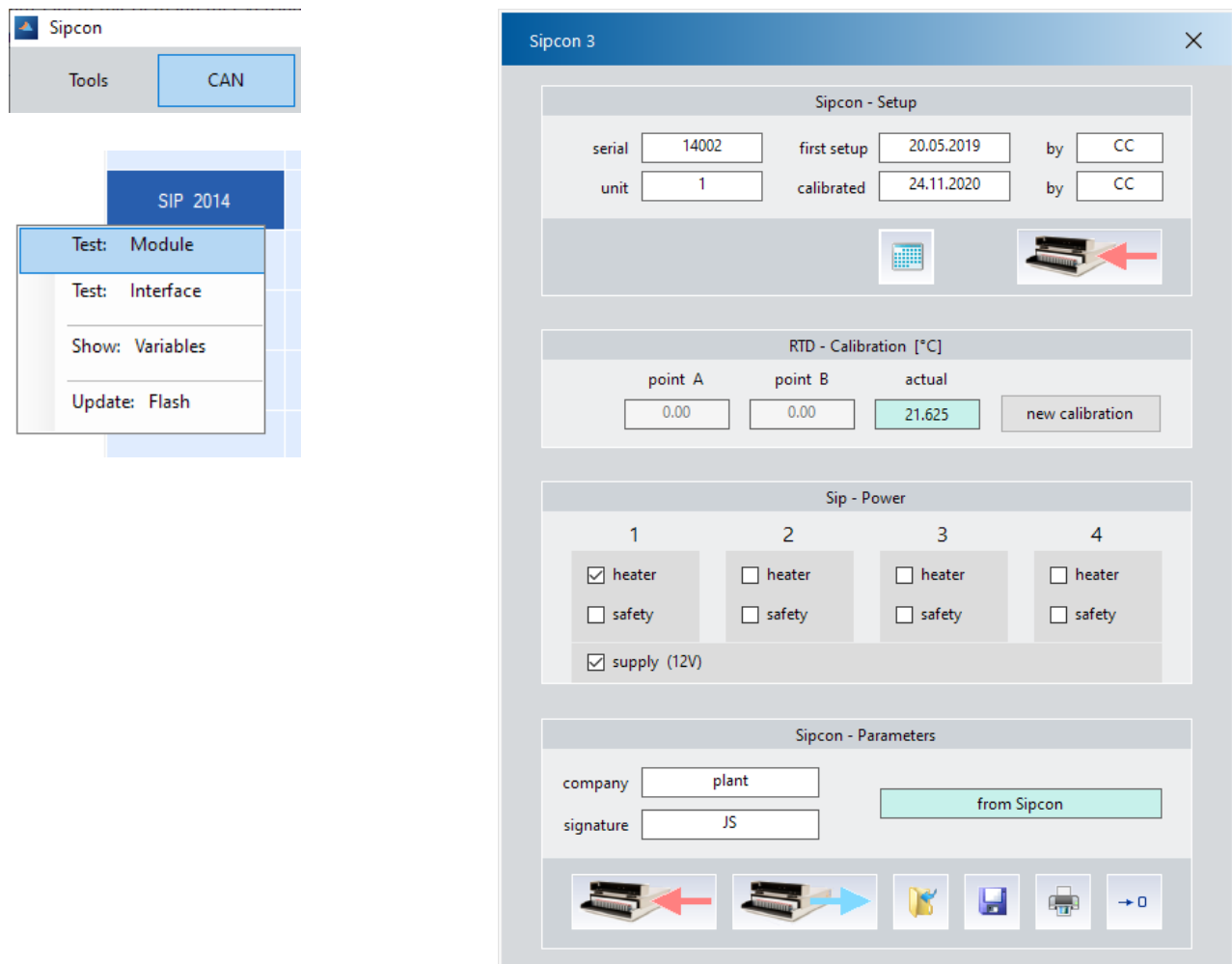
Please note:
pcb board and *identity* must be of the same type.

revision:
 Year / calendar week

Further information (on request): [B081_020.pdf](#) „CAG - Flash - Programmierung“

2.2 Test program

The Sipcon3 contains a powerful tool for self-diagnosis, troubleshooting and calibration.



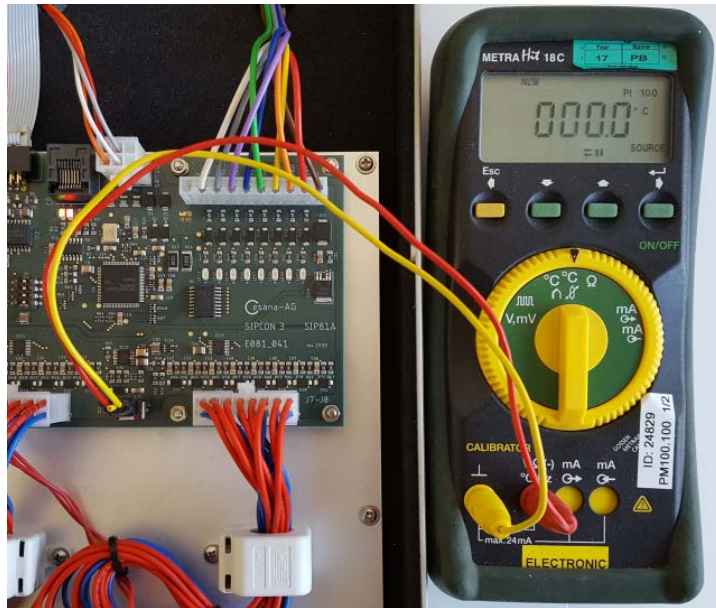
All calibrations have already been carried out at the factory.

Further information (on request): [P014_100.pdf](#) „Sipcon3 - Endprüfung“

2.2.1 RTD - Calibration

The temperature of the thermocouple connection terminals is measured by a Pt-100 sensor (RTD).

Use program [CAN / Test: Module](#)



1. new calibration

calibrator = 0°C

2. calibrate A

calibrator = 50°C

3. calibrate B

calibrator = 20°C

4. check $\pm 0.2^\circ\text{C}$

5. completion

RTD - Calibration [°C]			
point A	point B	actual	
0.00	0.00	0.836	new calibration
point A	point B	actual	
0		(84)	calibrate A
point A	point B	actual	
0.00	50	(100)	calibrate B
point A	point B	actual	
0.00	50.00	20.065	new calibration

Connect the internal RTD in place of the calibrator

2.2.2 Pressure sensor - Calibration

Use program *CAN / Test: Module*

Pressure - sensor

Carry out separately for P1 and P2:

range = 4 - 20mA

value = 20mA



Pressure sensor

1. Select channel: click on sensor-field
2. Select type of sensor:

☐ 0 ... 20 mA ☒ 4 ... 20 mA

lower reading (0 or 4mA) = [bar]

full scale (20mA) = [bar]

☒ Calibration of 20mA: do this once on a new Sipcon !

2.2.3 Sip-Power - Check outputs

Use program [CAN / Test: Module](#)

Check the function of each output individually:

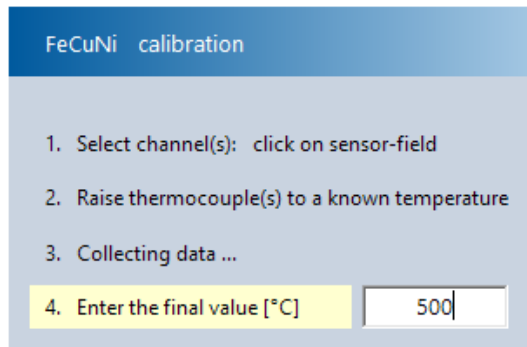
Sip - Power			
1	2	3	4
<input checked="" type="checkbox"/> Heater	<input type="checkbox"/> Heater	<input type="checkbox"/> Heater	<input type="checkbox"/> Heater
<input checked="" type="checkbox"/> Safety	<input type="checkbox"/> Safety	<input type="checkbox"/> Safety	<input type="checkbox"/> Safety
<input checked="" type="checkbox"/> Safety (12V supply)			

2.3 Thermocouple - Calibration

Use program [Tools / Sipcon: Calibration](#)

2.3.1 Calibration at the factory

1. [Thermocouple - Offset](#) Short-circuit all inputs with the jumpers provided.
2. [Thermocouple - FeCuNi](#) All inputs connected to the calibrator.
Setting: J, Ref = ambient temperature, **500°C**



The characteristics of the thermocouples are non-linear. This is corrected via software. The turning point for FeCuNi is 500 ° C. We therefore recommend an adjustment at 500 ° C.

2.3.2 Calibration by the user

This adjustment takes into account the individual thermal e.m.f.'s of the thermocouples. Hence the adjustment must be repeated each time a thermocouple is replaced. For accurate, relative temperature measurements, it is advisable to perform the adjustment for all thermocouples at the same time.

The sensors are generally calibrated using 2 points:

In the case of thermocouples, the first point is determined by inserting the supplied short-circuit jumpers into the input terminals. The measured value then corresponds to the terminal temperature. This temperature is measured by a RTD sensor.

For the second point, the thermocouples must be brought to a high and precisely known temperature.

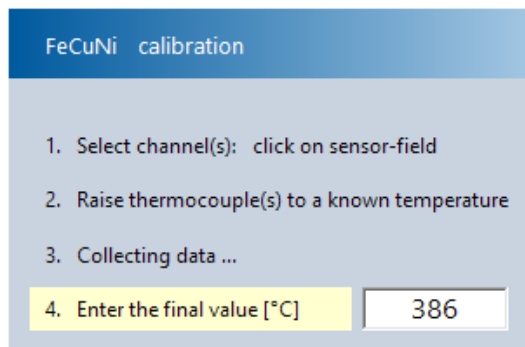
1. Zero point adjustment: *Thermocouple - Offset*

Short the measurement inputs directly at the sockets with the help of the supplied jumpers.

2. End value adjustment: *Thermocouple - FeCuNi or NiCrNi*

Insert thermocouples and close the Sipcon housing. Wait for isothermal conditions inside the Sipcon unit (approx. 30 min). Raise the thermocouples to a high and known temperature, e.g. heated oil bath or heated aluminum block. Follow the instructions of the program.

3. Enter final value: e.g. the temperature of the oil bath.



The screenshot shows a software window titled "FeCuNi calibration". It contains a list of four steps:

1. Select channel(s): click on sensor-field
2. Raise thermocouple(s) to a known temperature
3. Collecting data ...
4. Enter the final value [°C]

 Step 4 is highlighted with a yellow background. To the right of step 4, there is a text input field containing the value "386".

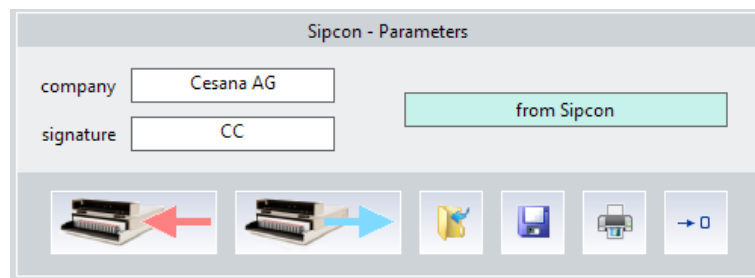


The best results for relative temperature measurements are achieved when all thermocouples come from the same production lot.



2.4 Parameter

All parameters are stored in the Sipcon and not in the PC program. These parameters can be saved in a file. Before a new calibration, it makes sense to save the parameters, because in the event of problems you can restore the old status at any time by transferring the old parameters from the backup-file to the Sipcon. Attention: old values will naturally be overwritten.



Use program *CAN / Test: Module*



Save parameters

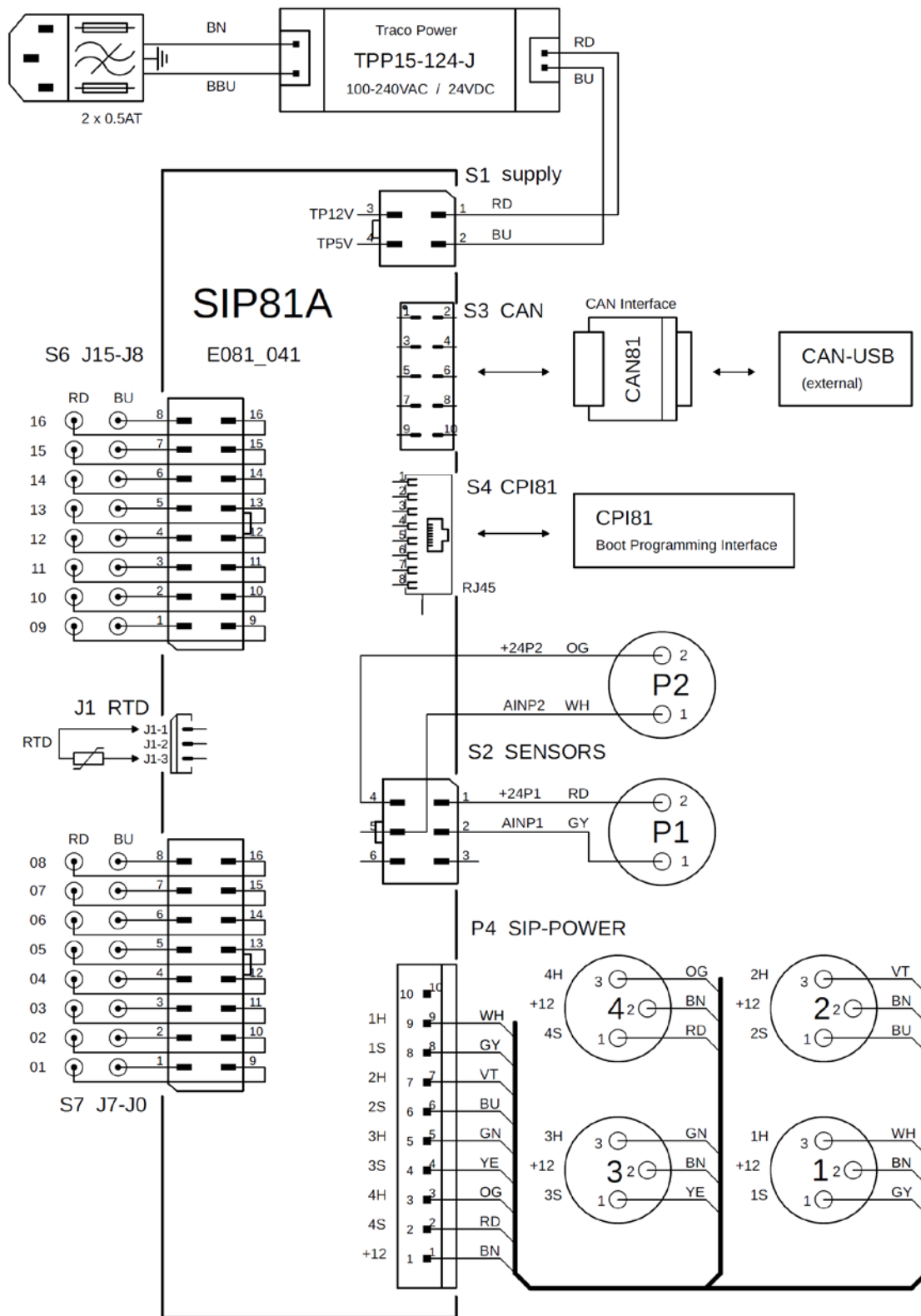
1.  Transfer parameters from Sipcon to the PC program.
2.  Save parameters in a file:
Automatically generated suggestion for the file name: e.g. *P014_106.par*
Key to this: *P014 = Product code, 1 = Sipcon3, 06 = Pcb-number*

Load parameters

1.  Transfer parameters from a *par file* to the PC program.
2.  Write parameters to the Sipcon. Attention: old values will be overwritten.

3. Diagrams

3.1 Sipcon3 - wiring



SIPCON 3 - wiring
E014_401

3.2 Sip-Power

