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SoilNet BoxCon Software

Functional Description and

Operating Instructions

V1.17



Wireless Sensor Network for Measuring Soil Moisture

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1 Functional Overview

The SoilNet **BoxCon application** is installed on the provided notebook. The functionality of the BoxCon Software is described in the following sections.

All functions require an intact connection of *SoilNet EndDevice* and the PC under use of the *SoilNet Service Unit*.

1.1 Display of EndDevice status

Several states (e.g. Online, Offline, Measure, Shortsleep, Longsleep, etc.) indicate the status of the *SoilNet EndDevice*. Indicators (LEDs) inform which state is active. (Chapter 3.1)

1.2 Display of current measurement

Each newly initiated measurement (Manually->Push Reset Button of *SoilNet Service Unit*, Automatic -> Real time clock triggered) produces a transfer of measured data to the PC. The values are displayed on the DATA tab. This visualization is necessary to verify sensor data in the field (e.g. *SoilNet EndDevice* installation) or in the laboratory (experiment). (Chapter 3.2)

1.3 Data record

All measured and displayed data are stored into a selectable filepath. This data are a duplicate of the data stored on the *SoilNet EndDevice* internal sd-card. (Chapter 3.2)

1.4 EndDevice Configuration

Several box parameter (e.g. Timestamp, Measure Mode, Measure Interval, GSM parameter, etc.) exists. Set the box into "Config Mode" to change these parameter. (Chapter 3.3)

1.5 Data download

All measured data are stored on the internal sd-card (*SoilNet EndDevice*). For access to the data a download function is implemented. (Chapter 3.3)

1.6 Email data converter

There are four possibilities to generate *SoilNet EndDevice* assigned data output files.

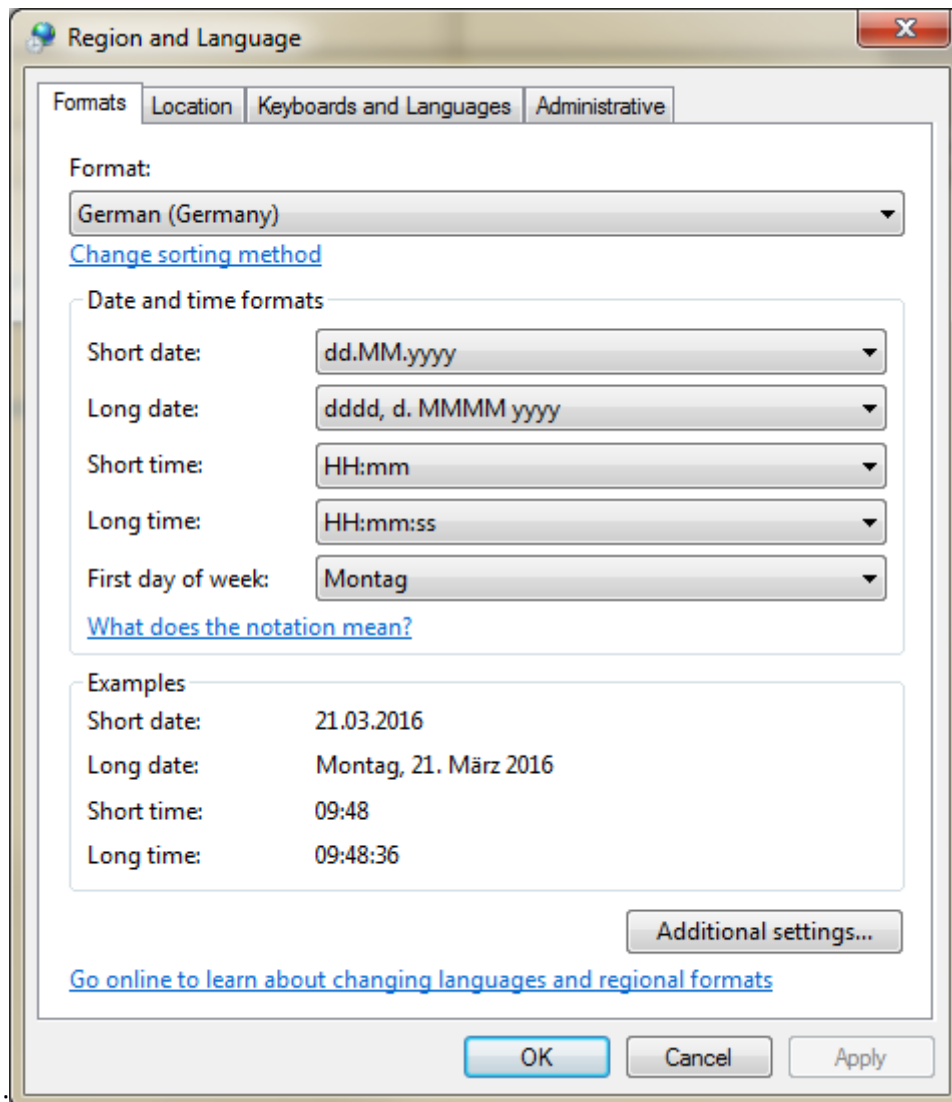
- Data record (cable connection required)
- Data download (cable connection required)
- SoilNet CPA Software (Online Modus, wireless, Protokoll File Output)
- GSM Mode (receiving data via email)

For the last case, it is necessary to convert the email attachments (*.dit) to the final data format (*.dat).

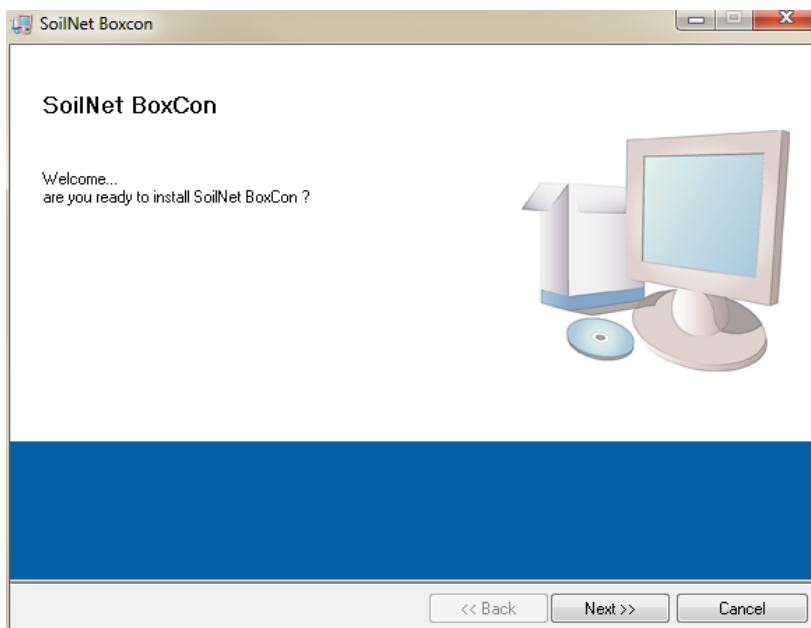
The Email data converter handled this function (automatically) (Chapter 3.4)

2 Software Installing Instructions

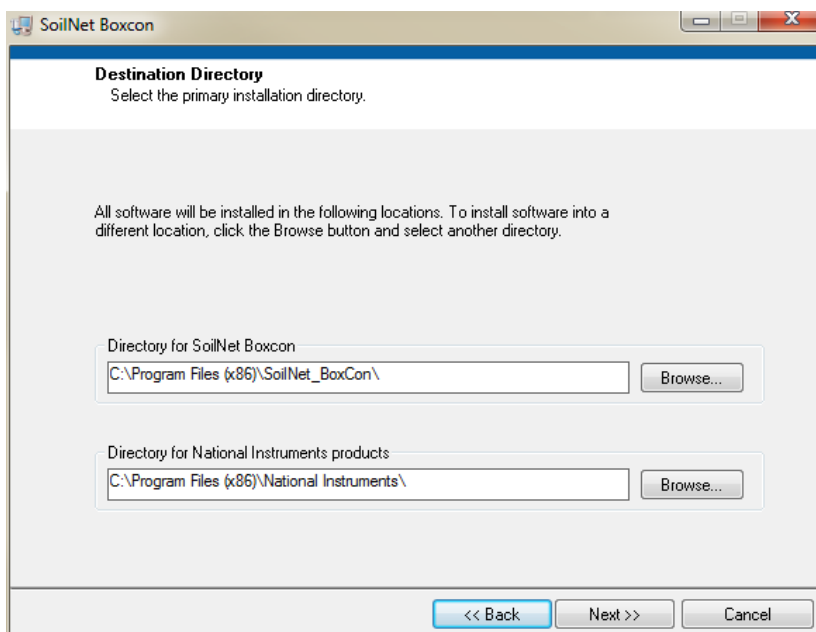
At first please change the region date and time format to german .



Now , Start Setup.exe

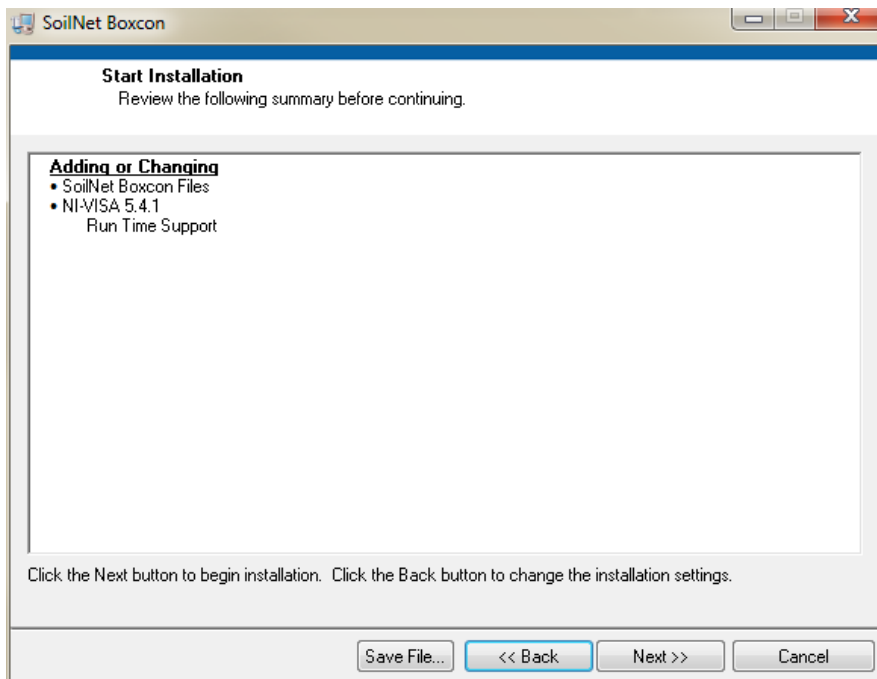


Click "Next"

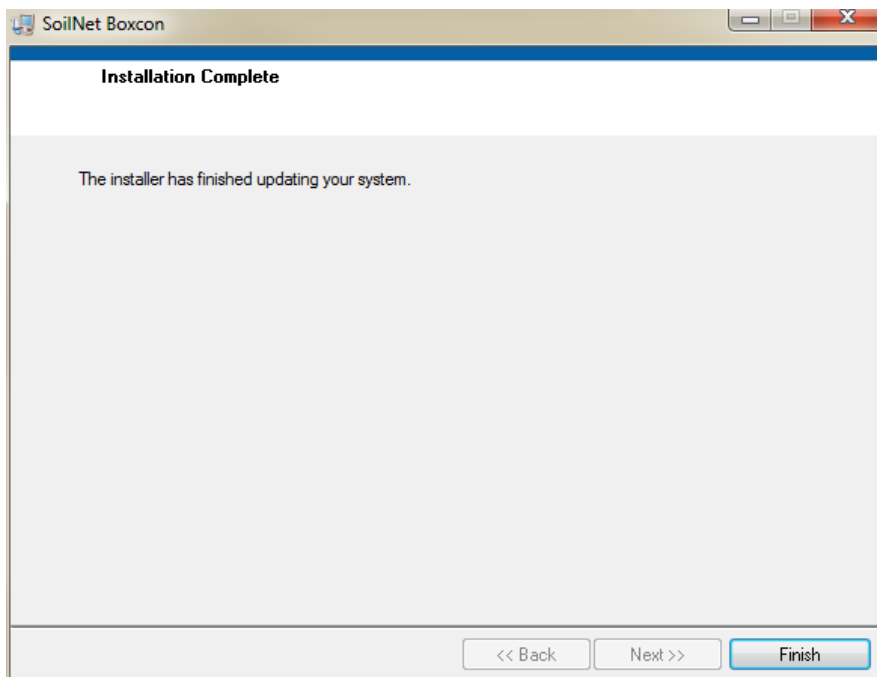


Check whether all the paths match. **It's important to accept the suggested paths.**

Click "Next"



Click "Next"



Click "Finish"

3 Software Description

3.1 MAIN ELEMENTS

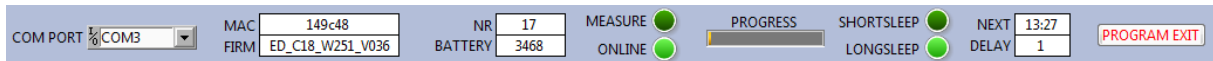


Figure 1 Main

COM PORT -> Select the COM PORT belonging to the USB Serial Port which is created when you plug in the *Soilnet Service Unit*.

Check the correct port with the windows device manager:

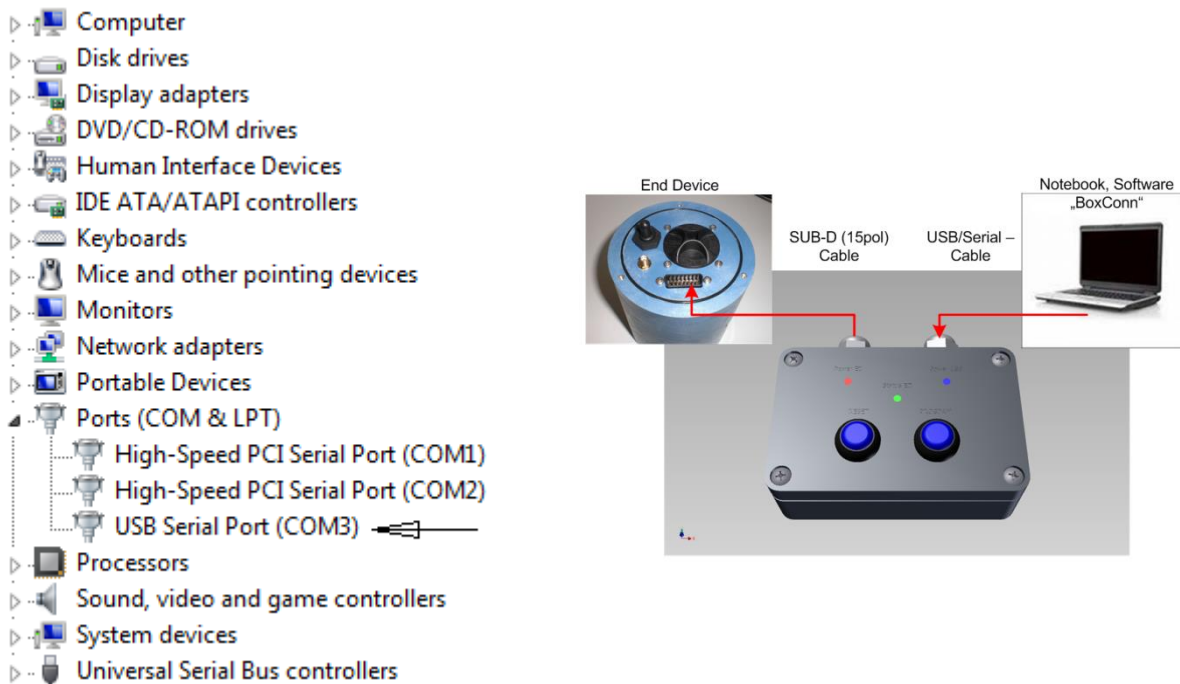


Figure 2 USB Serial Port and how to connect the devices

- MAC** -> Last Bytes from the *EndDevice* specific mac-address
- FIRM** -> EndDevice Firmware Version
- NR** -> Each *EndDevice* has its own number, defined by the manufacturer.
- BATTERY** -> Battery state in mV
- ONLINE** -> *SoilNet EndDevice* is involved into the wireless network
- MEASURE** -> A measurement is carried out
- PROGRESS** -> Progress of the measurement

- SHORTSLEEP** -> Standby between measurement and sending data via wireless
- LONGSLEEP** -> Standby between sending data and next measurement
- DELAY** -> unsent and unacknowledged data on the SoilNet EndDevice
- NEXT** -> Time of the next measurement
- PROGRAM EXIT** -> Close this application

3.2 DATA Tab

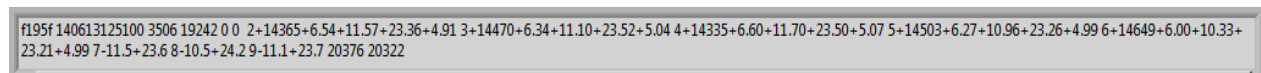


Figure 3 ENDDEVICE PACKET

Data stream (packet) received from the *Soilnet EndDevice*

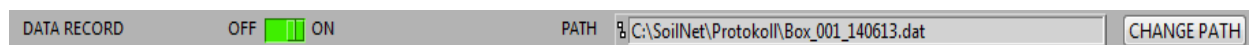


Figure 4 DATA RECORD

All measured and displayed data are stored into a selectable file path. This data are a duplicate of the actual measured data stored on the *EndDevice* internal sd-card. The file format is documented in Chapter 6



Figure 5 SENSOR SDI-12 VALUE OUTPUT

Display of the sensor sdi-12 data output, dependent from the sensor address and connected sensor type.

Different sensor types are selectable. Sensor parameters are set automatically.

A sensor specific parameter list is shown in chapter 6.1

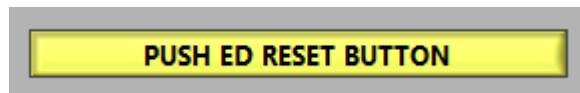
3.3 BOX CONFIG & DATA DOWNLOAD Tab

To use Box Config & Data Download function start first with the steps at Chapter 4.1
After that, activate the BOX CONFIG MODE at the "BOX CONFIG & DATA DOWNLOAD" Tab.



Figure 6 CONFIG MODE BUTTON 1

Activate "CONFIG MODE" by click the red button .After that, the button looks like



Now push and release *SoilNet Service Unit Reset* button.

The yellow software button switch to



Figure 7 CONFIG MODE BUTTON 2

Now the MEASURE PARAMETER partially changeable and looks like:

MEASURE PARAMETER		GSM PARAMETER
REFRESH DATA		
BOX TIMESTAMP		PC TIMESTAMP
13.06.2014 13:30:00	<---SET---<	13.06.2014 13:47:17
BOX MEASURE MODE		MEASURE MODE
OFFLINE	<---SET---<	OFFLINE
BOX INTERVAL [min]		INTERVAL
3	<---SET---<	3 min
BOX NUMBER		BOX NUMBER 2
1	<---SET---<	1
BOX READSECTOR		READSECTOR
20322	<---SET---<	6489
BOX WRITESECTOR		WRITESECTOR
20389	<---SET---<	6489
BOX COMPLETE MEASUREMENTS		
19254		
BOX UNSEND MEASUREMENTS		
67		

Figure 8 MEASURE PARAMETER

TIMESTAMP	->	Timestamp sync between PC and <i>SoilNet EndDevice</i>
MEASURE MODE	->	OFFLINE , measurements stored at internal SD-Card (increase Write sector value) no wireless network needed ONLINE , measurements stored at internal SD-Card (increase Write sector value) and send to the Coordinator (CPA Software) . A confirmed packet will increase the Read sector value. GSM , measurements stored at internal SD-Card (increase Write sector value) a defined number of measurements are send regularly by Email. (only with opt. <i>SoilNet GSM Modul</i>)
INTERVAL	->	Different measure intervals selectable. (3min, 6min, 12min, 15min, 30min, 60min, 2h, 4h, 6h, 12h) <i>EndDevices</i> with the same interval value measure exactly at the same time. (e.g. 10:00:00, 10:03:00, 10:06:00,etc.)
NUMBER	->	Each <i>EndDevice</i> has its own number. This number is defined by the manufacturer. The complete data output from one box is marked with this number.
READSECTOR	->	Each measurement is stored in a single sector of the <i>EndDevice</i> internal sd-card. READSECTOR value is a pointer to the last unacknowledged measurement entry.
WRITESECTOR	->	WRITESECTOR value is a pointer to the next free sector.
COMPLETE MEAs	->	Counter of all stored measurements.
UNSEND MEAs	->	WRITESECTOR – READSECTOR, unsend and unacknowledged data

To change parameter(s), select the new value(s) on the right side and push “SET” button.

SENSOR PARAMETER changeable and looks like:

MEASURE PARAMETER	SENSOR PARAMETER	GSM PARAMETER
<input type="button" value="REFRESH DATA"/>		
BOX HEAT FLUX 1 Rself		PC HEAT FLUX 1 Rself
<input type="text" value="96,1000"/>		<input type="text" value="96,1000"/>
BOX HEAT FLUX 1 Sensitivity		PC HEAT FLUX 1 Sensitivity
<input type="text" value="58,8022"/>		<input type="text" value="58,8022"/>
BOX HEAT FLUX 2 Rself	<input type="button" value="<---SET---<"/>	PC HEAT FLUX 2 Rself
<input type="text" value="102,8000"/>		<input type="text" value="102,8000"/>
BOX HEAT FLUX 2 Sensitivity		PC HEAT FLUX 2 Sensitivity
<input type="text" value="112,0043"/>		<input type="text" value="112,0043"/>

These sensor parameters are special for the 2 Heat Flux Plates HFP01SC (ICOS VERSION)

Insert the initial parameter on the right side (Rself & Sensitivity) and push SET.

The Sensitivity value changed after each self-calibration process (2 times a day).

GSM PARAMETER partially changeable and looks like:

MEASURE PARAMETER	GSM PARAMETER
<input type="button" value="REFRESH DATA"/>	
BOX SIM PIN <input type="text" value="0429"/>	PC SIM PIN <input type="text" value="0429"/>
BOX SIM APN <input type="text" value="internet.t-mobile"/>	PC SIM APN <input type="text" value="internet.t-mobile"/>
BOX SIM USER <input type="text" value="t-mobile"/>	PC SIM USER <input type="text" value="t-mobile"/>
BOX SIM PWD <input type="text" value="tm"/>	PC SIM PWD <input type="text" value="tm"/>
BOX SEND USER <input type="text" value="wp12248571-397933"/>	PC SEND USER <input type="text" value="wp12248571-397933"/>
BOX SEND PWD <input type="text" value="*****"/>	PC SEND PWD <input type="text" value="*****"/>
BOX SEND ADDR <input type="text" value="data@wp12248571.server-he.de"/>	PC SEND ADDR <input type="text" value="data@wp12248571.server-he.de"/>
BOX SEND SRV <input type="text" value="wp160.webpack.hosteurope.de"/>	PC SEND SRV <input type="text" value="wp160.webpack.hosteurope.de"/>
BOX SEND PORT <input type="text" value="587"/>	PC SEND PORT <input type="text" value="587"/>
BOX RSV ADDR <input type="text" value="data@rodawald.de"/>	PC RSV ADDR <input type="text" value="data@rodawald.de"/>
<input type="button" value="<-----SET ALL-----<"/>	

Figure 9 GSM PARAMETER

- SIM PIN** -> SIM Card Pin.
- SIM APN** -> SIM Card Provider's Access Point Name
- SIM USER** -> User name Access Point
- SIM PWD** -> User password Access Point
- SEND USER** -> Sender's user account, name (preconfigured)
- SEND PWD** -> Sender's user account, password (preconfigured)
- SEND ADDR** -> Sender's Email address (preconfigured)
- SEND SRV** -> Sender's user account, server address (preconfigured)
- SEND PORT** -> Sender's user account, server port (preconfigured)
- RSV ADDR** -> Recipient's Email address

To change parameter(s), insert the new value(s) into right side and push "SET ALL"

DATA DOWNLOAD

All measured data are stored on the internal sd-card (*SoilNet EndDevice*). For access to the data a download function is implemented. **Download function works only in active config mode.**

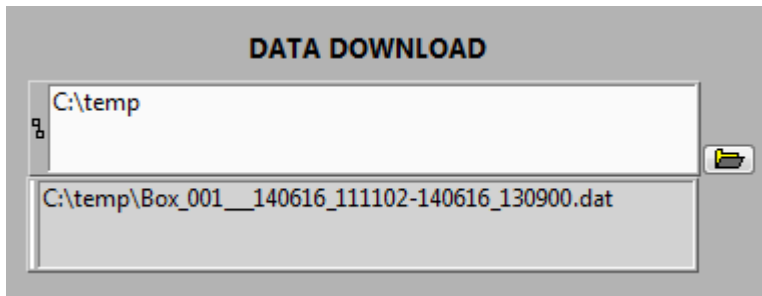


Figure 10 DATA DOWNLOAD PATH

First check the download path, if necessary to change the path click the  icon.

The filename is automatically created.

Filename is "Box_number__startdate_starttime-enddate_endtime.dat"

To update the information of all unsend and unacknowledged data (downloadable)

first push "SET VALUES OF UNSEND DATA"

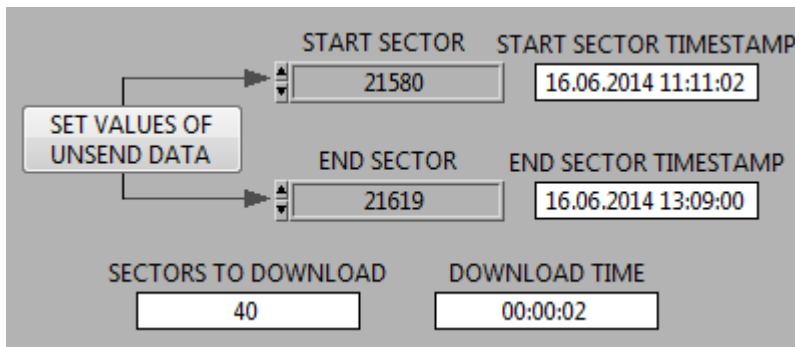


Figure 11 DATA DOWNLOAD 2

START SECTOR	->	First Sector to download
START SECTOR TIMESTAMP	->	associated timestamp
END SECTOR	->	Last Sector to download
END SECTOR TIMESTAMP	->	associated timestamp
SECTORS TO DOWNLOAD	->	count of selected sectors
DOWNLOAD TIME	->	expected download time

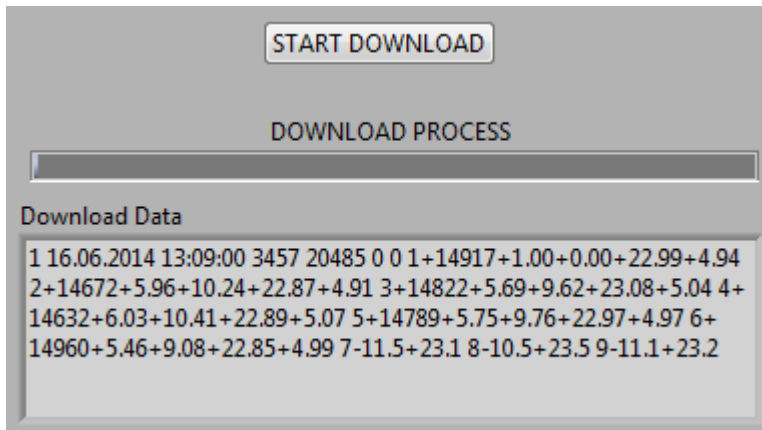


Figure 12 DATA DOWNLOAD 3

Now PUSH "START DOWNLOAD" to start the data transfer.

3.4 EMAIL DATA CONVERTER

In case of GSM Mode (GSM Function is optional) it is necessary to convert the email attachments (*.dit) to the final data format (*.dat).

The Email data converter handled this function (automatically).

How to description, see chapter 5.5

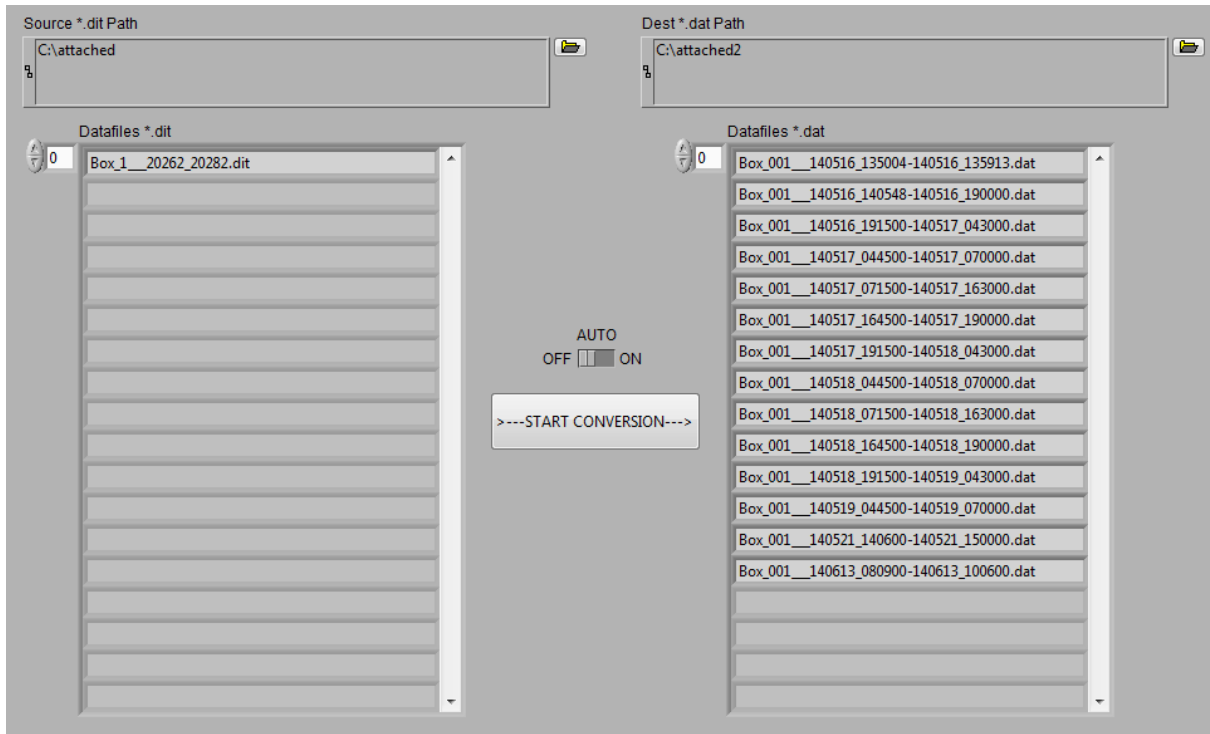


Figure 13 EMAIL DATA CONVERTER

- SOURCE *.DIT PATH -> Path to store email (.dit) attachment files (source)
- DEST *.DAT PATH -> Path to store converted (.dat) attachment files (destination)
- DATAFILES *.dit -> List of unconverted data files (.dit)
- DATAFILES *.dat -> List of converted data files (.dat)
- AUTO CONVERSION -> Automatic conversion
(all entries from source *.dit path are automatically converted)
- START CONVERSION -> Manual trigger to start conversion

4 Operating Instructions

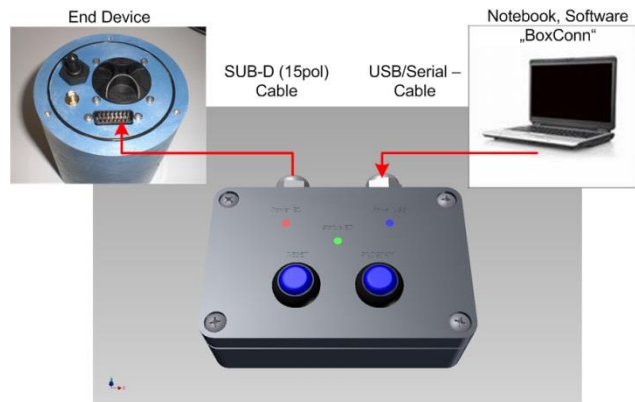
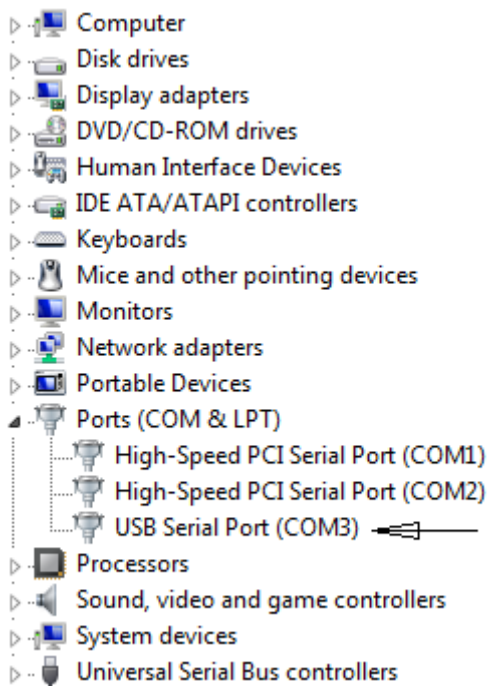
4.1 Start a manual measurement

List of components:

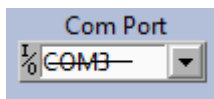
- Laptop or PC (with ready installed *SoilNet BoxCon Software*, see chapter 2)
- *SoilNet EndDevice* (**OFF**)
- *SoilNet Service Unit*

Step to do....

1. connect the *SoilNet Service Unit* via the USB connection to the PC
2. Check the correct port entry with the windows device manager:
here COM3, but may differ

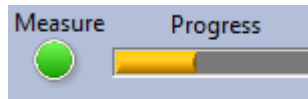


3. Start *SoilNet BoxCon Software*.
4. Select the COM PORT belonging to the USB Serial Port.



5. Select the "DATA" tab.

6. Check if the *SoilNet EndDevice* is **OFF**.
7. Connect the *Service Unit* via multi pin to the *SoilNet EndDevice* .
8. Hold the “Reset” Button down on the *Service Unit*”.
9. Switch **ON** the *SoilNet EndDevice*.
10. Release the “Reset” button on *SoilNet Service Unit*”

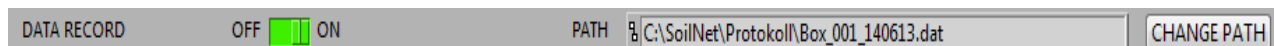


A measurement is in progress:

After 7 seconds the new measured values displayed at SDI-12 value output area:



If Data Record function is enabled a new entry in Box_xxx.dat file is written.



To trigger a new measurement again push and release only the “Reset” Button from the *SoilNet Service Unit*.

4.2 “OFFLINE” measure mode

The “OFFLINE” mode is useful for measurements without an existing wireless network (SoilNet wlan)

It is possible to select a measure interval from 3 minutes up to 12 hours. Each measurement is saved to the internal sd-card. To have an access to this data, use the “download function” (chapter 3.3)

1. Follow the steps 1-4 written in chapter 4.1
2. Select the “BOX CONFIG & DATA DOWNLOAD” Tab.
3. Activate “CONFIG MODE” by click the red software button



and after that, the button looks like



Now push and release *SoilNet Service Unit* **Reset** button.

The yellow software button switch to



Now the MEASURE PARAMETER partially changeable and looks like:

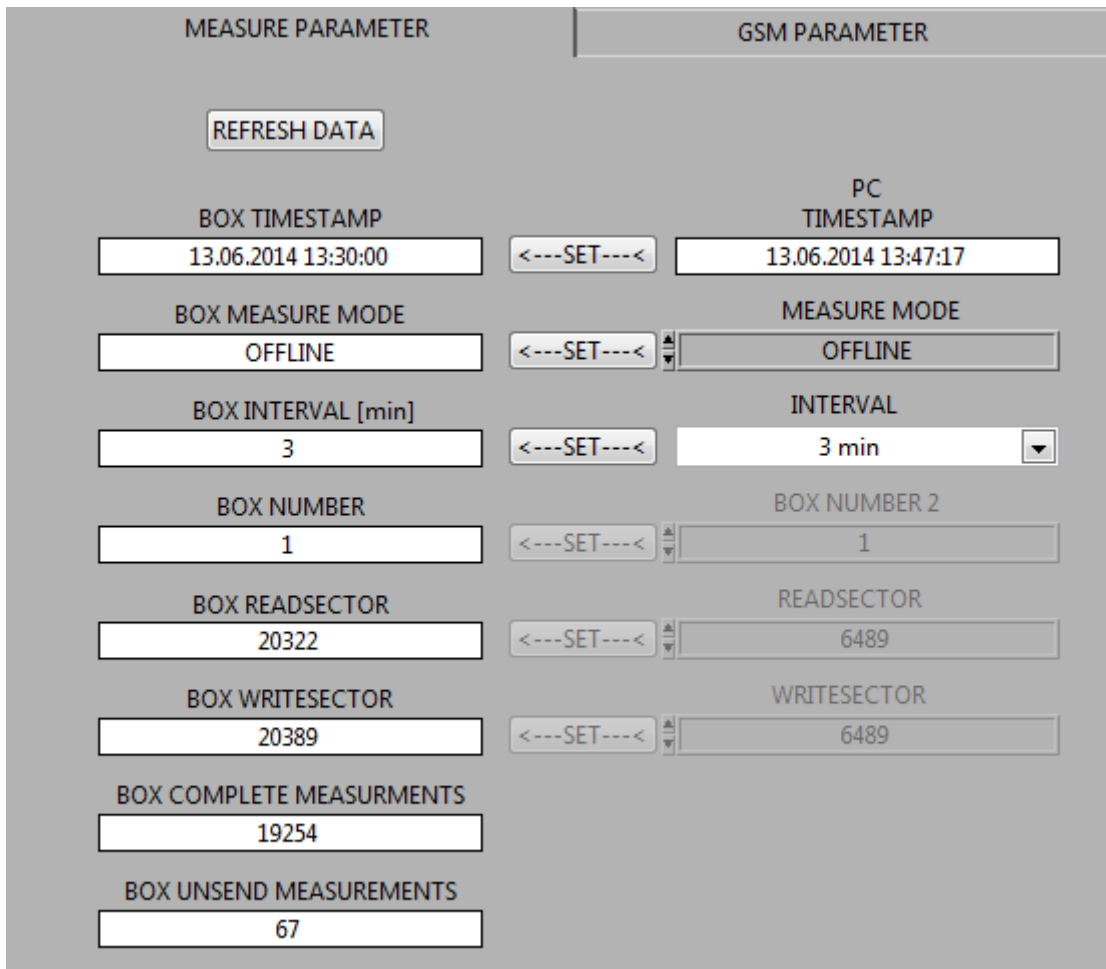


Figure 14 MEASURE PARAMETER

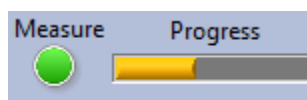
4. Select "OFFLINE" on the right side and click "SET" to set this parameter on the box (left side).

If it's necessary, change the "INTERVAL" and click "SET" again.

5. To start the measurements, switch back to the "MEASURE MODE".



6. A measurement is in progress:



7. When the "Longsleep" LED light up

disconnect the multi pin from *SoilNet EndDevice*.

8. Close the SoilNet cover. Now the *SoilNet EndDevice* unit continuously measures.

4.3 “ONLINE” measure mode

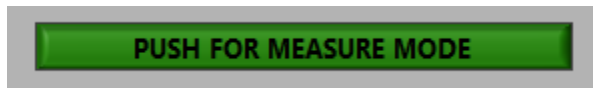
In order to use the “ONLINE” measure mode it is absolutely necessary to have a running wireless network with a *SoilNet Coordinator*, *SoilNet Routers* and the *SoilNet CPA Software*. See “*SoilNet CPA Software*” manual.

1. Follow the steps 1-4 written in chapter 4.1
2. Follow the steps 2-3 written in chapter 4.2
4. Select “ONLINE” on the right side and click “SET” to set this parameter on the box (left side).

“INTERVAL” is disabled because this parameter is set by the *SoilNet CPA Software* over the wireless connection.

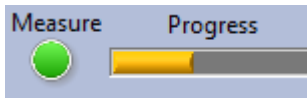
The same applies to the timestamp. It is possible to synchronize the timestamp now with the PC but after the first measurement its override by the wireless data packet (Timestamp CPA Software)

5. To start the measurements, switch back to the “MEASURE MODE”.

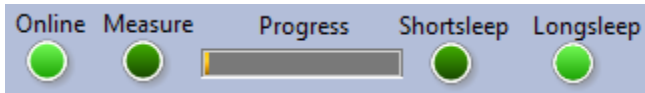


Click:

6. A measurement is in progress:



7. Wait for “Online” LED and “Longsleep” LED light up



Now the *SoilNet EndDevice* is involved into the SoilNet wireless network.

“Longsleep” means that the box is in standby mode to save energy.

8. Disconnect the multi pin and close the SoilNet cover. Now the *SoilNet EndDevice* unit continuously measures and sent the data over the wireless network to the *SoilNet CPA Software*.

5 GSM Function (opt.)

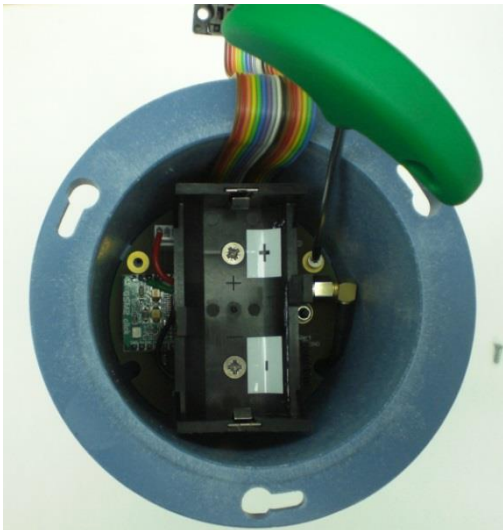
5.1 Install SIM Card (SoilNet GSM Modul)

Things that are needed:

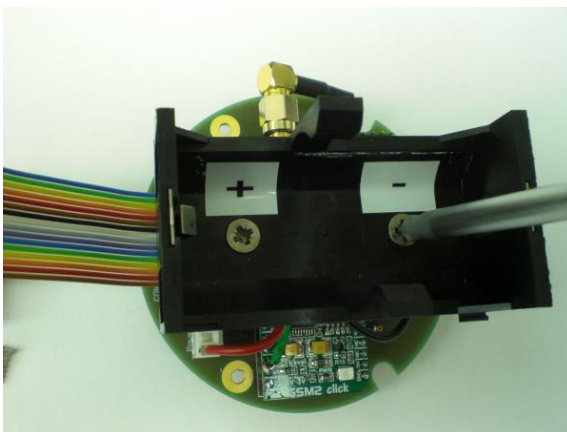
- Cross screwdriver, Torx screwdriver (incl.)
- *SoilNet GSM Modul*
- SIM Card

1. Remove GSM Batteries (3 * Typ Energizer Ultimate Lithium AA)

Loose the 2 torx screws (torx wrench incl.) and take out the unit.

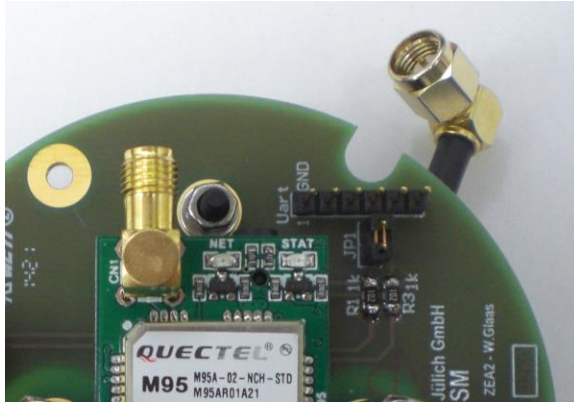


2. Loose the 2 cross-head screws

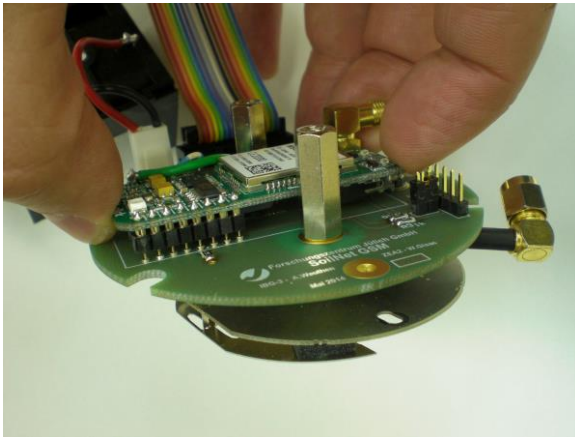


(battery holder may differ)

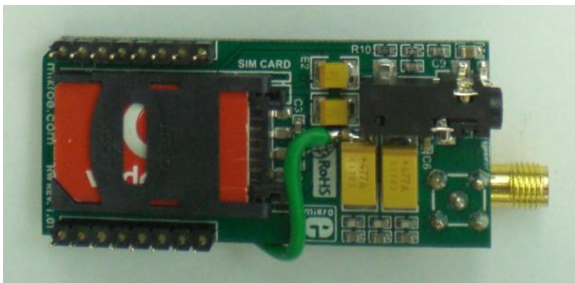
3. Unscrew the SMA Connector



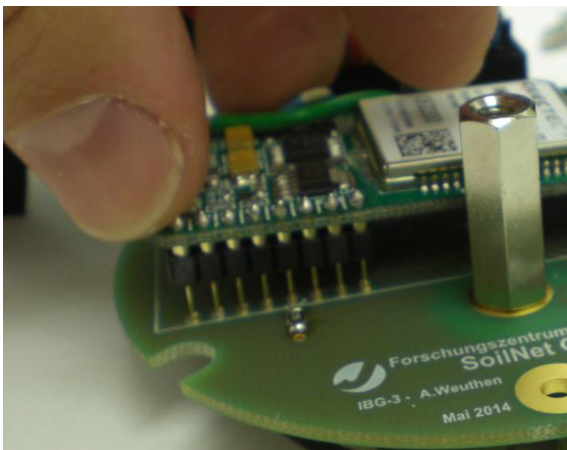
4. Pull GSM2 click module from GSM board



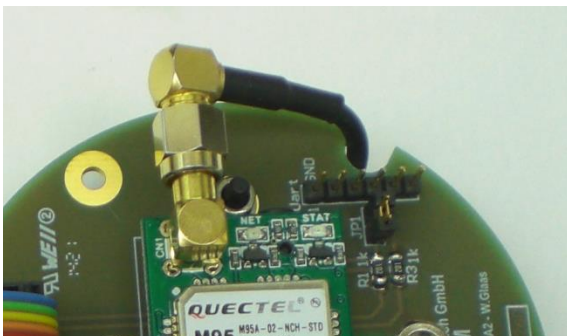
5. Insert SIM Card (note the lock mechanism)



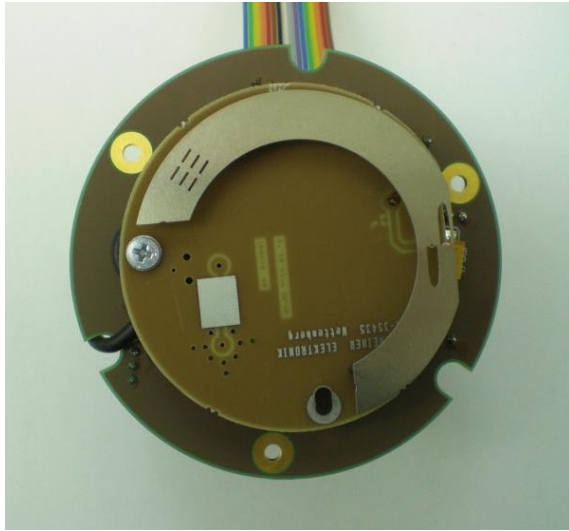
6. Pin GSM2 click module to GSM board



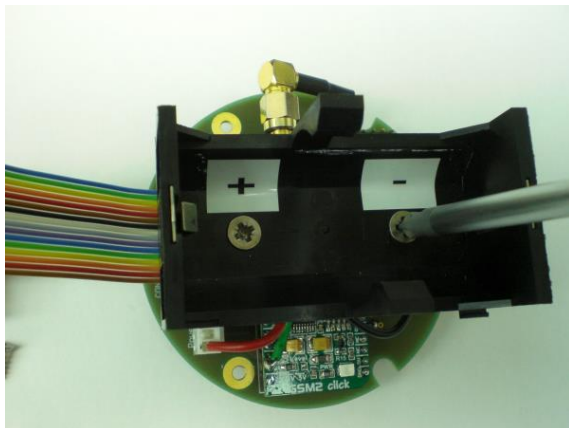
7. Screw the SMA Connector (note the cable direction)



8. Check perfect antenna position (3 free holes)



9. Fix the battery holder with the two cross-head screws



(battery holder may differ)

10. Fix the complete unit with the torx screws (torx wrench incl.)
Easier to do this over your head :-)



11. Insert GSM Battery (3 * Typ Energizer Ultimate Lithium AA)

Please pay attention to the correct polarity!!

Choosing wrong polarity will destroy the component!!

5.2 Configure GSM Mode

Things that are needed:

- Laptop or PC (with pre- installed *SoilNet BoxCon Software*, see chapter 2)

- *SoilNet EndDevice* (**OFF**)

- *SoilNet GSM Modul* (**opt.**)

- *SoilNet Service Unit*

- SIM Card with Provider's **Access Point Name**, Username, Password and Recipient's Email address.
(It is important to check the receiving quality from used mobile network at the location, e.g. with a GSM-scanner,

select the best quality mobile network provider)

Step to do....

1. Follow the steps 1-4 written in chapter 4.1

2. Follow the steps 2-3 written in chapter 4.2

3. Select "GSM" MEASURE MODE on the right side and click "SET" to set this parameter on the box (left side).

4. If it's necessary, change the INTERVAL value and click "SET" again.

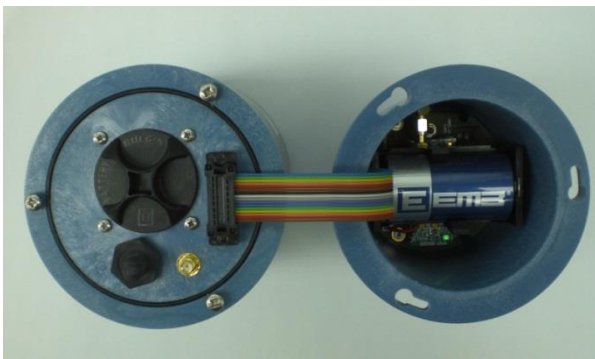
5. Switch to Tab "GSM PARAMETER"

MEASURE PARAMETER	GSM PARAMETER
<input type="button" value="REFRESH DATA"/>	
BOX SIM PIN <input type="text" value="0429"/>	PC SIM PIN <input type="text" value="0429"/>
BOX SIM APN <input type="text" value="internet.t-mobile"/>	PC SIM APN <input type="text" value="internet.t-mobile"/>
BOX SIM USER <input type="text" value="t-mobile"/>	PC SIM USER <input type="text" value="t-mobile"/>
BOX SIM PWD <input type="text" value="tm"/>	PC SIM PWD <input type="text" value="tm"/>
BOX SEND USER <input type="text" value="wp12248571-397933"/>	PC SEND USER <input type="text" value="wp12248571-397933"/>
BOX SEND PWD <input type="text" value="*****"/>	PC SEND PWD <input type="text" value="*****"/>
BOX SEND ADDR <input type="text" value="data@wp12248571.server-he.de"/>	PC SEND ADDR <input type="text" value="data@wp12248571.server-he.de"/>
BOX SEND SRV <input type="text" value="wp160.webpack.hosteurope.de"/>	PC SEND SRV <input type="text" value="wp160.webpack.hosteurope.de"/>
BOX SEND PORT <input type="text" value="587"/>	PC SEND PORT <input type="text" value="587"/>
BOX RSV ADDR <input type="text" value="data@rodawald.de"/>	PC RSV ADDR <input type="text" value="data@rodawald.de"/>
<input type="button" value="<-----SET ALL-----<"/>	

6. Insert your **SIM Card PIN** on the right side.
 7. Insert your **SIM providers APN** on the right side.
 8. Insert your **SIM USER** name (APN User) on the right side.
 9. Insert your **SIM PWD** password (APN password) on the right side.
 10. Insert your **RSV ADDR** email destination address on the right side
 11. Push "SET ALL" to set the parameter on the box.
- Check if the same entries are on the left side (BOX side).
12. Switch **OFF** the *SoilNet EndDevice*.
 13. Close *SoilNet BOXCON Software* with "PROGRAM EXIT" button.

5.3 Start SoilNet EndDevice with GSM Modul

1. Switch **OFF** the *SoilNet EndDevice*
2. Connect the **Service Unit** via multi pin to the *SoilNet EndDevice* .
Service Unit Usb Connector “open” or connected to PC.
3. Hold the “Reset” Button down on the Service Unit.
4. Switch ON the SoilNet EndDevice.
5. Release the “Reset” Button to start the box regular.
6. Wait 15 sec. until the box goto sleep.
7. Disconnect the **Service Unit** multi pin connector.
8. Connect the **GSM Modul** multi pin connector to SoilNet EndDevice.



(battery holder may differ)

9. Close the cover with the three cross screws.

5.4 Change GSM Module battery

If no more emails are received , one reason is low battery power. It is necessary to change it.

Use only battery type “Energizer Ultimate Lithium AA”, 3 pieces.

1. Open the cover with the three cross screws.
2. Switch **OFF** the *SoilNet EndDevice*.
3. Disconnect the GSM multi pin connector
4. Open battery holder with small cross screw.
5. Remove the batteries.
6. Insert the new batteries.
Please pay attention to the correct polarity!!
Choosing wrong polarity will destroy the component!!
7. Close the battery holder with the small cross screw.
8. Connect the **Service Unit** via multi pin to the SoilNet EndDevice .
Service Unit Usb Connector “open” or connected to PC.
9. Hold the “Reset” Button down on the Service Unit.

10. Switch ON the SoilNet EndDevice.
11. Release the "Reset" Button to start the box regular.
12. Wait 15 sec. until the box goto sleep.
13. Disconnect the **Service Unit** multi pin connector.
14. Connect the GSM Modul multi pin connector to SoilNet EndDevice.
15. Close the cover with the three cross screws.

5.5 Receiving and converting data emails

Once a day the *SoilNet GSM Module* send emails with the measured data.

Email subject looks like:

SoilNet Box 1 24.06.14 15:09:00-24.06.14 16:06:00 attached=20 unsend=0 • Box 1 • 24.06.2014 16:06

Subject structure as follow:

- SoilNet Box *number*
- *start date, start time* (timestamp of the first included measurement)
- *end date, end time* (timestamp of the last included measurement)
- attached (number of include measurements)
- unsend (unsend measurements at the *SoilNet EndDevice*)

Email body text looks like:

CSQ: 24,0 COPS: 0,0,"vodafone" CBC: 0,12,3583

CSQ description:

<http://m2msupport.net/m2msupport/atcsq-signal-quality/>

COPS description:

<http://m2msupport.net/m2msupport/atcops-plmn-selection/>

CBC description:

<http://m2msupport.net/m2msupport/atcbc-battery-charge/>

Most important is the third value. This is the SoilNet **GSM** battery voltage in mV.

If the battery voltage is lower than 3200 mV it is necessary to change it.

Read chapter 4.4.4 Change GSM Module battery

Email attachment looks like:

1 Anhang: Box_1__24901_24921.dit 4,2 KB

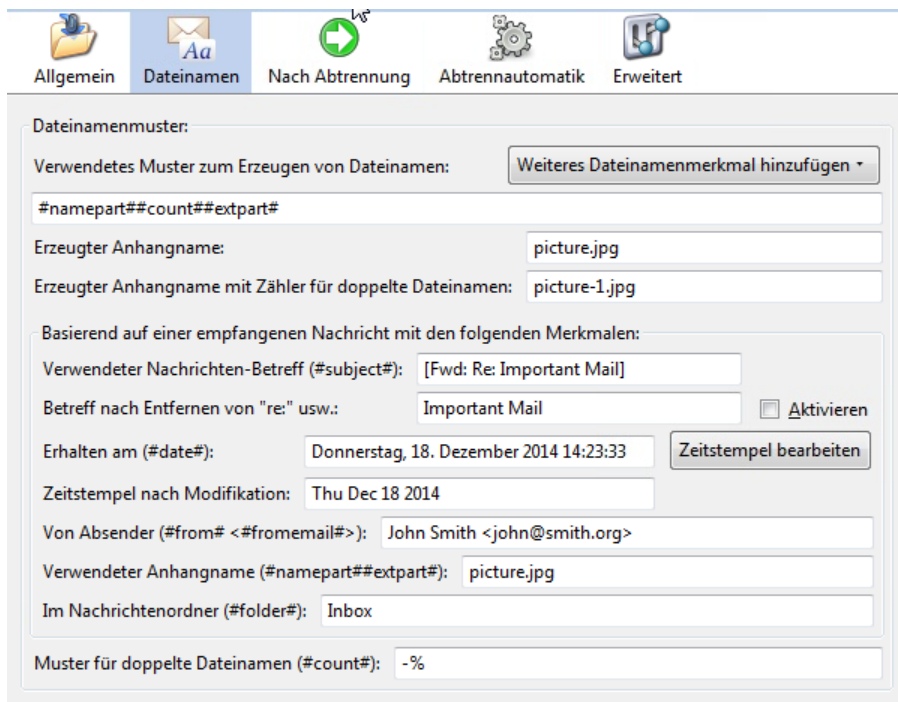
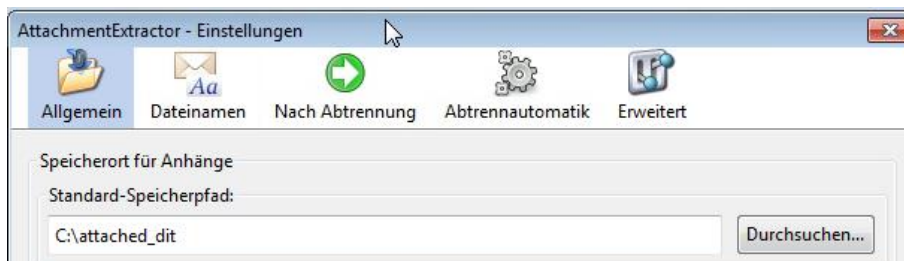
Email attachment structure as follow:

- SoilNet Box number
- Read sector pointer (here 24901)
- Write sector pointer (here 24921)

It is necessary to convert this attachment with the "Email data converter". (See chapter 1.6 & 3.4)

For automatic format conversion do the following steps:

1. Install "Mozilla Thunderbird" and "SoilNet BoxCon Software" on a Laptop (PC) with internet access.
2. Create 2 folder, e.g. c:\attached and c:\attached2 (use other names if you want)
3. SoilNet BoxCon Software (Tab: EMAIL DATA CONVERTER):
Set the SOURCE *.DIT PATH and the DEST *.DAT PATH to the created folders (chapter 3.4)
4. Tab: EMAIL DATA CONVERTER, set AUTO function to ON.
5. Configure Mozilla Thunderbird for your Data Email account (same address as here: chapter 4.4.1 Point 8)
6. Add Mozilla Thunderbird Plug-In named "AttachmentExtractor 1.3.5.1"
7. Configure "AttachmentExtractor as follows:



Navigation: Allgemein | Dateinamen | **Nach Abtrennung** | Abtrennautomatik | Erweitert

Vorgänge nach dem Abtrennen:

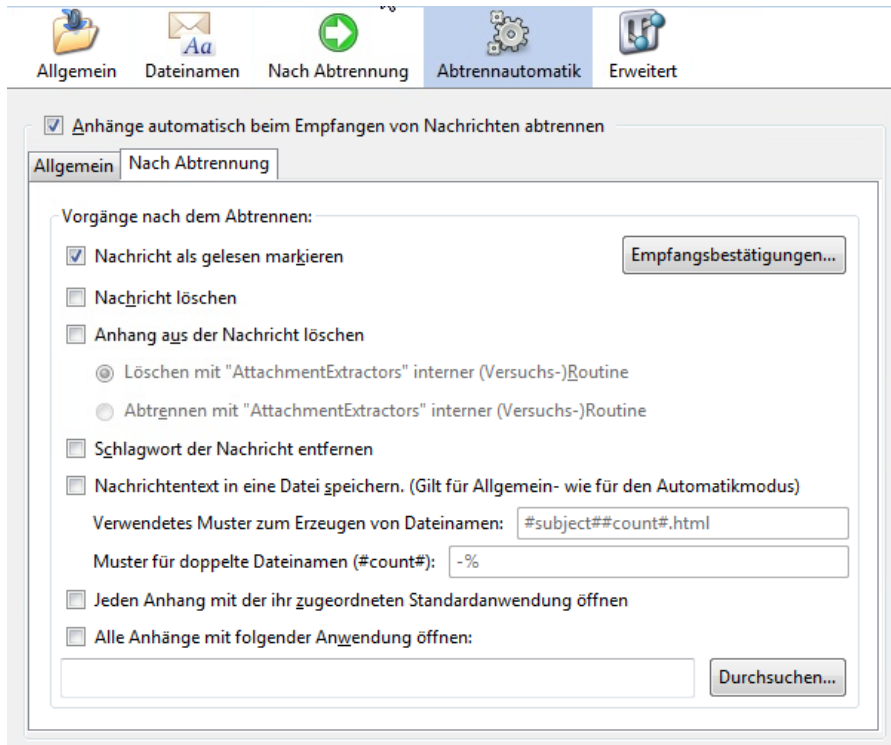
- Nachricht als gelesen markieren Empfangsbestätigungen...
- Nachricht löschen
- Anhang aus der Nachricht löschen
 - Löschen mit normaler Thunderbird-Routine
 - Löschen mit "AttachmentExtractors" interner (Versuchs-)Routine
 - Abtrennen mit "AttachmentExtractors" interner (Versuchs-)Routine
- Meldung ausgeben, nachdem alle Anhänge abgetrennt wurden
- Nachrichtentext in eine Datei speichern. (Gilt für Allgemein- wie für den Automatikmodus)
 - Verwendetes Muster zum Erzeugen von Dateinamen:
 - Muster für doppelte Dateinamen (#count#):
- Jeden Anhang mit der ihr zugeordneten Standardanwendung öffnen
- Alle Anhänge mit folgender Anwendung öffnen:
 -
 - Durchsuchen...
- Jede Ausführung von "AttachmentExtractor" protokollieren Protokollgenerator...

Navigation: Allgemein | Dateinamen | Nach Abtrennung | **Abtrennautomatik** | Erweitert

Anhänge automatisch beim Empfangen von Nachrichten abtrennen

Allgemein | **Nach Abtrennung**

- Die Abtrennautomatik nur bei Nachrichten mit Anhängen ausführen
- Automatisches Abtrennen erst beginnen nachdem alle Nachrichten heruntergeladen wurden
- Speicherpfad für Anhänge:
 -
 - Durchsuchen...
- Anhänge nur automatisch abtrennen bei Nachrichten mit passendem Schlagwort
 - Anhang abtrennen bei folgendem Schlagwort:
- Vorgabe für den Fall, dass bereits eine Datei gleichen Namens besteht:
 - Die bestehende Datei immer mit dem neuen Anhang überschreiben
 - Die bestehende Datei immer erhalten, Anhang nicht abtrennen
 - Neuen Namen für den Anhang vergeben, um beide Dateien zu behalten



8. Wait for one or more data emails
9. Right click at the email and select "Extract Selected Attachments To.." in German "Abtrennen von ausgewählten Nachrichten"
10. Now every email attachment is automatically saved to *.DIT PATH and converted to *.DAT Path.

6 Export Data Format

The “Box_xxx_.dat” files contain the following entries per line: (xxx is the mapped box number)

Identifier	Unit	Example	Description
Box no.	None	22	Mapped box number
Date	(DD.MM.YYYY)	09.12.2010	Date of measurement
Time	(HH:MM:SS)	14:33:11	Time of measurement
Battery voltage	mV	3588	Voltage of the lithium cell
Count		1234	Counts each measurement
Lqi		200	Link quality indication (1 - 255)
reed sw. count		234	Tipping bucket (e.g. rain gauge). Opt.
SDI_1_1	sensor-specific	11844	SDI-12 Sensor with address 1 , parameter 1
SDI_1_2	sensor-specific	15.05	SDI-12 Sensor with address 1 , parameter 2
SDI_1_3	sensor-specific	27.65	SDI-12 Sensor with address 1 , parameter 3
SDI_1_4	sensor-specific	24.15	SDI-12 Sensor with address 1 , parameter 4
SDI_1_5	sensor-specific	4.97	SDI-12 Sensor with address 1 , parameter 5
SDI_2_1	sensor-specific	11467	SDI-12 Sensor with address 2 , parameter 1
SDI_2_2	sensor-specific	17.46	SDI-12 Sensor with address 2 , parameter 2
SDI_2_3	sensor-specific	31.21	SDI-12 Sensor with address 2 , parameter 3
SDI_2_4	sensor-specific	24.23	SDI-12 Sensor with address 2 , parameter 4
SDI_2_5	sensor-specific	4.91	SDI-12 Sensor with address 2 , parameter 5
SDI_3_1	sensor-specific	11844	SDI-12 Sensor with address 3 , parameter 1
SDI_3_2	sensor-specific	15.05	SDI-12 Sensor with address 3 , parameter 2
SDI_3_3	sensor-specific	27.65	SDI-12 Sensor with address 3 , parameter 3
SDI_3_4	sensor-specific	24.15	SDI-12 Sensor with address 3 , parameter 4
SDI_3_5	sensor-specific	4.97	SDI-12 Sensor with address 3 , parameter 5
SDI_4_1	sensor-specific	11467	SDI-12 Sensor with address 4 , parameter 1
SDI_4_2	sensor-specific	17.46	SDI-12 Sensor with address 4 , parameter 2
SDI_4_3	sensor-specific	31.21	SDI-12 Sensor with address 4 , parameter 3
SDI_4_4	sensor-specific	24.23	SDI-12 Sensor with address 4 , parameter 4
SDI_4_5	sensor-specific	4.91	SDI-12 Sensor with address 4 , parameter 5
SDI_5_1	sensor-specific	11844	SDI-12 Sensor with address 5 , parameter 1
SDI_5_2	sensor-specific	15.05	SDI-12 Sensor with address 5 , parameter 2
SDI_5_3	sensor-specific	27.65	SDI-12 Sensor with address 5 , parameter 3
SDI_5_4	sensor-specific	24.15	SDI-12 Sensor with address 5 , parameter 4
SDI_5_5	sensor-specific	4.97	SDI-12 Sensor with address 5 , parameter 5
SDI_6_1	sensor-specific	11467	SDI-12 Sensor with address 6 , parameter 1
SDI_6_2	sensor-specific	17.46	SDI-12 Sensor with address 6 , parameter 2
SDI_6_3	sensor-specific	31.21	SDI-12 Sensor with address 6 , parameter 3
SDI_6_4	sensor-specific	24.23	SDI-12 Sensor with address 6 , parameter 4

SDI_6_5	sensor-specific	4.91	SDI-12 Sensor with address 6 , parameter 5
SDI_7_1	sensor-specific	11844	SDI-12 Sensor with address 7 , parameter 1
SDI_7_2	sensor-specific	15.05	SDI-12 Sensor with address 7 , parameter 2
SDI_7_3	sensor-specific	27.65	SDI-12 Sensor with address 7 , parameter 3
SDI_7_4	sensor-specific	24.15	SDI-12 Sensor with address 7 , parameter 4
SDI_7_5	sensor-specific	4.97	SDI-12 Sensor with address 7 , parameter 5
SDI_8_1	sensor-specific	11467	SDI-12 Sensor with address 8 , parameter 1
SDI_8_2	sensor-specific	17.46	SDI-12 Sensor with address 8 , parameter 2
SDI_8_3	sensor-specific	31.21	SDI-12 Sensor with address 8 , parameter 3
SDI_8_4	sensor-specific	24.23	SDI-12 Sensor with address 8 , parameter 4
SDI_8_5	sensor-specific	4.91	SDI-12 Sensor with address 8 , parameter 5
SDI_9_1	sensor-specific	11844	SDI-12 Sensor with address 9 , parameter 1
SDI_9_2	sensor-specific	15.05	SDI-12 Sensor with address 9 , parameter 2
SDI_9_3	sensor-specific	27.65	SDI-12 Sensor with address 9 , parameter 3
SDI_9_4	sensor-specific	24.15	SDI-12 Sensor with address 9 , parameter 4
SDI_9_5	sensor-specific	4.97	SDI-12 Sensor with address 9 , parameter 5
Delay	None	0	Number of data records buffered on the end device (Only data via wireless)

TAB is used as delimiter.

6.1 Sensor Type specific SDI-12 Parameter

Sensor Type	Producer	SDI Parameter 1	SDI Parameter 2	SDI Parameter 3	SDI Parameter 4	SDI Parameter 5
SMT100	truebner.de	COUNT	PERMITTIVITY	MOISTURE[Vol%] (Topp)	TEMP[C°]	SUPPLY[V]
MPS-2 R7	decagon.com	WATER POT[kPa]	TEMP[C°]			
GS3 R3.85	decagon.com	DIELECTRIC	TEMP[C°]	ELEC.COND.[dS/m]		
CTD R3.46	decagon.com	WATER DEPTH[mm]	TEMP[C°]	ELEC.COND.[dS/m]		
5TE R2.03	decagon.com	DIELECTRIC	TEMP[C°]	ELEC.COND.[dS/m]		