

Overview

The BUS II Station is based on the BUS II Logger. It was optimised for use with 12V Solar Power Supply. It is ideal for small and smart environmental monitoring systems.

On the picture on the left, a WXT510 (or WXT520) based station is shown (the WXT510 and WXT520 are digital Multiparameter Environmental Sensor with SDI-12).

The station on the left side is supplied with a GPRS modem for automatic transmission of the data (the small High-Gain antenna is mounted on the top of the enclosure).

Because the BUS II logger (especially in combination with the WXT510) requires only little power, a small solar panel is sufficient (nevertheless the WXT510 is constantly averaging data (e.g. for wind speed and direction) in the background, but this requires only very little energy).

Of course, any other types of sensors might be connected to the BUS II logger.

Please ask GeoPrecision if special sensors are required, we can measure almost anything!



Installation

The first step is mounting the components to the mast (if a mast is used).

Please ensure, that the mast is stable enough! We strongly recommend to use additional tension ropes for stabilising the mast! Especially wind force can be quite strong!

Mounting the Control Enclosure

The Control Enclosure comes with special mast fixtures:



Mounting the Solar Panel

The Solar Panel should be located at least a few cm over the antenna. Please orientate the panel for best performance (but take care: around the equator this would be straightway up, but this is not optimal, because dust and dirt can sediment, leave an angle of at least 10°-15°!):



Mounting the rest

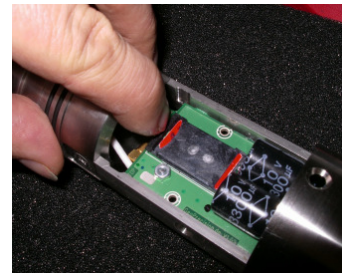
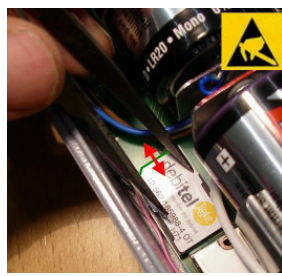
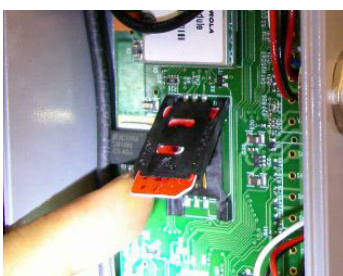
Mounting the other sensors depends on the type. Here a WXT510 is mounted on the top of the mast

Hardware-Setup

GPRS SIM card

If used, the SIM card should be inserted before connecting the power, Remark: Normally it is safe to change the SIM card without removing the power, if no transmission is in progress, but it is always better to operate „safe“. Remove the 4 screws of the cover to access the SIM card holder.

We have different systems for the SIM cards (depending on the supplier). Some require Push/Pull others require Shifting.. Normally there are small symbols printed on the card holder:



Here some different systems are shown.

Important: Although the contacts are normally Gold plated, there is a chance for (later) errors if the contacts are touched with fingers! Please always clean the contacts before inserting. In environments with high humidity, we recommend to use special „Contact-Cleaner“, which is available on normal electronic stores

Then close the cover. Fix all 4 screws, but not with strong force, else the sealing will not work properly, because thermal stress might spoil it.

Please note: On the inside of the cover a small packet of drying agent („Silika-Gel“) is glued. Normally this should be sufficient for many years. It should be replaced from time to time (recommendation each 2-5 years).

Accumulator

In the next step the Accumulator should be connected to the loggers. Our Solar Accumulators are pre-charged and are specially developed for high-endurance-solar use.

If the accumulator drops below a certain voltage (normally below 8 Volts for a longer time), cells of the accumulator will break down. So avoid long-term deep discharge. Our special solar accumulator can withstand longer times of deep discharge than normal accumulators, but deep discharge is generally not recommended!

To connect the power, simply connect the BLUE cramp to MINUS of the accumulator.

After that the green LED on the BUS II logger („Action“) will be blinking for abt. 10 seconds. Then the logger is ready!



Open



Closed

The accumulator has an energy of normally >6 Ah, this means it can supply 6000 hours of 1mA. During Sleeping the BUS II datalogger will draw only <0.1 mA, but other sensors (like the WXT510) may draw continuous power. Only for measuring or GPRS the logger requires more.

(The WXT510 needs constantly about 1.5 mA for averaging).

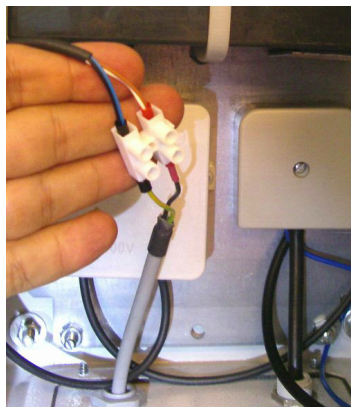
Solar Charger and Panel

The Solar Charger is located under a cover (for dust protection). It can be removed to see the 2 LEDs: If the Accumulator is 100% full, the green LED will be lit, until only ca. 95% full. During charging the red LED will be lit.

Connect the Solar panel with the 2 luester terminals.

Be careful to avoid revers polarity!

The Solar Charger draws a small current from the accumulator (if not charging). This is about 1.5 mA maximum. So, in combination with the upper data a standby time (without any solar charging) of 1000 - 3000h is



theoretically possible (although very unrealistic!). But even twilight causes small charging...

Communication

Connect the communication cable to the RS232 input. If required, install the supplied USB to RS232 converters as stated in its manual. The software GP-SHELL2 requires a COM-port, see the separate manual how to use the GP-SHELL2. The GP-SHELL2 is used for all of our different data loggers, so it is independent of the hardware.



<- RS232

<- SDI12

Operation

During operation nothing can be seen. except the red LED on the logger („Heartbeat“) will flash shortly all 4 seconds during sleeping. During operation the green LED will blink.

All further operation (like accessing SDI12 sensor and using the GP-SHELL2) is described in separate manuals, look the GeoPrecision website or ask our staff if more information is required.

Maintenance

Normally the station is completely maintenance free for many years.

Our recommendations:

- The station can withstand high temperatures (short times up to 80 °C) as well as low temperatures (-40 °C). Especially the sensors are designed for rugged conditions. However, the GPRS modem is operating with reduced performance if very hot (>60 °C) or if it is cold (<10 °C). For cold temperatures the GP-SHELL2 offers a minimum transmission temperature (default is -10 °C), if it is colder, transmissions are delayed (but no data is lost, the logger is still recording).
- Accumulator maintenance: The accumulator has the best lifetime, if operated in the temperature range 0 °C - 30 °C. Normally long-term high temperatures inside of the enclosures degrade the accumulator. So we recommend, if possible, to reduce the solar exposure of the control cabinet if operated in very sunny/hot places. Watch the HK-Temperature (Parameter of the logger). If required, ensure that the control enclosure is put into the shadow.
- Check the stations regularly, at least once per year.