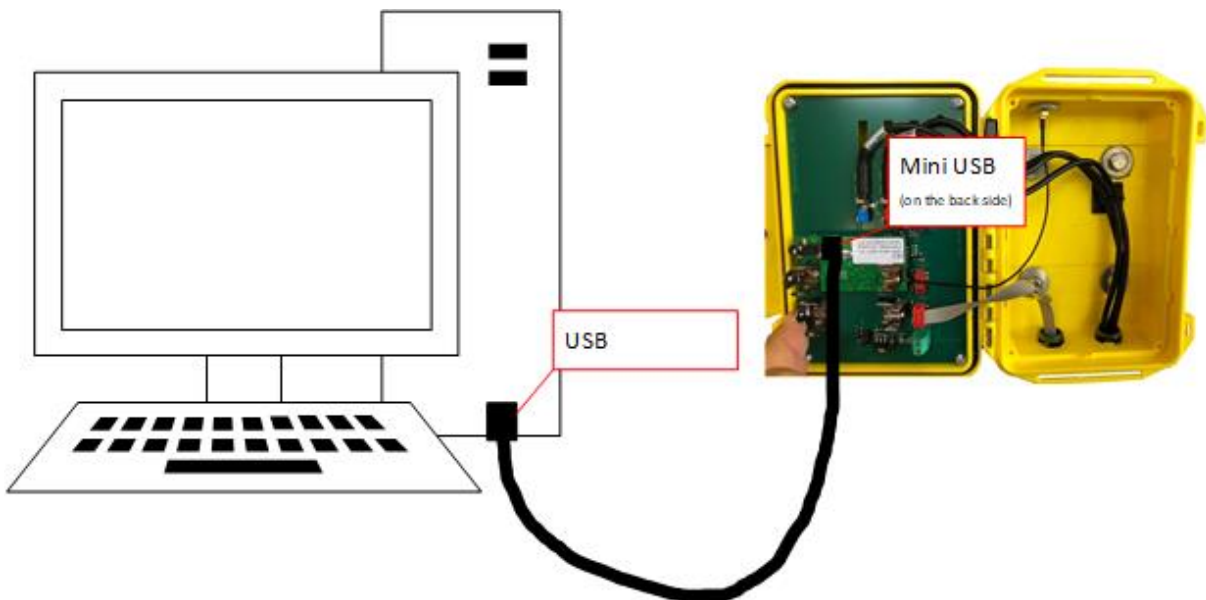


Programming FieldGuard LoRaWAN Stations.

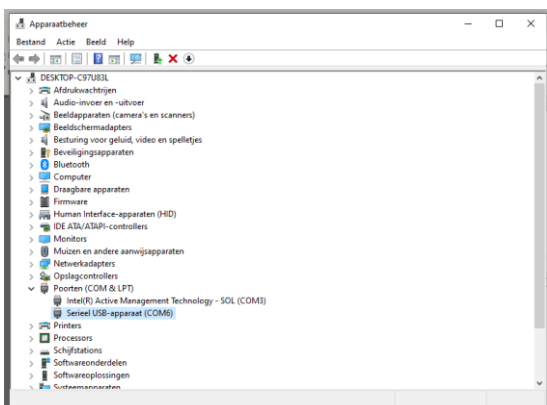
If you order a complete FieldGuard Station from our website it normally comes pre-configured with the correct settings and keys to work out of the box. In some cases you might need to change certain settings because of changes in the sensor configuration, measurement interval, LoRa Network Operator etc. Below is a description of how you can connect your FieldGuard Station to your computer and make changes in the Stations configuration.

Connecting your FieldGuard Station to your computer.

Connect the FieldGuard Station to your computer (You need a USB to Mini USB cable). Connect the Mini USB connector to your FieldGuard Station (this connector is on the backside of the Small LoRa Module (see picture below)). When you connect the USB cable to your computer you should hear a sound.



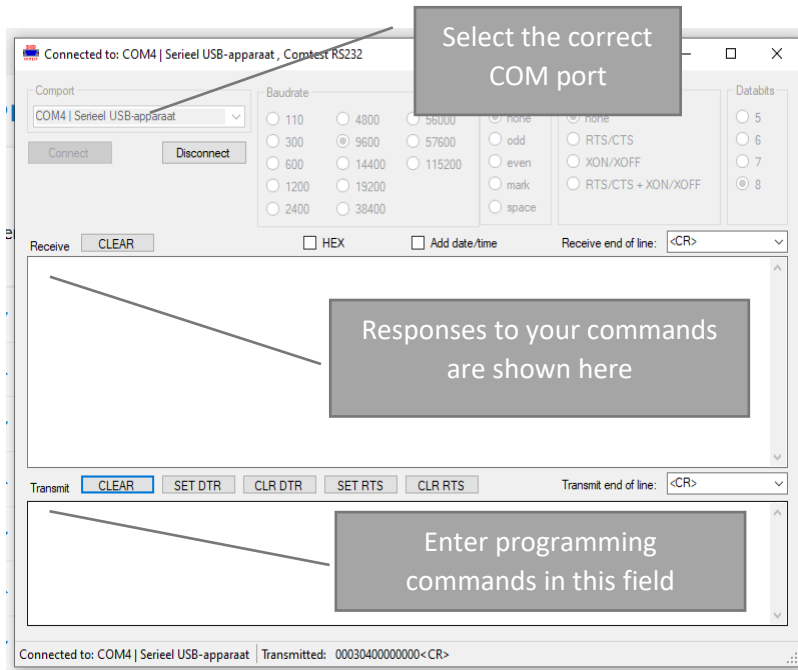
In some cases you (depending on operating system en computer hardware) your FieldGuard Station doesn't connect immediately. If you don't hear the connection sound go to your device manager and check if the computer detected the FieldGuard Station in the correct way and assigned a COM port to the device (see picture below)



If your computer connected in the correct way to your FieldGuard Station, you should see a Serial USB-device (COMx) appear in your Device Manager. In This case the FieldGuard Station Connected to COM6. If your station didn't connect correctly click with the right mouse button on this COM port and then on Switch Off. After that repeat this but then select Switch On. In most cases the second time is OK (otherwise repeat this procedure).

Installing the ComTest Software

For Programming the FieldGuard Stations you need to install our ComTest Software onto your computer. If you don't have the ComTest Software Available on your computer you can download a copy of this software from our website: <http://fieldGuard-stations.com/downloads>.



<- Screenshot ComTest Software.

After connecting your FieldGuard Station to your computer select the correct COM port.

Check your device manager which COM port has been assigned to your FieldGuard Station (Serial USB device).

If the Computer failed to assign the COM port to your FieldGuard Station then take out the battery from your station, wait a few seconds and then put it back in, or use the procedure as described in sector 1. (through the Device Manager).

In General there are 3 types of Settings that you might need to change:

1. Connection keys (provided by your Local telecom Provider or from TTN (the things network).
2. Station Configuration settings (measurement interval)
3. Sensor Configuration settings (battery level and type of sensor and sensor port)

Of these keys these configuration settings the sensor type settings are the hardest, but no worries we will guide you through the process.

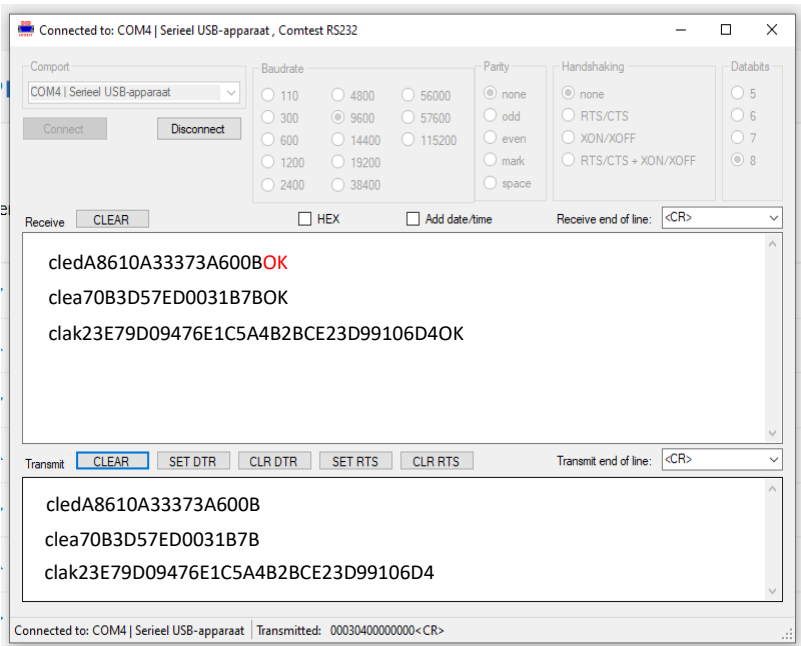
1. Connection keys

Let start with the connection keys. These keys are provided to you either by your (LoRa) telecom provider (like KPN in the Netherlands) or by TTN (the things network). In most cases ESTEDE will provide the keys to you (or are already programmed into the FieldGuard Station). However, to make a connection to the LoRa Network we need 3 keys: Device EUI, Application EUI and the App Key (see picture below). Example Keys provided by TTN (the things network) for this instruction.

Device EUI <> A8 61 0A 33 37 3A 60 0B

Application EUI <> 70 B3 D5 7E D0 03 1B 7B

App Key <>



Use the lower Transmit Field in your ComTest software to transmit the configuration keys to your FieldGuard Station.

To write the Device EUI, Application EUI and App Key to the correct address in the FieldGuards processor you need to use the commands as described below:

CLED -> Device EUI
 CLEA-> Application EUI
 CLAK-> App Key

CLED -> Writes the Device EUI to the FieldGuard Station. Enter CLED plus the Device EUI provided by your provider in the Transmit field en press ENTER (See picture above). When the command is accepted by the FieldGuard Station it will respond with an OK (in the picture above in red).

CLEA - > Writes the Application EUI to the FieldGuard Station. Enter CLEA plus the Application EUI provided by your provider in the transmit field and press ENTER.

CLAK -> Writes the AppKey to the FieldGuard Station. Enter CLAK plus the App Key provided by your provider in the transmit field and press ENTER.

2. Station Configuration Keys

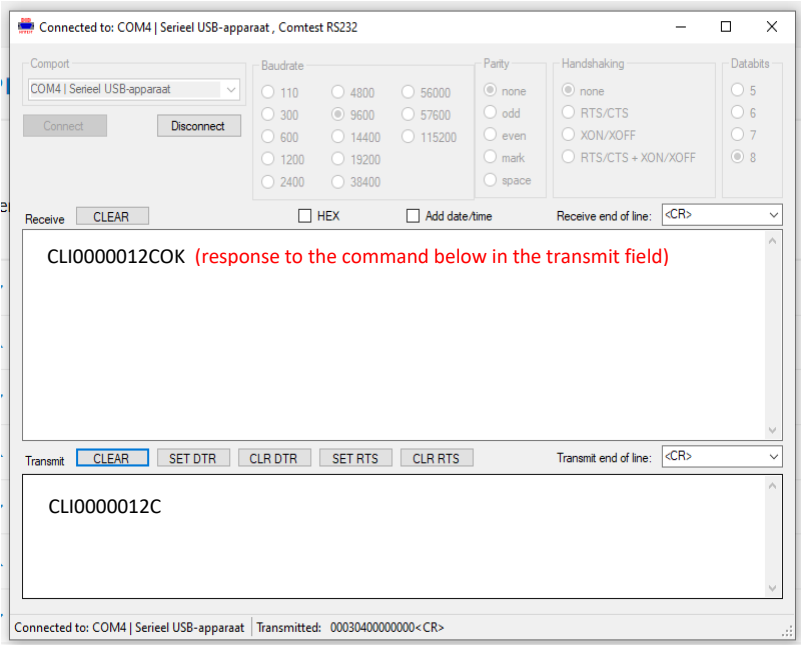
Station keys are simple. Just like to entering the connection keys you need to enter the write commands into the lower (Transmit) field of the Comtest software. There is actually only 1 station key available for programming:

CLI this command programs the measuring interval period for the station

The minimum interval period between 2 measurements is 300 seconds (5 minutes). This is due to regulations set by the LoRa specification. In order to program the interval period we need to use Hexadecimal values for the interval time (300 seconds in HEX. Is 12C), but the total length of this field is 8 bytes so therefore this becomes 0000012C.

Command Example (setting the interval period to 5 min. will therefore be):

CLI0000012C



seconds	HEX	Command
First hour		
300 sec	12C	CLI0000012C
600 sec	258	CLI00000258
900 sec	384	CLI00000384
1200	480	CLI00000480
1500	5DC	CLI000005DC
1800	708	CLI00000708
2100	834	CLI00000834
2400	960	CLI00000960
2700	A8C	CLI00000A8C
3000	BB8	CLI00000BB8
3300	CE4	CLI00000CE4
3600	E10	CLI00000E10
4 hours		
14400	3840	CLI00003840
½ day		
43200	A8C0	CLI0000A8C0
1 day		
86400	15180	CLI00015180

Example 2.

Let say we want to change the interval from once every 5 minutes to once every hour. Then we need to enter the command as below in the Transmit (lower) field of the Comtest software:

CLI00000E10

The response in the Receive Field (upper) would then be:

CLI00000E10OK

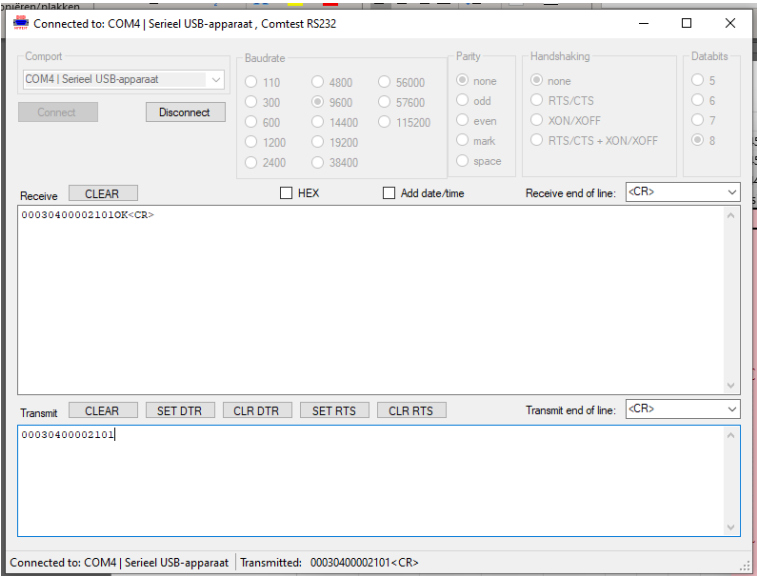
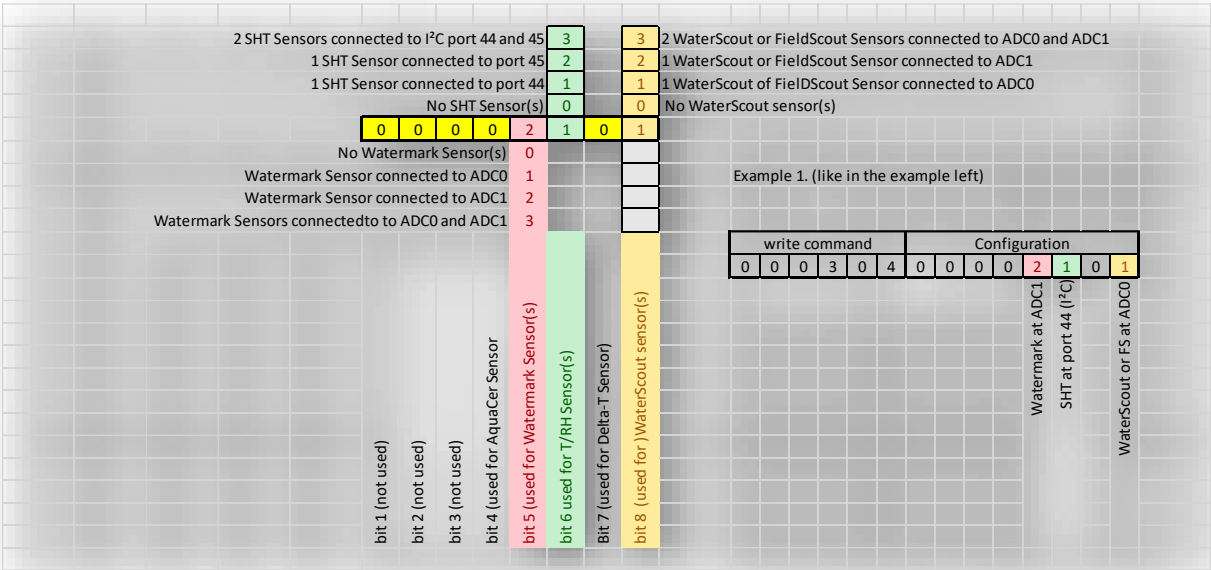
3. Sensor Configuration settings

This section is a little bit harder to comprehend. The command to write the sensor configuration to the FieldGuard Station is 000304 followed by the sensor configuration setting (see image below).

This configuration setting consists just like the measuring interval of 8 bytes. Depending on the type of sensor(s) that are connected and to which port the value of each byte can differ.

Below is a description of each byte in relation to the connected sensor and used port:

Sensor Configuration Setting



This is what it looks like when you enter the sensor configuration command in the COMtest software.

In the Transmit Field (Bottom) you enter 00030400002101.

In the Receive Field you should receive 00030400002101OK (command + OK) so that you know that the config command was received in the correct way.

Result

The complete configuration for a FieldGuard Station should look similar to the example below. In this case 5 Commands:

Cled: writes the Device EUI to the station

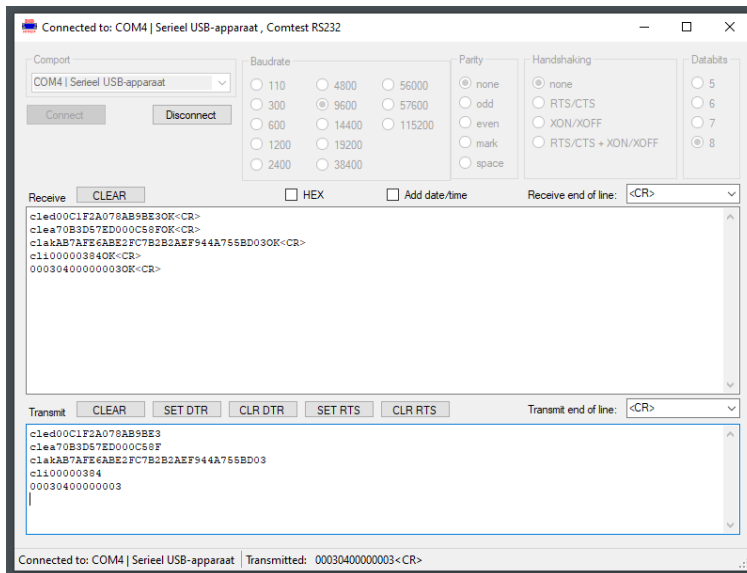
Clea: writes the Application EUI to the station

Clak: writes the App Key to the station

Cli: writes the measuring / transmit interval to the station

000304: writes the sensor configuration to the station

000300: writes battery report to the station (00000000 = no bat. Level / 00000001 = bat. Level)



The Total Configuration of your FieldGuard Stations should look like this (depending on required sensor configuration, interval and connection keys.)

After entering each key / command press ENTER and verify if you get an OK for this command in the Receive Field.

If you need help configuring you station feel free to contact ESTEDE | Technologies or your local dealer to help you with the station configuration.