Lora Calibrate Tool Operating Instruction V1.1

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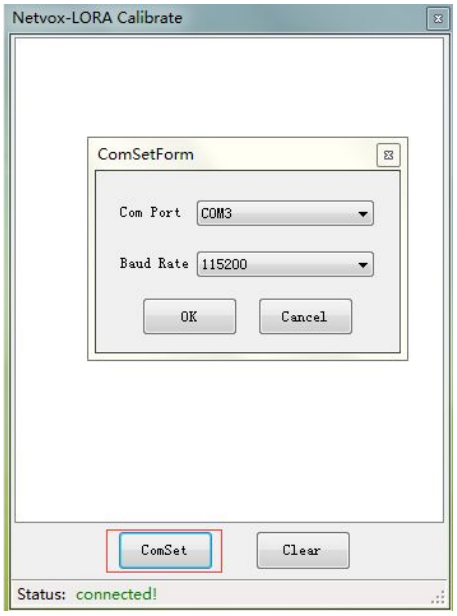
1. LoRa Coordinator Driver Installation

1. Users need to purchase the Netvox LoRa Coordinator, as shown in the Fig. below, and then install the Netvox LoRa Coordinator driver on your computer, as shown below.

Note: high-frequency equipment needs to be used with a high-frequency LoRa coordinator, and low-frequency equipment is used with a low-frequency LoRa coordinator.

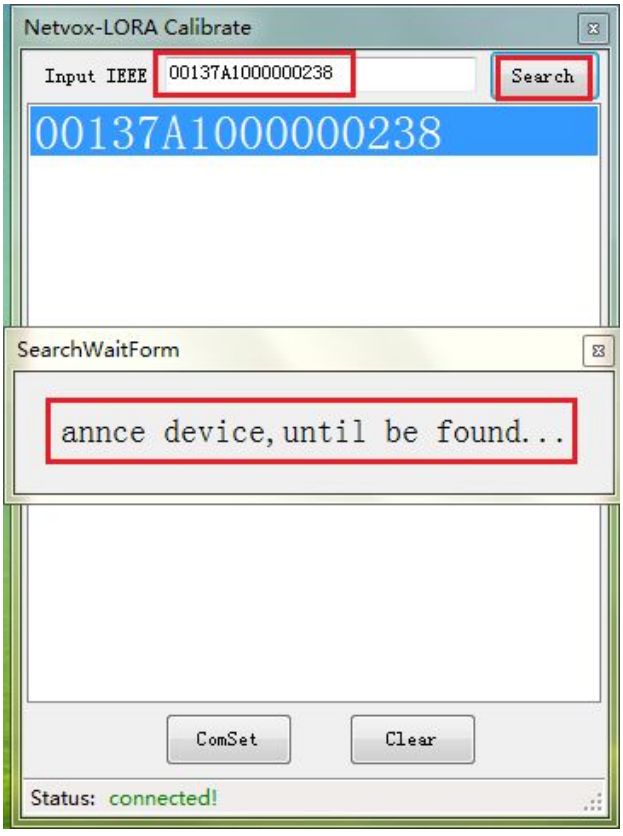
CP210x_VCP_Windows.zip

2. After the driver is successfully installed, a com port will be automatically assigned on the computer. Open the Lora Calibrate calibration software; click the ComSet button; select the port corresponding to the LoRa coordinator and the serial transmission rate defaults to 115200 as shown in below figure, when the connection is successful, the status will show “Connected!”.



2. Power on and Add Devices in Network for Calibration

2.1 Please enter the device IEEE. Click the "Search" button to send calibration tool command to devices which are in [Engineering Test Mode].



2.2. Please refer to the following table to operate the LoRa deviceto enter [Engineering Test Mode] for calibration. If the model is not mentioned in the form or if you have any questions, please contact customer service staff QQ: 4008917178.

Engineering Test Mode Operation:

	Model	Operation	Remark
1	R211	Press and hold the re-start key and power on the device at the same time.	
2	R311 series R312 R312A RA02A RA02C RB02I	Press and hold any key and power on the device at the same time.	
3	R602A	Press and hold any key and power on the device at the same time.	
4	R711 R712	Press and hold any key and power on the device at the same time.	
5	R718X series	Load batteries; press and hold the function key for 3 seconds to turn on. The first five seconds after turning on, the device is in Engineering Test Mode.	
6	R809A	Press and hold on/off key and power on the device at the same time.	
7	RB11E	Press and hold both keys and power on the device at the same time.	

2.3 To enter [Engineering Test Mode] :

After the device enters [Engineering Test Mode] successfully, the calibration tool will display the IEEE address code of the current device, as shown in the Fig. below:

3. LoRa Device Attribute Value Calibration

The following three examples illustrate the steps of calibration. For the calibration of other attributes, refer to the following steps, and the description will not be repeated here. After the device attribute value is successfully calibrated, power off / power on/ turn on the device to enter the normal working mode.
After the device is restored to the factory settings, the calibration value of the device will be retained. The attribute value reported after the device is connected to the network is the value after calibration.

3.1 Temperature and Humidity Value Calibration

3.1.1 After selecting the IEEE code of the device, right click; in the pop-up function options, select the attribute that you need to calibrate and enter the calibration interface. For example, select the temperature and humidity attribute TempAndHum.
Note:
1. If the device supports temperature and humidity values, the user selects

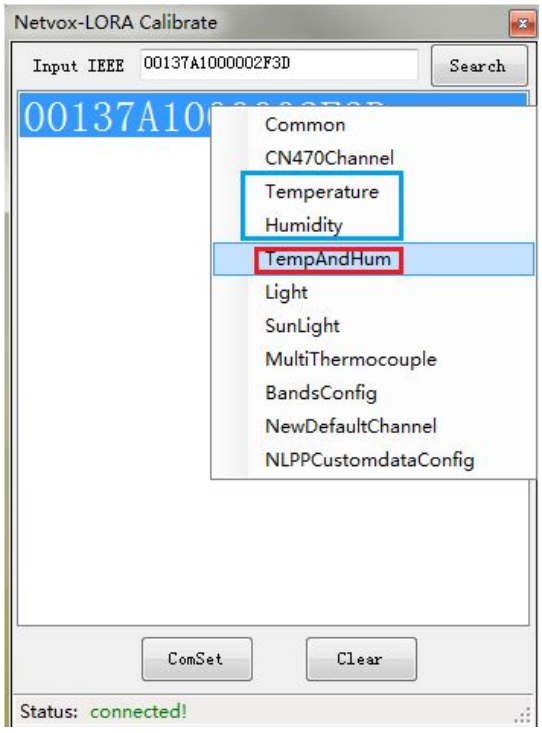
“Temperature” for temperature value calibration and then selects “Humidity” for humidity value calibration. This will erase the temperature calibration value when “Humidity” is selected for calibration. So when users want to calibrate the temperature and humidity values at the same time, be sure to select the “TempAndHum” item for calibration.

2. When the device only supports the temperature value, please select “Temperature” for temperature value calibration.

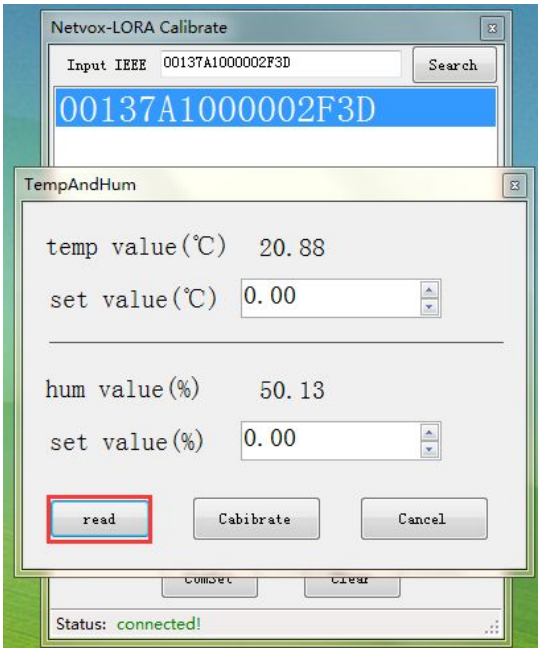
3. When the device only supports the humidity value, please select “Humidity” for humidity value calibration.

4. When the device supports temperature and humidity values, please select “TempAndHum” to calibrate the temperature and humidity values.

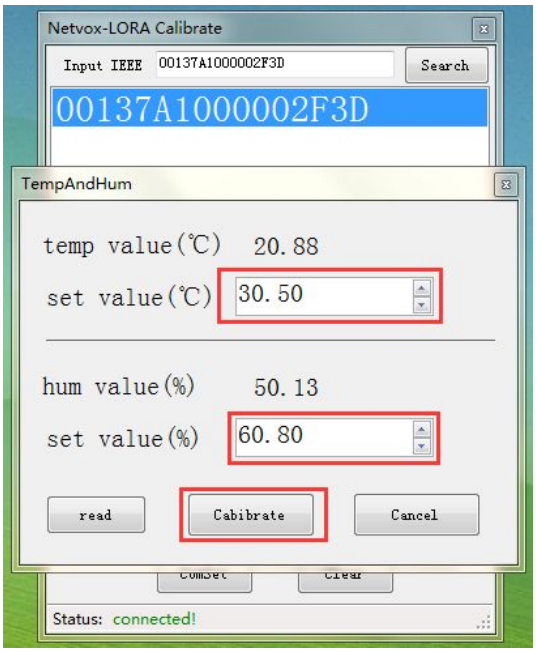
5. After the device property calibration value is restored to the factory settings, it will be retained. The attribute value reported after the network access is the value after calibration.



3.1.2 Enter the temperature and humidity value calibration interface, click the “read” button to read the temperature and humidity values currently collected by the device, as shown below:



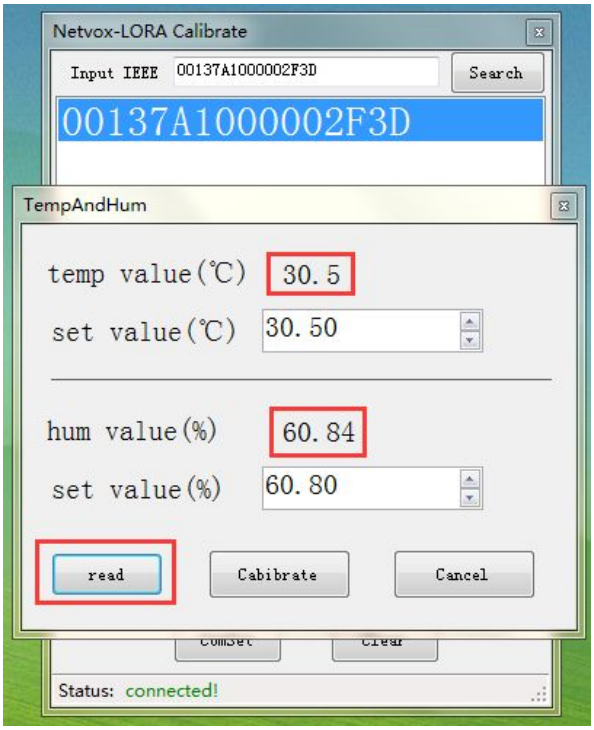
3.1.3 When the user thinks that the temperature and humidity values are incorrect and need to be calibrated, enter the standard temperature value in the temperature calibration input box, and enter the standard humidity value in the humidity calibration input box. For example, enter the temperature value: 30.50, enter 60.80 in humidity value and click “Calibrate” button to write the calibration values as shown below:



3.1.4 During the calibration process, the button will become gray and unavailable. After the calibration is completed, the button color will be restored. Click the “read” button to read the temperature and humidity value after the calibration of the device.

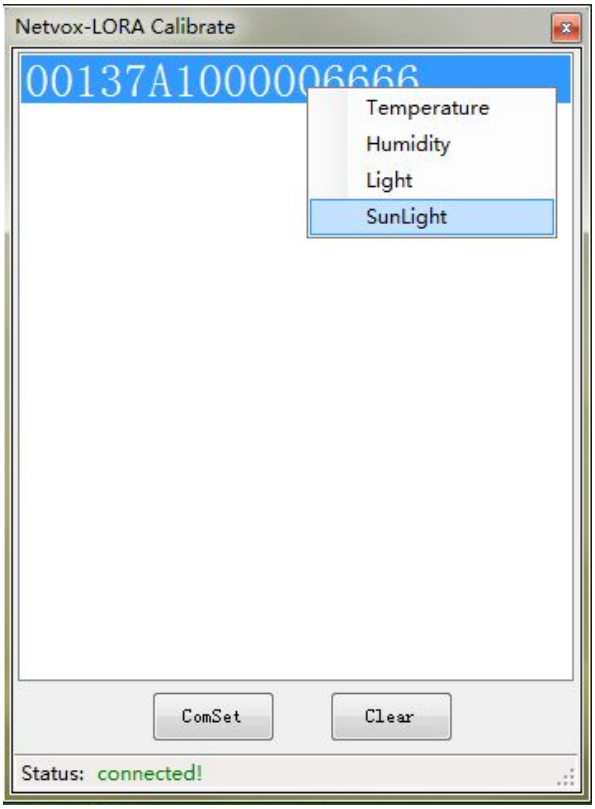
The temperature value after reading the calibration is 30.5; the humidity value is

60.84, which is in accordance with the calibration result. After the device attribute value is successfully calibrated, power off and power on the device to enter the normal mode. As shown below:

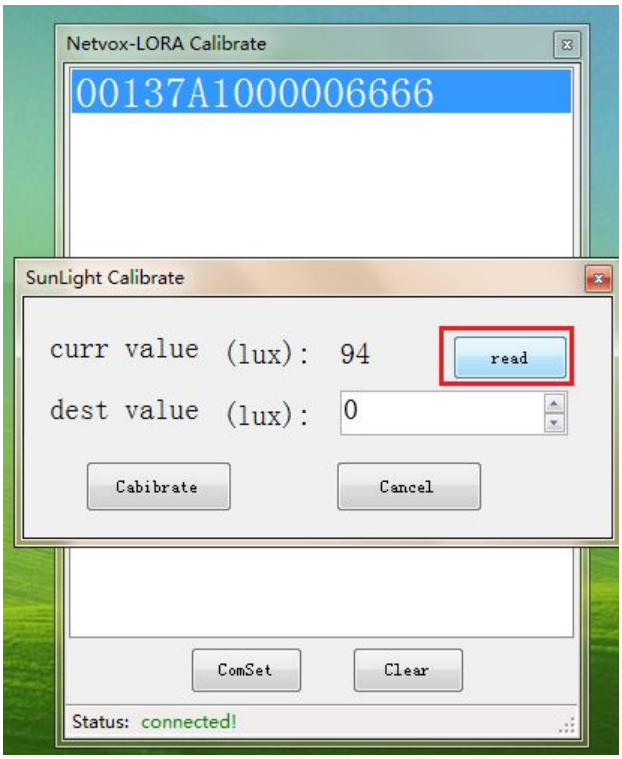


3.2 Sunlight Value Calibration

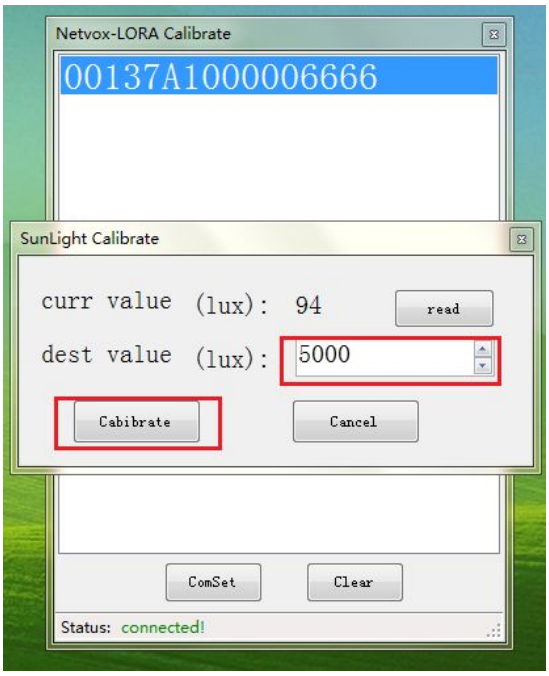
3.2.1 After selecting the IEEE code of the device, right click, in the pop-up function options, select the property to be calibrated and enter the calibration interface. For example, select the Sunlight property to be calibrated, as shown in the Fig. below:



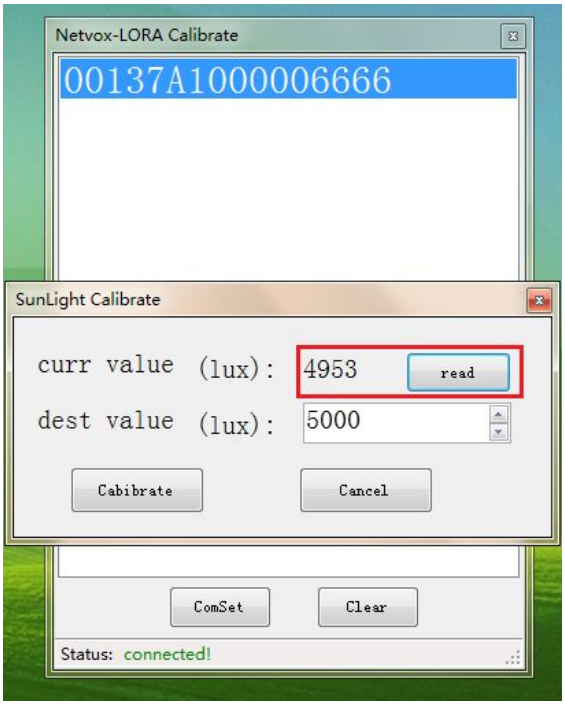
3.2.2 Enter the sunshine property calibration interface, click the “read” button to get the sunlight value returned by the current sampling device, as shown in the Fig. below:



3.2.3 When the current value returned by the device is not accurate enough compared with the value measured by the standard source, the calibration can be made. For example, if the standard source value indicates that the current sunshine value should be 5000 lux, the dest value input box should be filled in 5000. Then click on the "Calibrate" button to write the calibration value, as shown in the Fig. below:

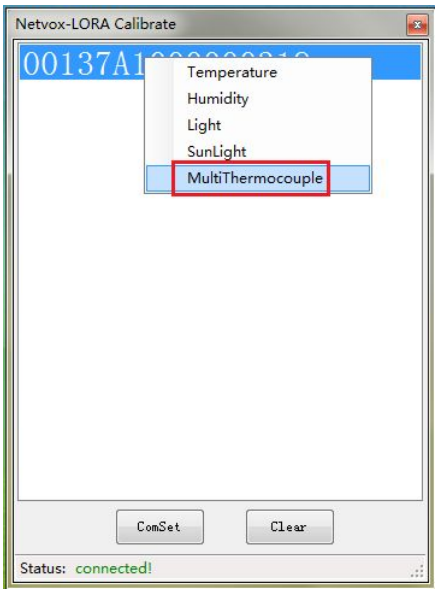


3.2.4 After the calibration is completed, click the “read” button again to get the return value after the calibration of the device. As the following Fig. in below, the sunshine value returned after calibration is: 4953 lux, which has been modified to the standard source close value (within the error range). Then the calibration of the sunshine attribute value is successful. After the device attribute value is successfully calibrated, power off and power on the device to enter the normal working mode.



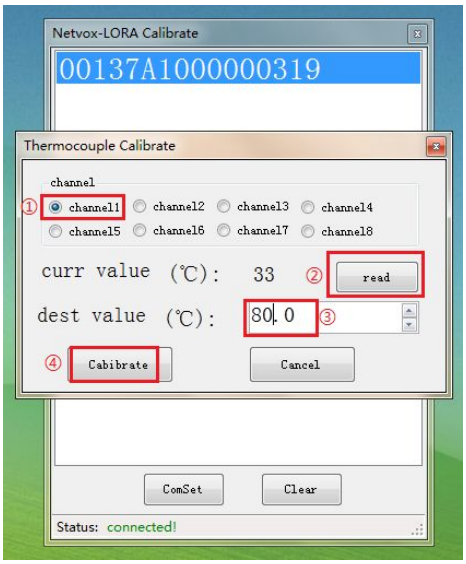
3.3 Thermocouple Temperature Value Calibration

3.3.1 Right-click the device IEEE and select “MultiThermocouple” to enter the thermocouple temperature calibration interface, as shown in the Fig. below.

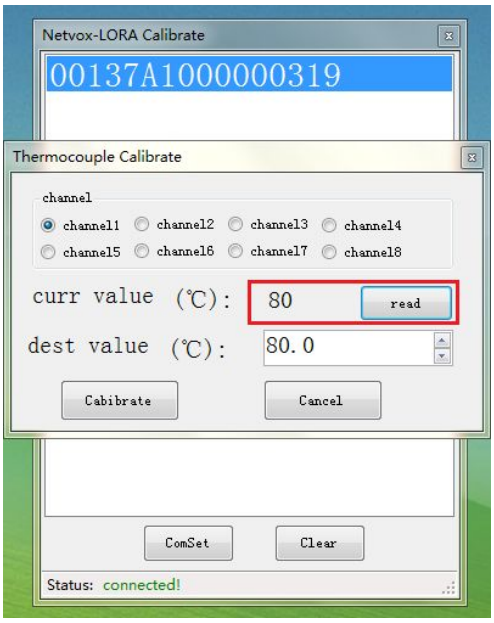


3.3.2 After entering the thermocouple calibration interface, firstly select the way to calibrate the thermocouple. Selects “channel1” for the first thermocouple temperature calibration. Select “channel2” for the second thermocouple temperature calibration , and so on.

To read temperature value of the selected channel, as shown below, the current temperature value of the first thermocouple returned is 33°C, when the user thinks that the collected temperature value is not accurate, for example, the standard source temperature value is 80°C. At this time, the dest value temperature value should be written to the standard source temperature value of 80°C, and then click the "Calibrate" button to write the calibration temperature value.



3.3.3 After temperature value calibration is successfu, click the “read” button again to re-read the return value after calibration. As shown in the figure below, the read temperature value of the first channel of the thermocouple has been calibrated to the standard source temperature value 80° C and so on.

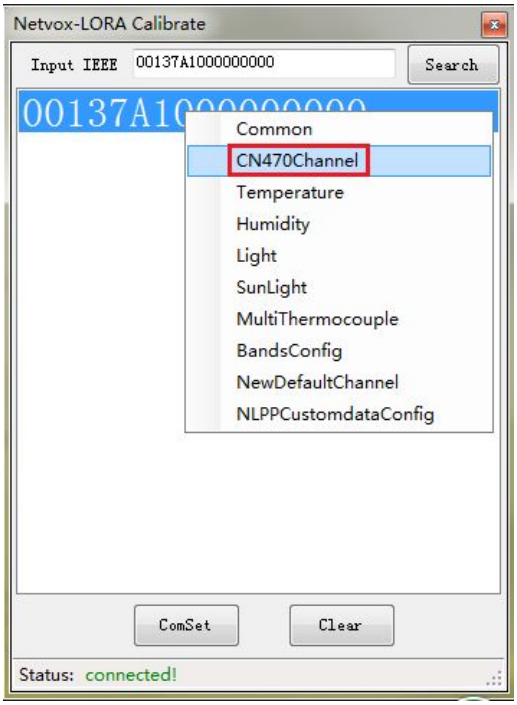


The calibration of other channels is the same. The calibration operation of other attributes is the same as the attribute calibration operation of the example. It is not repeated. After the device attribute value is successfully calibrated, power on and power off to enter normal working mode.

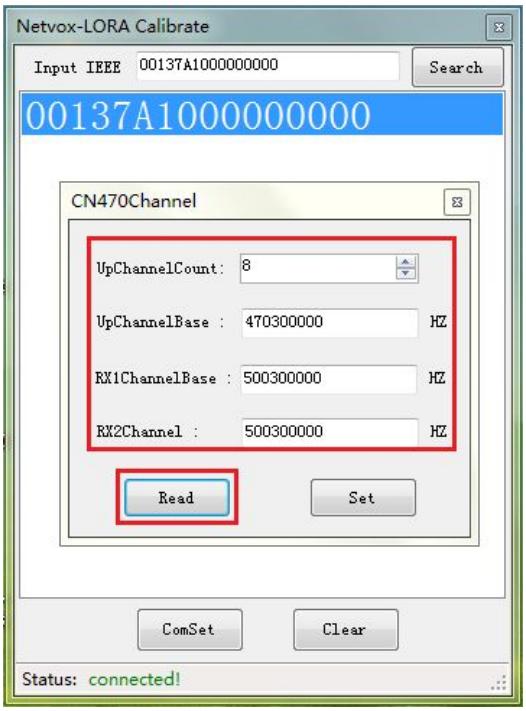
After the device calibration value is restored to the factory settings, it will be retained. The attribute value reported after the device is connected to the network is the value after calibration.

4. LoRa Low Frequency Device Frequency Point Modification

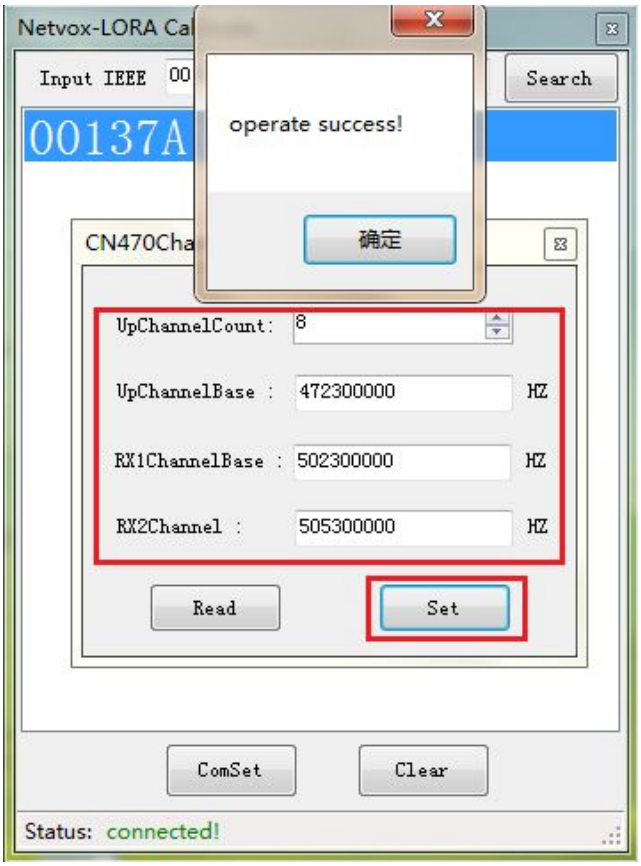
Right-click the device IEEE, right click and select “CN470Channel” to enter the frequency setting interface, as shown in the Fig. below:



Set the interface at the frequency point, click the “Read” button, you can read the current frequency information of the device, as shown in the Fig. below:

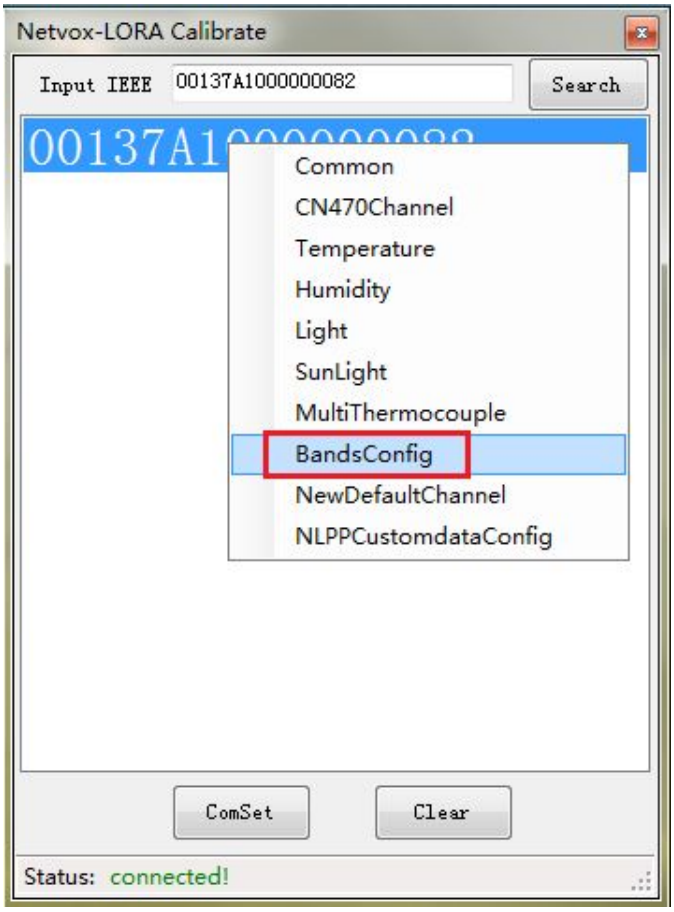


Input device uplink frequency point UpChannelCount, the default value is generally 8 frequency points; input the uplink starting frequency point UpChannelBase; note that the unit here is HZ; input the downlink starting frequency point RX1ChannelBase; input the downlink RX2Channel frequency point, and then click "Set" button to enter the set value. After the setting is successful, there will be an “operate success” window prompt. After the setting is successful, click the “Read” button to read the value returned after setting, as shown in the following Fig.:

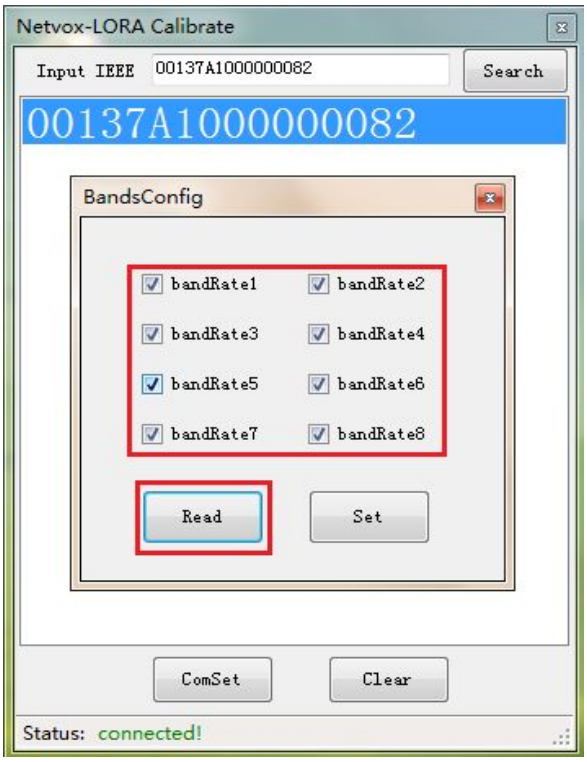


5. LoRa High Frequency Device Bands Modified

Note: Bands modification only supports software in the US915 and AU915 bands.
After the device is successfully connected to the network, right-click and select the “BandsConfig” option to enter the Band modification interface, as shown in the Fig. below:



After entering the Band modification interface, click the “Read” button to read the current Bands information of the return device. The default device shipment is usually band1~band8, as shown in the Fig. below:



Note: The difference between each band is only the uplink frequency point, and the downlink frequency points are the same. Therefore, only the uplink frequency points are marked as follows:

US915 Band1 uplink frequency points as below：
902.3MHz, 902.5MHz, 902.7MHz, 902.9MHz, 903.1MHz, 903.3MHz, 903.5MHz, 903.7MHz 903.0MHz(@BW500

US915 Band2 uplink frequency points as below：
903.9MHz, 904.1MHz, 904.3MHz, 904.5MHz, 904.7MHz, 904.9MHz, 905.1MHz, 905.3MHz 904.6MHz(@BW500

US915 Band3 uplink frequency points as below：
905.5MHz, 905.7MHz, 905.9MHz, 906.1MHz, 906.3MHz, 906.5MHz, 906.7MHz, 906.9MHz 906.2MHz(@BW500

US915 Band4 uplink frequency points as below：
907.1MHz, 907.3MHz, 907.5MHz, 907.7MHz, 907.9MHz, 908.1MHz, 908.3MHz, 908.5MHz 907.8MHz(@BW500

US915 Band5 uplink frequency points as below：
908.7MHz, 908.9MHz, 909.1MHz, 909.3MHz, 909.5MHz, 909.7MHz, 909.9MHz, 910.1MHz 909.4MHz(@BW500

US915 Band6 uplink frequency points as below：
910.3MHz, 910.5MHz, 910.7MHz, 910.9MHz, 911.1MHz, 911.3MHz, 911.5MHz, 911.7MHz 911.0MHz(@BW500

US915 Band7 uplink frequency points as below：
911.9MHz, 912.1MHz, 912.3MHz, 912.5MHz, 912.7MHz, 912.9MHz, 913.1MHz, 913.3MHz 912.6MHz(@BW500

US915 Band8 uplink frequency points as below：
913.5MHz, 913.7MHz, 913.9MHz, 914.1MHz, 914.3MHz, 914.5MHz, 914.7MHz, 914.9MHz 914.2MHz(@BW500

AU915 Band1 uplink frequency points as below：
915.2MHz, 915.4MHz, 915.6MHz, 915.8MHz, 916.0MHz, 916.2MHz, 916.4MHz, 916.6MHz 915.9MHz(@BW500

AU915 Band2 uplink frequency points as below：
916.8MHz, 917.0MHz, 917.2MHz, 917.4MHz, 917.6MHz, 917.8MHz, 918.0MHz, 918.2MHz 917.5MHz(@BW500

AU915 Band3 uplink frequency points as below：
918.4MHz, 918.6MHz, 918.8MHz, 919.0MHz, 919.2MHz, 919.4MHz, 919.6MHz, 919.8MHz 919.1MHz(@BW500

AU915 Band4 uplink frequency points as below：
920.0MHz, 920.2MHz, 920.4MHz, 920.6MHz, 920.8MHz, 921.0MHz, 921.2MHz, 921.4MHz 920.7MHz(@BW500

AU915 Band5 uplink frequency points as below：
921.6MHz, 921.8MHz, 922.0MHz, 922.2MHz, 922.4MHz, 922.6MHz, 922.8MHz, 923.0MHz 922.3MHz(@BW500

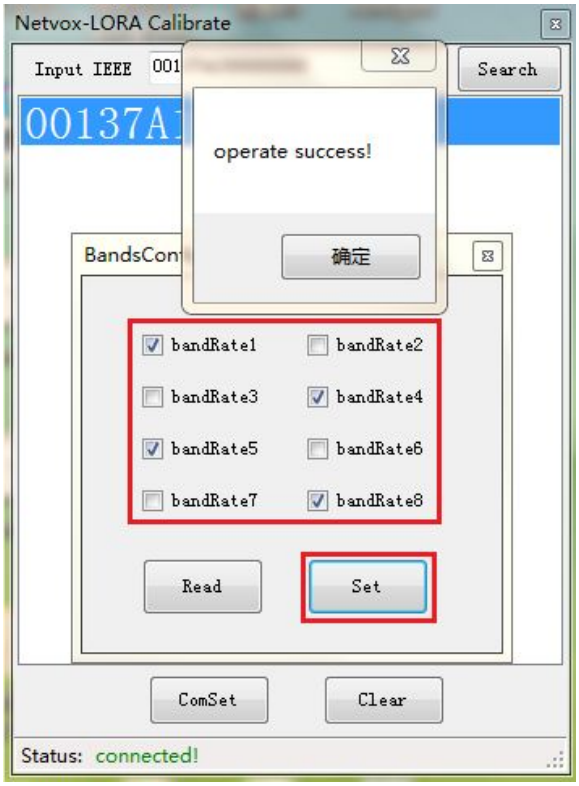
AU915 Band6 uplink frequency points as below：
923.2MHz, 923.4MHz, 923.6MHz, 923.8MHz, 924.0MHz, 924.2MHz, 924.4MHz, 924.6MHz 923.9MHz(@BW500

AU915 Band7 uplink frequency points as below：
924.8MHz, 925.0MHz, 925.2MHz, 925.4MHz, 925.6MHz, 925.8MHz, 926.0MHz, 926.2MHz 925.5MHz(@BW500

AU915 Band8 uplink frequency points as below：
926.4MHz, 926.6MHz, 926.8MHz, 927.0MHz, 927.2MHz, 927.4MHz, 927.6MHz,

927.8MHz 927.1MHz(@BW500

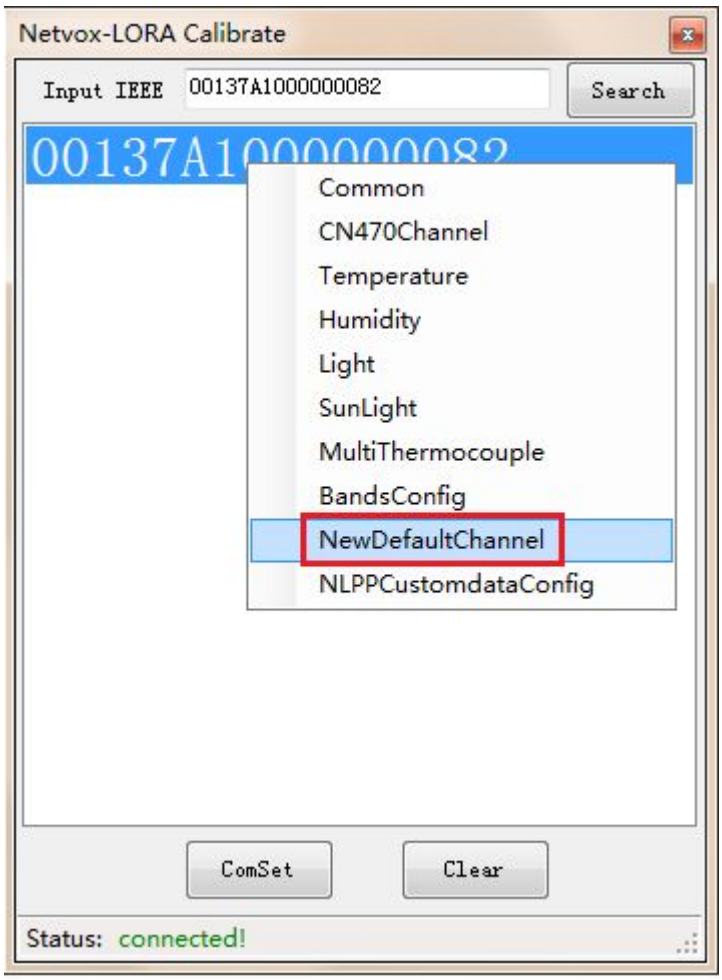
Click to select the required Band, click to remove the unwanted Band, and then click the "Set" button to write into the device. After the setting is successful, there will be an "operate success" window prompt. After the setting is successful, click the "Read" button to read information returned after setting, as shown in the Fig. below:



6. LoRa High Frequency Device Frequency Point Modification

Note: The frequency point modification only supports the software of AS923, KR920 and IN865 frequency bands.

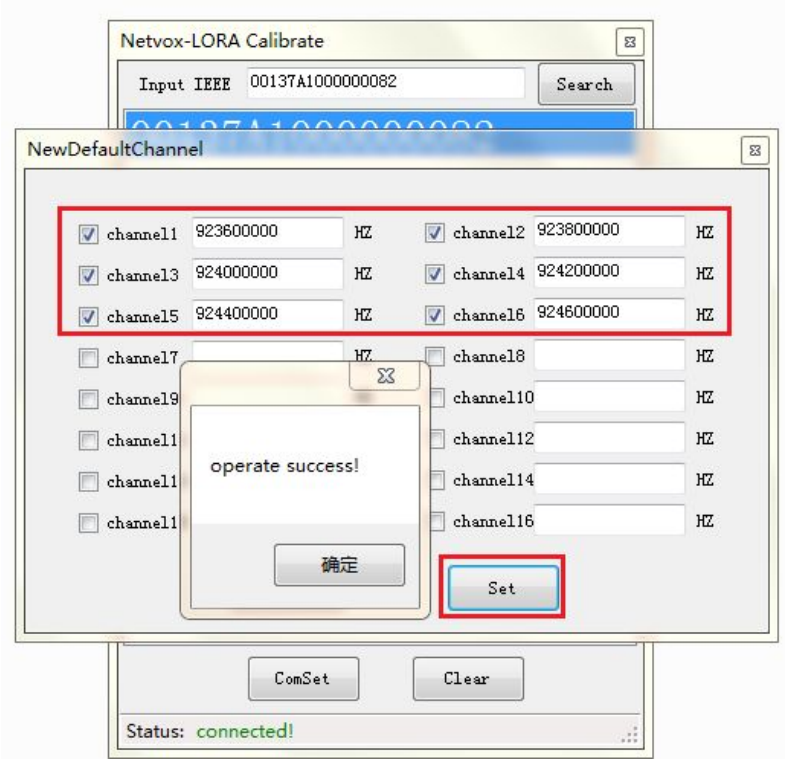
After the device is successfully connected to the network, right click and select the “NewDefaultChannel” option to enter the frequency setting interface, as shown in the Fig. below:



For example, to modify the frequency of the AS923 band as an example, the AS923 band must have two frequency points by default, as follows:

AS923 (frequency range 920MHz~928MHz).
The default must have two frequency points: 923200000 Hz and 923400000 Hz. These two frequencies do not need to be set.

Then in the setting interface, select channel1~channel6, input the remaining 6 frequency points; click the “Set” button to complete the setting. After the setting is successful, there will be “operate success” window prompt; then click “Read” button to read information returned after setting as the Fig. below:

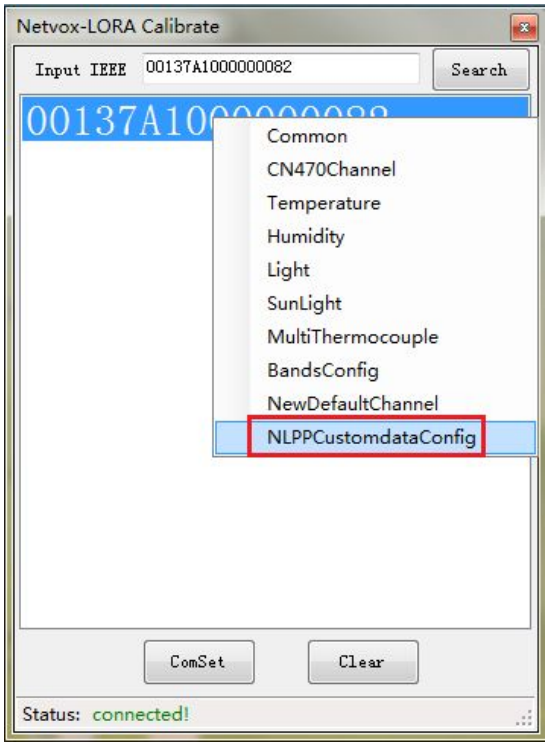


7. LoRa Device CustomData Modification

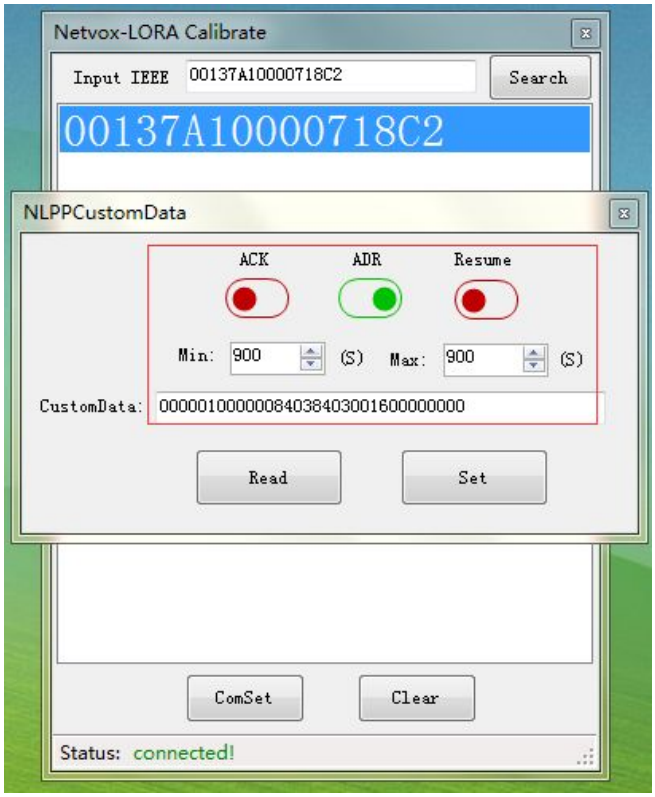
Note: Different devices have different CustomData definitions. For details, please consult the software developer.
The Cus Data description of the R311A device is as follows:
The 1-2th byte: ACK (reverse write), open as: 0100, off: 0000 (factory default)
The 3-4th byte: ADR (reverse write), open to: 0100 (factory default), off: 0000
5-6th byte: resume (reverse write), save network information: 0100, do not save network information: 0000 (factory default)
7-8th byte: minimum time (reverse write), set value is hexadecimal, for example, 100E means 1 hour (factory default)
9-10th byte: maximum time (reverse write), set value is hexadecimal, for example, 100E means 1 hour (factory default)
11-16th byte: reserved

Note: “Reverse Write” means that the low byte is in the front and the high byte is after. For example, 1 hour (3600 seconds), converted to hexadecimal 0E10, here reversed, it is expressed as 100E.

After the device is successfully connected to the network, right-click and select the NLPPCustomdataConfig option to enter the Customdata modification interface, as shown in the following Fig.:



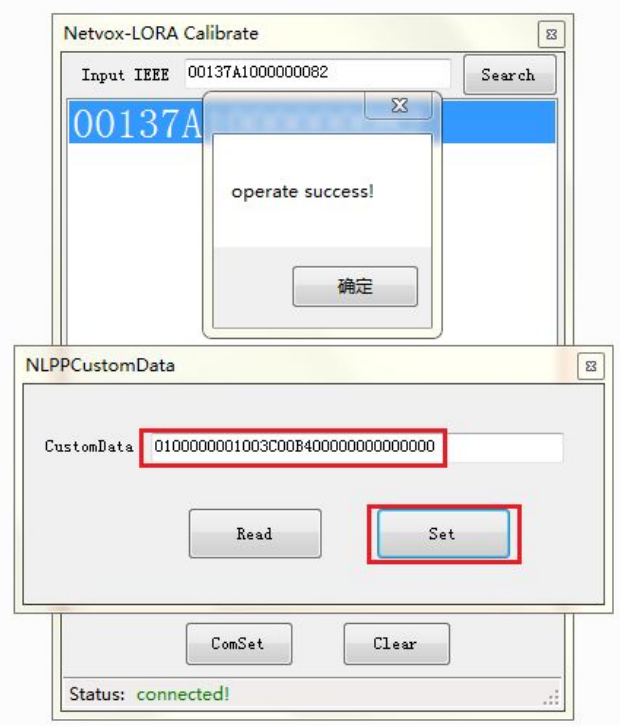
After entering the Customdata modification interface, click the “Read” button to read the current programming value of the device, as shown in the Fig. below:



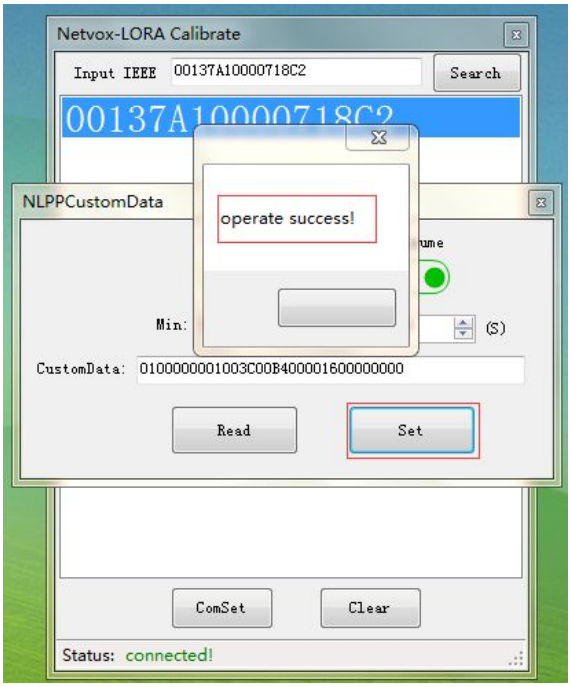
For example, read the factory default Customdata value of the R718CK2 device: 0000010000008403840300160000000

The factory default ACK bit of the device is: off (0x0000, reverse write). ADR bit is on (0x0100, reverse write). Resume saves network bit as off (0x0000, reverse write). Mintime defaults to be 900 seconds (0x8403, reverse write). Maxtime defaults to 900 seconds (0x8403, reverse write).

To change the ACK to on, ADR to off. Save Network to On, report minimum time to 60 seconds, and maximum time to 180 seconds. Customdata settings are as follows:

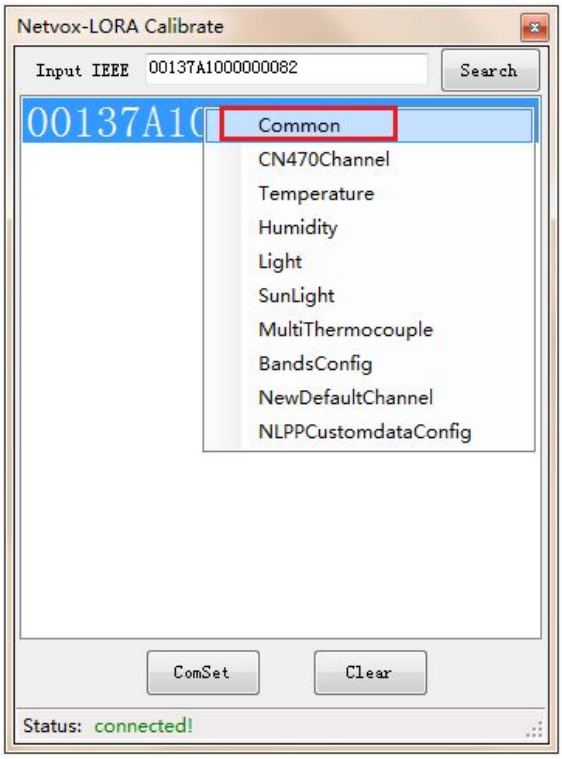


After selecting the desired setting item, click the “Set” button to write the device. After the setting is successful, there will be “operate success” window prompt, or click the “Read” button to read the information returned after setting, as shown below:

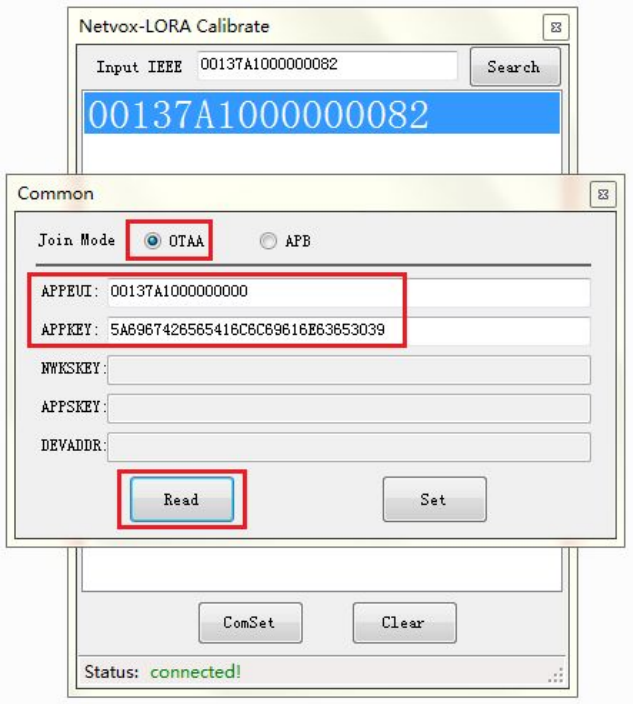


8. LoRa Device Screening Information Modification

After the device is successfully connected to the network, right click and select the “Common” option to enter the screening information setting interface, as shown in the Fig. below:



After entering the screening information setting interface, click the “Read” button to read the screening mode and screening information of the current device that is being programmed, as shown in the Fig. below:



For example, to modify the device to ABP mode, select ABP mode, enter NWSKEY, APPSKEY, DEVADDR information content, click the “Set” button to complete the setting, after the setting is successful, there will be “operate success” window prompt; then click “Read” button to read information returned after setting, as shown in the Fig. below: