RS485 to Zigbee Module Testing Instructions

1. A USB-RS485 adapter is required for setting up, which is used to connect Zigbee Modules to a computer to run the configuring app. The USB-RS485 module in our store can also provide power to Zigbee Module with the 5V power output on it. You can also choose to use your own USB-RS485 adaptors.
2. Screw the sucker antenna onto your Zigbee Module, then hook it up to your computer using a USB-RS485 converter. LEDs should turn blue indicating the module is working. Make sure Zigbee Module is powered up by 5-28VDC.
3. Make sure the driver for USB-RS485 module is installed so that your computer can recognize the USB-RS485 converter. Open up the setup app you have downloaded. Choose "English" then "Zigbee Module". If the USB-RS485 is correctly installed, its COM port should show up in the COM list on the configuration page, otherwise you need to check if the RS485 connection to your computer is good or try a different USB-RS485 adapter.
4. Click "CONNECT" button on the configuration window, it'll show its Version Number once successfully connected. See the following picture for reference.

5. The wireless communication network formed by Zigbee Modules is called "Mesh Network". In mesh network, one module needs to take on the role of "Coordinator", others being "Router" or "End Device". Routes (valid paths from a router or end device to coordinator for

communication) are automatically discovered and maintained, routing table is stored on each module. If one device becomes broken, which means there's a link missing in the established mesh network, new routes would be created automatically to keep other devices working. In a simple example of Mesh Network, 1 HMI needs to collect data from 3 PLCs to control them accordingly. There are 4 Zigbee modules in this mesh network with each device connecting to one. The Zigbee Module connected to HMI should be set to the role of coordinator. Other Zigbee Modules need to be set to routers or end devices. When you have more than 30 nodes in your mesh network, you can choose to set some of the routers sitting on the edge of your network to the role of "End Devices", "End Devices" don't relay data as routers do.

6. In the configuration window as showed in the picture above, set up the parameters exactly as the picture shows for the test. The middle section is parameters for the coordinator. The right-hand section is for routers, which would be stored on the coordinator for routers to read from and set up themselves when "function key" being pressed three times. It's recommended to keep it as default for testing; you can muck around with it especially baud rate in actual use for better performance. After writing the information to Zigbee Module by clicking the "Write" button, the module you are setting up now can work as coordinator. You don't need to set up other Zigbee Modules one by one unless you would like to use different baud rate and other Serial Communicaiton parameters for different Zigbee modules. Instead, the setup of Zigbee modules as routers can be done automatically by pressing the "Function Key" on it three times after powered up, it'll automatically try to connect to Coordinator and read settings as showed on the right hand section to set itself up.
There are two LEDs on the module, which are defined as follows:
On coordinator: LED4 stays solid blue, LED3 flicks when receiving data.
On Router: LED4 flicks fast when not connected to coordinator, flicks slowly after connected. LED3 flicks when receiving data and function key being pressed, flicks fast when function key being pressed three times, and starting to search coordinator.

7. Parameters of Serial Communication for coordinator and routers don't have to be the same, but need to be the same as the settings of the devices connected to it through RS485. In the example network mentioned above, coordinator needs to have the same settings as HMI, and routers need to have the same setting as the PLC which is connected to. Program your PLC and HMI the same as you do with cabled connection (say MODBUS RTU) via RS485. Zigbee modules make the over the air transmission transparent.

8. Antenna needs to be placed at a place where there's less blocking in between. If one router is out of valid communication distance from the coordinator. You can put another Zigbee module in the middle so that the third module is in valid communication distance with both modules to work as a relay link.

9. Zigbee Module, by default, uses the frequency of 2.4GHz (2460MHz) for its wireless communication. The frequency can be set to from 2405MHz to 2480MHz in the step of 5MHz by changing the channel option on the setup page to avoid interference. Please note, some of WIFI routers work at 2.4GHz.

10. Wireless communication can be affected by many factors. The best result at 1600 meters can be acquired in outdoor environment with no interference, no blocking, no noise nearby. For indoor use, the valid distance can be anywhere between 50 meters and 400 meters. Wireless signal can pass through 2-3 walls. Try different frequencies if the valid distance is

not ideal, which could happen when there's strong interference. All modules in the network must run at the same frequency and PAN ID.

11. Topology button is to put Zigbee modules on a map. You can also check signal strength between any of your Zigbee modules.