

RHF3M485 setup guide.

- 1) Connect the RHF3M485 to the provided USB to TTL dongle as below.



- 2) OPEN a terminal program, like UARTAssist or Tera Term and setup as **Baud rate 9600, Bit 8, stop bit 1, no parity bit.**
- 3) Type AT+DR to confirm the frequency is the same as your requirement

```
+DR: DR0 (ADR DR3)
+DR: AU915 DR3 SF9 BW125K
+DR:
AU915 DR0 SF12 BW125K

AT+DR
```

If not, issue the below command

AT+DR=AS923 (for AS923)
AT+DR=AU915 (for AU915)
AT+CH=num, 8-15 (sub freq band 2 for AU915)

- 4) Setup the serial baud rate
AT+UARTDFU = 9600, 0, 8

Or check it by **AT+UARTDFU**

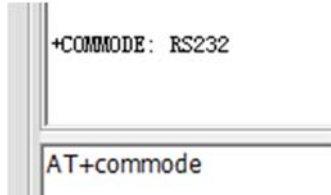
```
+UARTDFU: 9600, 0, 8

AT+UARTDFU
```

- 5) Set up the Serial interface mode RS232 / RS485

AT+COMMODE=RS232

Or check it by AT+COMMODE

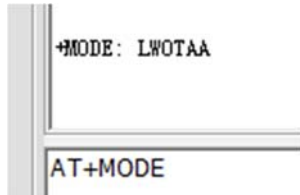


```
+COMMODE: RS232
AT+commode
```

- 6) Check the Join mode , OTAA / ABP

AT+MODE= LWOTAA

Or check it by **AT+MODE**



```
+MODE: LWOTAA
AT+MODE
```

- 7) Check the sensor DEVEUI and APPEUI by command
AT+ID

- 8) Change the APP key or using the default APP key
The default key is **2B7E151628AED2A6ABF7158809CF4F3C**

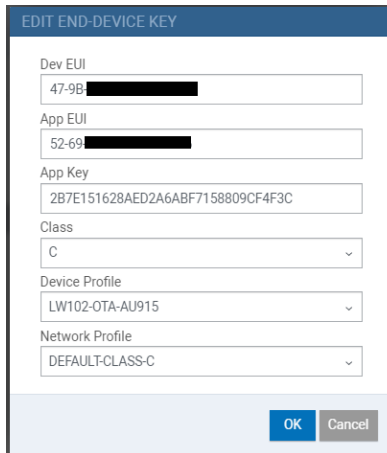
AT+KEY=APPKEY, "2B7E151628AED2A6ABF7158809CF4F3C"

After all of the above setup, you could now set up your gateway and register the devices as Class C devices.

Multitech gateway as Class C

- 1) Goto Multitech Conduit
- 2) Setup as Network Server mode
- 3) Go to Key management
- 4) Setup local key and then register the devices as below.

You must set up as Class C and Profile as Class C to make it work.



Now you could connect Serial cable RS232 to the RHF3M485 devices.

Then, Power OFF your RHF3M485, and power ON again.

It will initiate a JOIN request to the Gateway, and once you see join accept, you should see some message in the payload.

“70050001020002802500000300040805000600070108000900”

In our testing, we connect the devices with computer, and then open a serial to terminal console like UARTASSIST or Tera Term.

We send HELLO in the terminal console, and you could see the message received in the Multitech NodeRED.



The message in HEX 7000**01**0048454c4c4f

01 is the message ID sent by the host. And it can't be the same for consequence message.

So if you send the next message "HELLO ELECOMES" , it will change into **02**

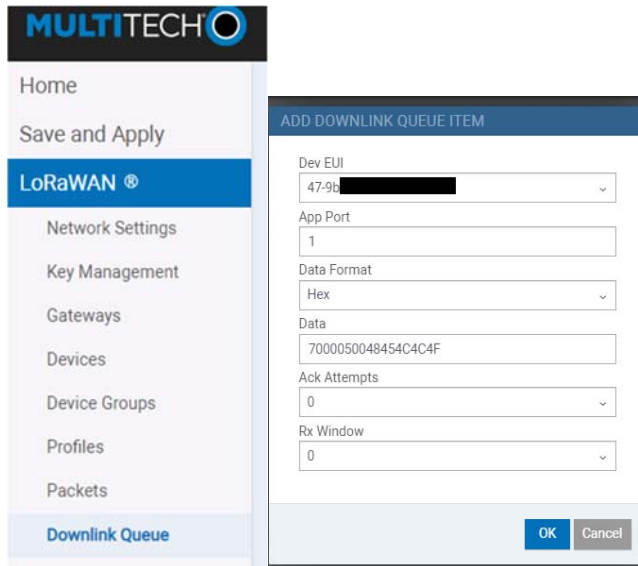
```
18/07/2021, 17:37:54 be59f86.f736f
msg.payload : buffer [18]
7000020048454c4c4f20454c45434f4d4553
```

When you send a Downlink message from the Network Server to the RHF3M485 devices, you need to take care of this ID, as if it is repeated as the previous value, the message will be filtered and not be displayed.

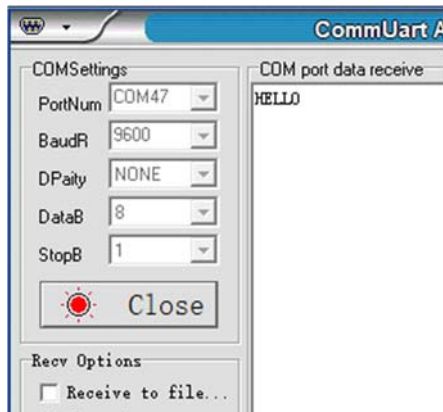
SETUP downlink message from the Network Server.

- 1) Goto LORAWAN > Downlink Queue
- 2) Setup the downlink command as below where we use ID as **05**

So prefix: 70000500
Message: 48454c4c4f (HELLO)



- 3) You will see below data received.

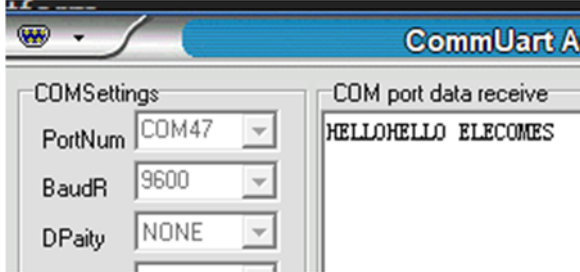


4) Send the next message

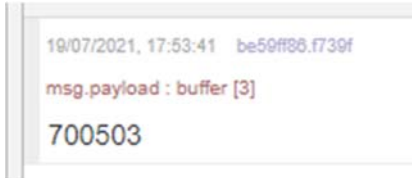
Set prefix: 7000600

Message: 48454c4c4f20454c45434f4d4553 (HELLO ELECOMES)

See below result.



The sensor also has a default heartbeat in 2 mins, so you will see a message



You could change this Heartbeat message time by command, please follow the protocol guide for more details.

For example

7004**30****01****0100****02****80250000**030004080500060007010800

Header: 70

Command: 04 (4: Command for parameters configuration, only for the application server downlink)

ID: 30 (2 consecutive command need to be different)

Command type: 01 (Period)

Type 1 value: 0100 (0100 LSB = 0x0001 hex = 1mins)

Command type: 02 (baud rate)

Type 2 value: 80250000 (80250000 LSB = 0x2580 hex = 9600)

.....

Till type 08 value 00

RHF3M485 response the below command as acknowledgement

70050301020002802500000300040805000600070108000900

Another Example to set up as 1hrs heartbeat

700431013C000280250000030004080500060007010800

Header: 70
Command: 04 (4: Command for parameters configuration, only for the application server downlink)
ID: 31 (2 consecutive command need to be different)
Command type: 01 (Period)
Type 1 value: 3C00 (0100 LSB = 0x003C hex = 60mins)
Command type: 02 (baud rate)
Type 2 value: 80250000 (80250000 LSB = 0x2580 hex = 9600)
.....
Till type 08 value 00

RHF3M485 response the below command as acknowledgement

700503013c0002802500000300040805000600070108000900