

Setting up a new LoRaWAN® Connection

1. Establishing a provision from network partner / gateway receiver

- a. Plug in battery cable to LoRa board and connect to computer (verify with sound)
- b. Open TERA TERM
- c. Select the proper COM port
- d. Press "H" to bring up station menu
- e. Press "L" (Print LoRaWAN info)

```
MAIN MENU:  
  
1 - Print system info  
3 - Print all raw data of data memory  
4 - Print sensors configuration set  
5 - Sensor testing  
6 - Print all control registers of data memory  
7 - Print DataFlash memory organization  
8 - Make a new sensors configuration set  
A - Setup the measure/logging intervals  
  
L - Print LoRaWAN info  
P - Setup LoRaWAN parameters  
M - LoRaWAN bridge mode  
T - Test <force> data transmission  
Z - FW Upgrade
```

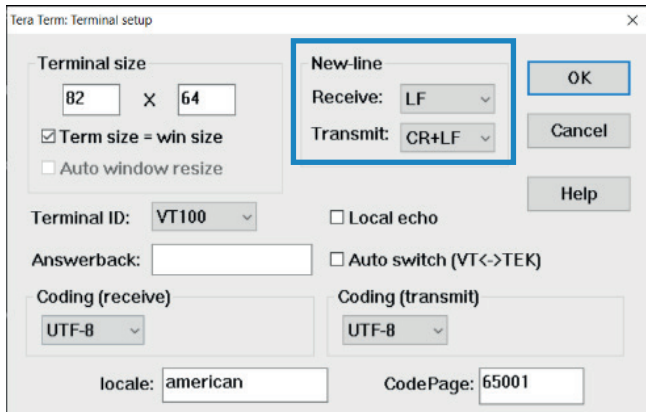
- f. Copy and paste the following information from the board and send to station administrator to get the proper provisioning from partner network

```
LoRaWAN module - System info:  
  
HW Platform:      RN2903  
ISM Band:        US902_928  
FW Version:      1.0.5 <105>  
FW Release:      Nov 06 2018 10:45:27  
Hardware EUI:    0004A30B00EAD534  
  
Device Address:  26022818  
Device EUI:      0004A30B00EAD534  
Application EUI: 70B3D57EF000676D  
Application Key: 776A2110C8AF85FF4F5110FFD51E9CBF  
  
Adaptive DR:     ON  
Uplink type:     UNCF  
Max. DT Retry:  2  
Join Retry:      2  
  
LoRa stack ver.: 1.01
```

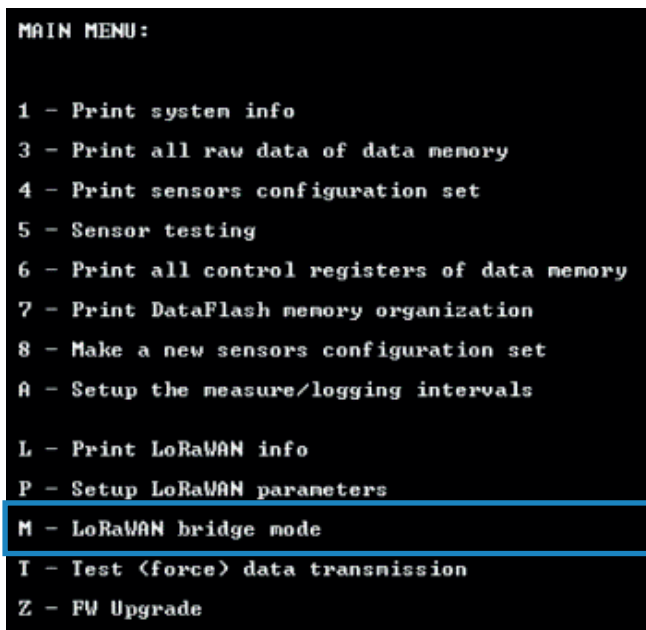
- g. Wait for confirmation that stations have been added to partner network before. CONNECTION WILL NOT BE POSSIBLE if they have not added the station information on their end

2. Setting up LoRa Configuration from Pessl Instruments side

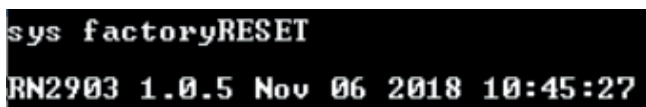
- Plug in battery cable to LoRa board and connect to computer
- Open TERA TERM
- Select the proper COM port
- On the top menu bar, select "Setup" -> Terminal
- Make sure the "TRANSMIT" tab is set to CR+LF



- Press "H" to bring up the main menu
- Press "M" to enter bridge mode

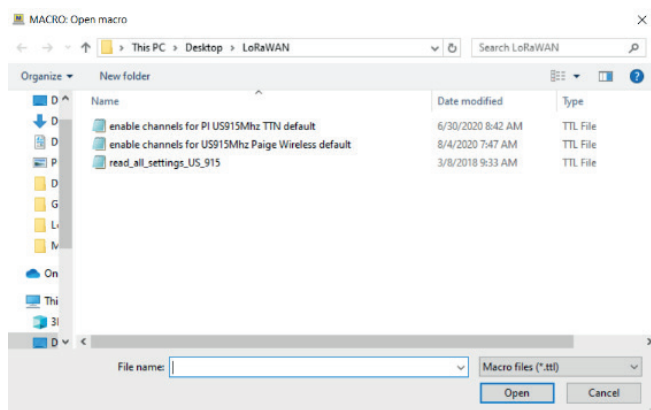


- Type "sys factoryRESET" and press enter (RN2903 indicates complete)



- Once complete, from the top menu bar, select "CONTROL" -> "MACRO"

j. Select the pre-created macro file for the network you are working with



k. This process will run through the configuration provided by network, shutting off and turning on the proper channels.

l. "mac save ok" will be the last line indicating that your macro has been successfully imported

m. Press "H" to bring up station menu

n. Press "T" to execute a system test --- if you are within range of network, it will connect

3. Installing New Sensors into a LoRa Board

- UNPLUG both the battery and solar panel from LoRa board
- INSTALL new sensors into proper inputs
- Plug in battery cable to LoRa board and connect to computer
- Open TERA TERM
- Select the proper COM port
- Press "H" for station menu
- Press "8 - make new sensor configuration"
- Press "Y" to execute new sensor configuration
- You will see this message when successful

```
Do you really want to make a new sensors configuration set? [Y - Yes / N - No]

New sensors configuration set:
AWS sensor config... restored!
Static data rewritten!
Done.
```

j. Press "H" for station menu

k. Press "4 - print sensors configuration set"

l. This will show you which sensors the board recognizes as being hooked up.

Chan.	S. Code	Full Name	Short	Unit	Size	LST	SUM	AU
G MIN MAX	TIM USE DIR							
	1 0x0007	Battery voltage	BATR	mV	2	X		
	2 0x001E	Solar Panel	SOLPN	mV	2	X		
	3 0x0300	Precipitation	PRECP	mm	2	X		
	11 0x0258	Solar radiation	SOLAR	W/m2	2		X	
X	17 0x01F1	HYT Air temperature	AIRTH	C	2		X	
X	18 0x0301	HYT Relative humidity	RELHH	%	2		X	
	53 0x4008	US Wind direction	WNDDR	Deg	2			
	54 0x4007	US Wind speed	WNDSF	m/s	2		X	
	55 0x4009	US Wind gust	WNDSG	m/s	2			

- m. Press "H" for station menu
- n. Press "5 - sensor testing"
- o. This will force the sensors to take a reading of the current conditions to ensure they are all working properly.

```

Sensor testing:

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Input	Full Name Of Sensor	Short	Value	Unit	Notes
	Battery voltage	BATTR	6399	mV	
	Solar Panel	SOLPN	0	mV	
	Precipitation	PRECP	0.0	mm	Pulse res
	Resolution = 0.2 mm, Counter = 268				
	Solar radiation	SOLAR	0	W/m2	
	HYT Air temperature	AIRTH	21.07	C	
	HYT Relative humidity	RELHH	55.6	%	
	1 US Wind direction	WNDDR	116	Deg	PI-Bus: D
	uty cycle = 748.2 Hz / 49.9 %				
	1 US Wind speed	WNDSR	0.0	m/s	PI-Bus: D
	uty cycle = 748.2 Hz / 49.9 %				
	1 US Wind gust	WNDSG	0.0	m/s	PI-Bus: D
	uty cycle = 748.2 Hz / 49.9 %				
	Done.				

- p. If all sensors are hooked up and properly working, press "T" to run a system test
- q. If you are in range of a gateway, you will see "mac join otaa - successful"
- r. Check FieldClimate site for data