

Deploying an End-to-End LoRaWAN Platform

Starting from September 2016, Saint-Joseph University of Beirut (USJ) will be deploying the first academic **LoRa** network in Lebanon. The network will support monitoring of micro-climate conditions in vineyards. Here below you can find a detailed description of the experimental platform implementing an end-to-end LoRaWAN solution.

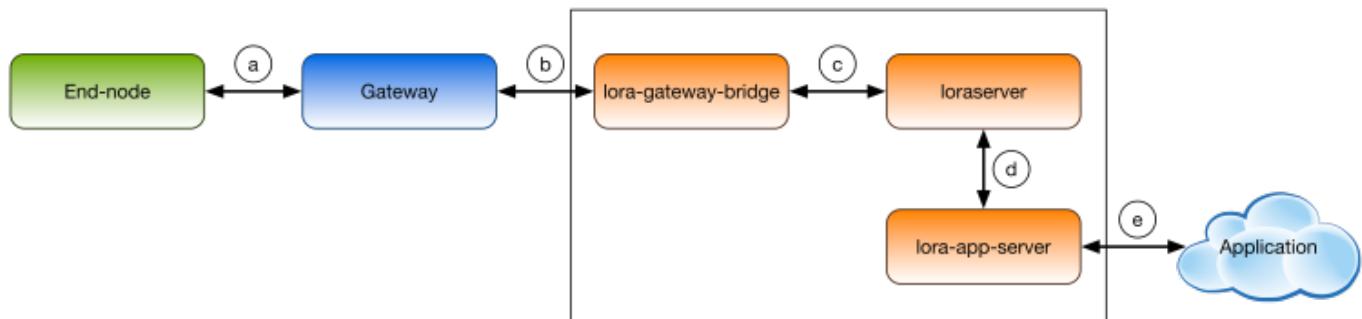


Figure 2. Architecture of the LoRaWAN Platform

- . End-nodes

- . Autonomo with LoRaBee

- . Arduino with Dragino Shield

- . Gateways

- . Single Channel Gateway

The single channel gateway includes a LoRa transmission module (the Dragino Shield) connected to a Raspberry Pi (2 or 3). The connection pins are identified in Figures 2 and 3. Communication is done on an SPI communication interface.

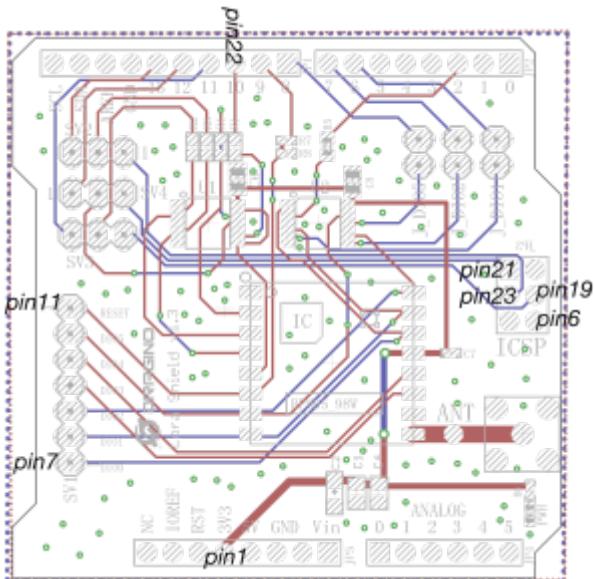


Figure 2. Dragino pin mapping

Raspberry Pi 3 GPIO Header		
Pin#	NAME	Pin#
01	3.3v DC Power	02
03	GPIO02 (SDA1 , I ² C)	04
05	GPIO03 (SCL1 , I ² C)	06
07	GPIO04 (GPIO_GCLK)	(TXD0) GPIO14
09	Ground	(RXD0) GPIO15
11	GPIO17 (GPIO_GEN0)	(GPIO_GEN1) GPIO18
13	GPIO27 (GPIO_GEN2)	12
15	GPIO22 (GPIO_GEN3)	14
17	3.3v DC Power	(GPIO_GEN4) GPIO23
19	GPIO10 (SPI_MOSI)	16
21	GPIO09 (SPI_MISO)	(GPIO_GEN5) GPIO24
23	GPIO11 (SPI_CLK)	18
25	Ground	Ground
27	ID_SD (I ² C ID EEPROM)	(GPIO_GEN6) GPIO25
29	GPIO05	22
31	GPIO06	(SPI_CE0_N) GPIO08
33	GPIO13	24
35	GPIO19	(SPI_CE1_N) GPIO07
37	GPIO26	26
39	Ground	(I ² C ID EEPROM) ID_SC
		28
		Ground
		30
		GPIO12
		32
		Ground
		34
		GPIO16
		36
		GPIO20
		38
		GPIO21
		40

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Figure 3. Raspberry pi 3 pins

- Kerlink IoT Station

- Backend

- Loraserver

- The Things Network

- Applications

- MQTT spy

- Emoncms

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