868 MHz

LoRaWAN
Gateway

Internet

THE THINGS
NETWORK

Web Hook

LoRaWAN
Class A
Device

DATACAKE

HTTP

hello.

Scale Weight: -800 to 800 Gram (14 Bit 0-16383)
Battery Voltage: 0-10 Volt (10 Bit 0-1024)
Temperature: -100 to 100 Degree Celcius (11 Bit 0-2048)

7			byte[0]				0
W	W	W	W	W	W	W	W

7			byte[1]				0
V	V	W	W	W	W	W	W

7			byte[2]				0
V	V	V	V	V	V	V	V

7			byte[3]				0
T	T	T	T	T	T	T	T
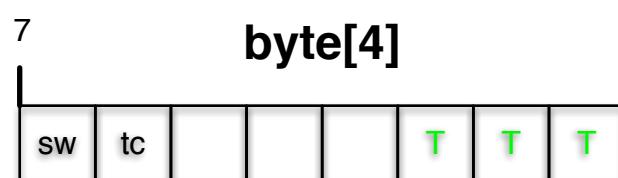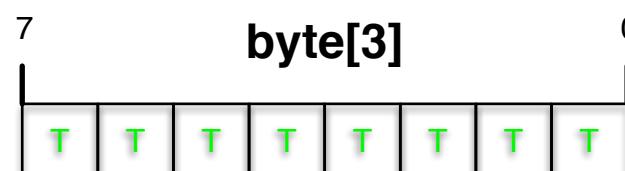
7			byte[4]				0
sw	tc				T	T	T

weight = ((byte[1] & 0x3f) << 8) + byte[0];
weight = (weight - 8192) / 10.0;

voltage = (byte[2] << 2) + ((byte[1] & 0xc0) >> 6);
voltage = voltage / 100.0;

temperature = ((byte[4] & 0x07) << 8) + byte[3];
temperature = (temperature - 1024) / 10.0;

Flag Bits:
sw = send weight on/off (boolean)
tc = temperature correction on/off (boolean)

- The hardware sleeps most of the time (average power consumption 2-4 uA).
- The hardware wakes up every 5 minutes and weighs the scale.
- If the measured weight delta is more than 5 Grams a LoRaWAN packet gets sent.
- If after one hour there has been no change in weight a LoRaWAN packet gets sent.

Down Link	Command	Description
0x01	set flags	send weight/temperature correction
0x02	offset	add or subtract to the offset (tare point) of the scale in Degree Celsius
0x03	coefficient	the temperature coefficient of the scale in Degree Celsius
0x04	save Configuration	save configuration to eeprom
0x05	reboot	reboot system (experimental)

Time on air and limitations for a full LoRaWAN packet of 18 bytes in EU868:

data rate	airtime	1% max duty cycle		fair access policy		
DR6 SF7 BW250	25.7 ms	2.6 sec	1,399 msg/hour	74.1 sec (avg)	48.6 avg/hour	1,166 msg/24h
DR5 SF7 BW125	51.5 ms	5.1 sec	699 msg/hour	148.2 sec (avg)	24.3 avg/hour	583 msg/24h
DR4 SF8 BW125	92.7 ms	9.3 sec	388 msg/hour	266.9 sec (avg)	13.5 avg/hour	323 msg/24h
DR3 SF9 BW125	185.3 ms	18.5 sec	194 msg/hour	533.8 sec (avg)	6.7 avg/hour	161 msg/24h
DR2 SF10 BW125	329.7 ms	33.0 sec	109 msg/hour	949.6 sec (avg)	3.8 avg/hour	90 msg/24h
DR1 SF11 BW125	659.5 ms	65.9 sec	54 msg/hour	1,899.2 sec (avg)	1.9 avg/hour	45 msg/24h
DR0 SF12 BW125	1,318.9 ms	131.9 sec	27 msg/hour	3,798.5 sec (avg)	0.9 avg/hour	22 msg/24h

See the airtime calculator for many more details and interactive results.