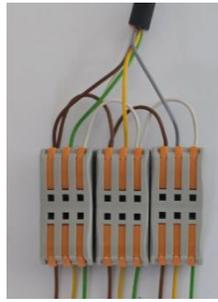


IoP-S-LA Quick Start (version with ratiometric output)

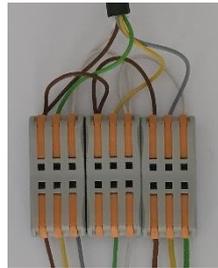


Close Jumper



↑ 1 ↑ 2 ↑ 3

Connect 3 Dendrometers, No



↑ Air ↑ Leaf ↑
LAT-B3 Dendro-
meter

Connect 1 LAT-B3 + 1 Dendrometer

Payload Decoder for IoP-S-LA analog LoRa nodes (specifically for TTN):**IMPORTANT NOTE ON DEFAULT UPLINK INTERVAL AND PAYLOAD LENGTH:**

In the pre-configured IoP-S-LA, the payload length is fixed at 13 bytes. For use in regions with restrictive payload limitations in DR0, such as e.g. US915, please contact us.

By default, an uplink interval of 15 minutes is configured (corresponding to the command AT+TDC=900000), which is recommendable for dendrometer measurements.

Please be aware of any applicable Fair Use Policy (e.g., in the case of TTN), which may still limit the air-time of LoRa end devices.

Test Payload with 3x analog sensors connected:

13 47 13 4c 13 47 30 ff ff ff ff **0e 44**

Bat_mV [mV]

ADC#1

ADC#2

ADC#3

Payload decoding:

The JavaScript decoder in page 3 converts the raw payload into Vbattery (mV) and ADC input ratios 0.1mV/V from 0 – 10,000. These ratiometric ADC values are then converted to micrometers.

By default, an 11,000 µm range dendrometer (e.g., DD-S2) is assumed. If a dendrometer with a different range is used, uncomment the corresponding conversion line in the code.

If a temperature sensor (e.g., LAT-B3 or T-series) is connected, comment out the micrometer conversion. To obtain °C, process the ratio using the Steinhart–Hart equation (see the sensor manual). This can be implemented either in the payload decoder or during post-processing in data analysis.

Decoded Result:

```
{
  "A_Bat_mV": 3652,
  "B_ADC_1_Input_ratio": 4935,
  "C_ADC_1_Input_dendrometer_11000um": 5428.5,
  "D_ADC_2_Input_ratio": 4940,
  "E_ADC_2_Input_dendrometer_11000um": 5434,
  "F_ADC_3_Input_ratio": 4935,
  "G_ADC_3_Input_dendrometer_11000um": 5428.5
}
```

TTN decoder:

A PDF version of this guide for copy-paste the decoder code can be found on the IoP-S product page on our website on the tab 'Documents':

<https://ecomatik.de/en/products/data-capture-and-measurement-systems/iop-systems-internet-of-plants/>

```
function decodeUplink(input) {  
  
    var data = {};  
  
    /***** Battery: *****/  
    data.A_Bat_mV = (input.bytes[11] << 8) | input.bytes[12];  
  
    /***** ADC input #1: *****/  
    data.B_ADC_1_Input_ratio = ((input.bytes[0] << 8) | input.bytes[1]) & 0x7fff;  
    data.C_ADC_1_Input_dendrometer_1100um = data.B_ADC_1_Input_ratio * 1.1;  
    // data.C_ADC_1_Input_dendrometer_2540um = data.B_ADC_1_Input_ratio * 2.54;  
    // data.C_ADC_1_Input_dendrometer_5080um = data.B_ADC_1_Input_ratio * 5.08;  
    // data.C_ADC_1_Input_dendrometer_15000um = data.B_ADC_1_Input_ratio * 15.0;  
  
    /***** ADC input #2: *****/  
    data.D_ADC_2_Input_ratio = ((input.bytes[2] << 8) | input.bytes[3]) & 0x7fff;  
    data.E_ADC_2_Input_dendrometer_1100um = data.D_ADC_2_Input_ratio * 1.1;  
    // data.E_ADC_2_Input_dendrometer_2540um = data.D_ADC_2_Input_ratio * 2.54;  
    // data.E_ADC_2_Input_dendrometer_5080um = data.D_ADC_2_Input_ratio * 5.08;  
    // data.E_ADC_2_Input_dendrometer_15000um = data.D_ADC_2_Input_ratio * 15.0;  
  
    /***** ADC input #3: *****/  
    data.F_ADC_3_Input_ratio = ((input.bytes[4] << 8) | input.bytes[5]) & 0x7fff;  
    data.G_ADC_3_Input_dendrometer_1100um = data.F_ADC_3_Input_ratio * 1.1;  
    // data.G_ADC_3_Input_dendrometer_2540um = data.F_ADC_3_Input_ratio * 2.54;  
    // data.G_ADC_3_Input_dendrometer_5080um = data.F_ADC_3_Input_ratio * 5.08;  
    // data.G_ADC_3_Input_dendrometer_15000um = data.F_ADC_3_Input_ratio * 15.0;  
  
    return {  
        data: data  
    };  
}
```