

cuplTag

Temperature logging NFC tag

1. Features

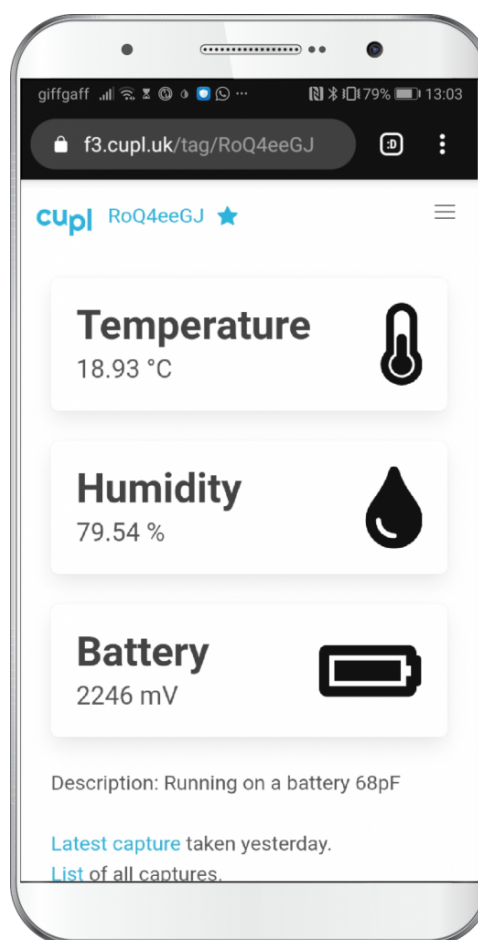
- One-step operation. Temperature and humidity appear automatically when cuplTag is tapped by an NFC phone.
- No need for a dedicated phone app.
- No installation for the end-user.
- No clocks to set. Relative timestamps.
- Programmable sampling rate.
- Samples are plotted on a graph.
- Sleep current: <math><500\text{nA}</math> at 25°C.
- Powered by a user-replaceable CR1220 coin cell battery.
 - Estimated life of 7+ years.
 - Voltage is recorded in the URL.
- Supports webhooks to integrate with existing enterprise applications.
- URL contains an HMAC to prevent spoofing. This is derived from a secret key, randomly generated for each cuplTag.
- Reusable and repairable. Open source hardware puts the user in control.

2. Applications

- Prevent mould growth by keeping relative humidity <math><60\%</math>.
- Houses and greenhouses.
- Cold-chain and long-term storage.



cuplTag



cupl® web application

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3. Description

cuplTag is a battery-powered data logger, which:

1. Wakes up every 10 minutes.
2. Measures temperature and humidity.
3. Base64 encodes the sample.
4. Writes the sample into a [circular buffer](#) within a [web address](#) (URL).

The URL is stored on a NFC-readable memory chip (EEPROM).

The user:

1. Scans the device with an NFC-capable phone (Android 9+ or iOS 13).

They will see a web page with the most recent temperature and humidity reading. Pressing either displays timestamped data in a graph and table, which is exportable to CSV.

cuplTag requires no configuration from an end user. **Tap for Temperature™**.

4. Specifications

4.1. Datalogger

	Min	Typical	Max	
Circular buffer capacity				
- Temperature only	-	-	376	samples
- Temperature & R.H.	-	-	188	samples
Log length where $t_s = 10m$				
- Temperature only	-	-	2d 16h	
- Temperature & R.H.	-	-	1d 8h	
Sample interval t_s	3	10	65535	minutes

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4.2. Antenna

NFC Tag Type 2.

	Min	Typical	Max	
Resonant frequency f_r	13.4	13.56	13.7	MHz
Read range from top of case	5	15	30	mm

4.3. Operating Conditions

	Min	Typical	Max	
Temperature	-10	-	55	°C
Relative Humidity	10	-	90	%

This product is not waterproof and is designed for indoor use only. Operation above dew point is not recommended.

4.4. Power

	Min	Typical	Max	
Current consumption	-	-	-	
- Standby @25°C,50%RH	-	-	500	nA
- Active @25°C,50%RH	-	-	1.3	mA
Voltage	2.3	-	3.3	V

Recommended battery: Renata CR1220 MFR 3V coin cell.

An error state will be entered when the battery voltage is too low.

5. Revision History

Version	Date	Author	Description
V1	16/05/21	MM	Preliminary datasheet
D3.7	09/09/21	MM	Updated

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