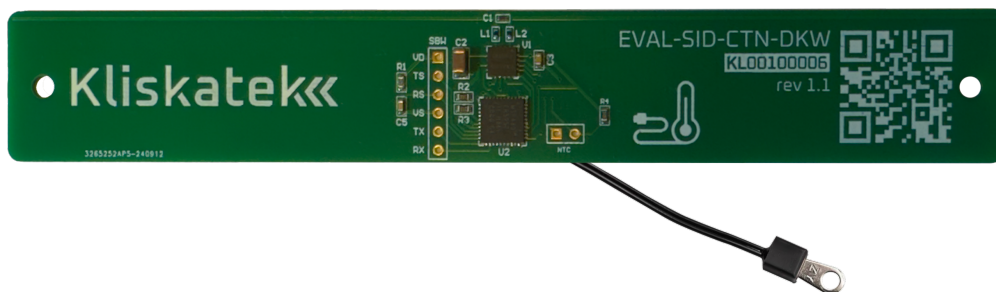

BATTERYLESS UHF RFID CONTACT TEMPERATURE TAG

Check for samples: [EVAL-SID-CTN](#)



FEATURES

- **Battery free**
- **Long passive operation range: 5m**
- **Compatible with EPC C1G2**
- **NTC Contact temperature sensor**
 - **Range: -30°C to 105°C**
 - **Accuracy: ±0.5°C**

DESCRIPTION

EVAL-SID-CTN is a wireless and battery free sensor tag that belongs to the SenselD (SID) family by Kliskatek. Built in a compact PCB format, the tag includes a contact temperature sensor based on an NTC probe.

These sensor tags are compatible with commercial EPC C1G2 readers. The SID family tags respond to standard EPC C1G2 inventory commands, no custom commands are needed. With a 2W ERP setup, the batteryless temperature sensor can communicate to over 5 meters – 16 feet.

EVAL-SID-CTN operates with EPC C1G2 UHF/ISO18000-6C RFID readers. The tag only responds to inventory procedures operating with BLF around 270KHz and Miller 4 modulation. No further C1G2 commands are supported (Read, Write, Lock, etc.).

Sensor data is encapsulated in the EPC. The tag harvests energy emitted by the reader, and whenever enough energy has been stored a new sensor measurement is triggered. The tag updates its EPC with the new data and responds to the next inventory round.

The structure of the EPC is as follows:



- H (1 byte): header byte to avoid conflict with standardized EPC formats 0x00.
- PEN (4 bytes): Kliskatek's Private Enterprise Number 0x0000F1D3.
- T (1 byte): tag type identifier 0x06.
- V (1 byte): tag version.
- SN (3 bytes): unique serial number.
- CTC (2 bytes): contact temperature code. Data formatted as uint16 little endian. This code is the ADC output of the resistance of the NTC probe. Use following conversion formula to get contact temperature:

First, get the resistance of the NTC thermistor:

$$R_{NTC}[\Omega] = \frac{CTC * 10^3}{4095 - CTC} \quad (1)$$

Then use NTC thermistor constants with the beta equation to get the actual contact temperature:

$$CT_{NTC}[^{\circ}C] = \frac{1}{\frac{1}{T_0 + 273.15} + \frac{\log\left(\frac{R_{NTC}}{R_0}\right)}{\beta}} - 273.15 \quad (2)$$

Where

- $\beta = 3950K$
- $T_0 = 25^{\circ}C$
- $R_0 = 10000\Omega$

As the sensor data varies, the EPC of the tag will change over time. The SN allows uniquely identifying the tag.

Note that the resulting data rate depends on the input power of the tag and ranges between one to several tens of samples per second.

CHARACTERISTICS

SYMBOL	PARAMETER	MIN	TYP	MAX	UNIT
RFID					
$r_{operation}$	Operation range full passive ¹		5		m
OPERATING CONDITIONS					
T_{OP_TOP}	Operating temperature range	-40		85	°C
AMBIENT TEMPERATURE SENSOR					
CT_{range}	Temperature range	-30		105	°C
CT_{acc}	Temperature accuracy		± 0.5		°C
$t_{response}$	Response time to 63.2%			9	s
L_{probe}	Probe length		300		mm

¹With 2W ERP setup

REFERENCES

The next table shows the available references of the EVAL-SID-CTN.

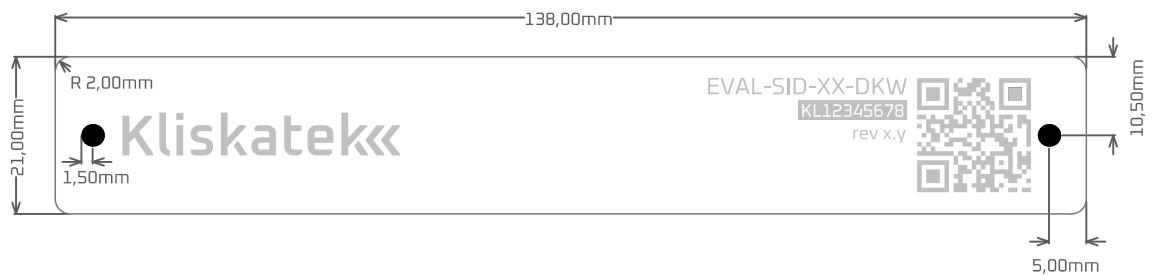
Ref.	Name	Description
KL00100006	EVAL-SID-CTN-DKW	EVAL-SID-CTN, dipole wideband antenna, PCB format

For custom references with other antennas and housings, please contact us at sales@kliskatek.com.

MECHANICAL DIMENSIONS

DKW

2D VIEW



3D VIEW

