

PRODUCT DATASHEET

Confidex Temperature Monitoring label™



Battery assisted passive UHF RFID tag for cold chain monitoring applications. This disposable label is capable to monitor storage and transportation temperature of perishable goods such as fresh food, pharmaceuticals or sensitive chemicals.

ELECTRICAL SPECIFICATION

Device type

Battery assisted passive UHF RFID transponder

Air interface protocol

Class 3 Gen 2 that is compliant with:

- ISO 18000-6C
- EPC™ Gen2 / EPCGlobal Class 1Gen2
- ISO 18000-6D (TOTAL)
- AIAG™ B-11
- ATA Spec 2000 Low memory tag compliant

Operational frequency

EU 865 - 869 MHz

US 902 - 928 MHz

IC type

EM4325

Memory configuration

EPC 352 bit; User memory 3072 bit; TID 48 bit

EPC memory content

Unique number encoded as a default

Read range (2W ERP)*

Up to 40 m / 130 ft in the maximum battery-assisted mode. In the battery-assisted mode, there are several read range levels to select. Passive mode selection available.

Applicable surface materials*

Any non-metallic surface

* Read ranges are theoretical values that are calculated for non-reflective environment, in where antennas with optimum directivity are used with maximum allowed operating power according to ETSI EN 302 208 (2W ERP). Different surface materials may have an effect on performance.

MECHANICAL SPECIFICATION

Tag materials

White synthetic face layer

Weight

3 g

Delivery format

Single

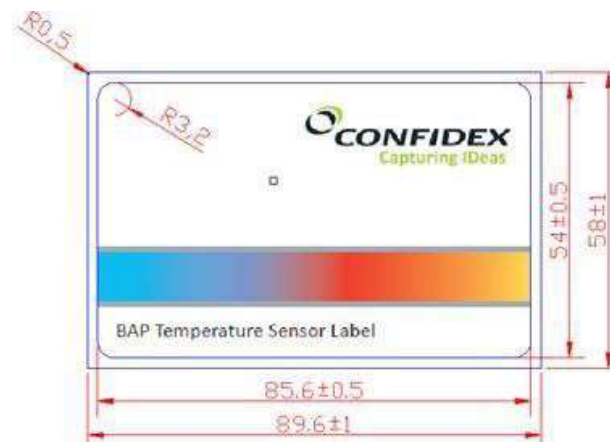
Amount in box

45 pcs

Dimensions

Credit card size:

85.6 mm x 54 mm x 0.8 mm / $3\frac{3}{8}$ in x $2\frac{1}{8}$ in x $\frac{1}{32}$ in



ENVIRONMENTAL RESISTANCE

Operating temperature

-30°C to +64°C / -22°F to +147°F

Ambient temperature

-30°C to +64°C / -22°F to +147°F

Weather ability

Tolerates normal cold chain conditions

Expected lifetime

3 months in typical use

Expected shelf lifetime

1 year at room temperature (21°C)

Storage at 0°C ... 5°C will prolong the shelf life

Values in the table are the best recommendations; resistance against environmental conditions depends on the combination of all influencing factors, exposure duration and chemical concentrations. Thus, product's final suitability for certain environmental conditions is recommended to be tested. Contact Confidex for more specific information.

PERSONALIZATION OPTIONS

Electrical personalization

Tag memory can be encoded with variable customer specific data.

Visual personalization

Customer specific full-color artwork

Customer specific visual printing (barcodes, human readable text, etc.)

TEMPERATURE MONITORING SETTINGS

Custom sensor and simple sensor

The temperature monitoring label can be used with custom parameters in the custom sensor mode, and ISO/IEC 18000-6:2010 specified temperature sensor formats are available in the simple sensor mode.

Simple sensor settings

In the simple sensor mode there are two temperature ranges available, +14°C and +28°C. The center temperature can be selected from eight alternatives. Other user selectable parameters are e.g. sampling accuracy ($\pm 0.5^\circ\text{C}$ / $\pm 1^\circ\text{C}$ / $\pm 2^\circ\text{C}$), sampling frequency (16 options in the range from 5 minutes to 8 hours), high and low temperature limits in the selected temperature range and how many consecutive limit exceeding samples are required to trigger an alarm.

Custom sensor settings

The custom sensor settings are similar to the simple sensor settings but with less limitations. The temperature measurement range available is from -40°C to $+60^\circ\text{C}$. User adjustable parameters are e.g.:

- high and low temperature limits
- sampling interval
- how many consecutive temperature limit exceeding samples are needed to raise an alarm
- monitor delay that defines when the first measurement will be performed

MONITORING

Storing in inactive mode

Labels are delivered in inactive mode (battery disconnected to prolong battery life) so minimal initialization is tag activation. Activation enables BAP-mode as well as monitoring capabilities. Initialization is done with RFID reader by writing specific configuration registers.

Initialization

Confidex Temperature Monitoring Label™ needs to be initialized before attaching to monitored item. Initialization includes for example setting the desired temperature limits, setting label clock, setting measurement interval, defining monitoring start delay, etc.

Monitoring

During monitoring phase, label will measure temperature independently with desired interval. If predefined upper limit or lower limit is violated longer than accepted, a time stamp and violation length is stored to label memory and an alarm is raised. The alarm condition will stay until the user resets the alarm. This allows users to detect the interruption point in a cold chain with any commercial UHF RFID reader anytime during transportation and storage.

Accuracy

Typical accuracy is $\pm 1^\circ\text{C}$ over the full range and $\pm 0.6^\circ\text{C}$ over the ISO range for cold chain applications.

INSTALLATION INSTRUCTIONS

Polarization of Confidex Temperature Monitoring Label™ is according to its longest dimension.

Ideal installation conditions are $+20^\circ\text{C}$ ($+68^\circ\text{F}$) / 50% RH. For exceptional conditions, please contact Confidex. Bond strength can be improved with firm application pressure. Always ensure clean and dry surface for obtaining the maximum bond strength.

During attachment to the identified item, please avoid touching the background adhesive. If the location on the asset needs to be changed, please use a new tag instead of re-placing the used one; the adhesion will suffer from the re-placement.

Minimum bending diameter of the Confidex Temperature Monitoring Label™ is defined to be 30cm. Do not bend the label above the limit. Never touch on the location of the IC.

ORDER INFORMATION

Product number: 3000499

Product name: Confidex Temperature Monitoring Label™ EM4325

Product number: 3001160

Product name: Confidex BAP Kit ETSI

Product number: 3001173

Product name: Confidex BAP Kit FCC

For other versions, additional information and technical support contact Confidex Ltd.

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