

## LoRaWAN™ CELS'O SENSOR



The CELS'O sensor measures the temperature of sensitive products in order to control and respect the cold chain in the agrifood and transport sectors. It relays the measures through a LoRaWAN™ public or private network.

### APPLICATIONS

- Supervision of the ambient temperature in the refrigerating and climatic chambers in the agrifood and transport sectors
- Applications: Fridge, freezer, refrigerated vehicles and refrigerated containers
- Sharing information through the Cloud

### BENEFITS & KEY FEATURES

- LoRaWAN™, Class A
- Easy to use and deploy
- >7 years autonomy based on 4 measures an hour and 1 transmission per hour
- Historization (and data storage) of 30 days of temperatures measured every 60 minutes.
- Temperature measure
  - ✓ Range : -30°C / +35°C
  - ✓ Accuracy: +/-0,5°C
  - ✓ Resolution: 0,1°C
- Data compression for batch report
- IP66

### QUALITY & RELIABILITY

- RoHS compliant
- CE Compliant



The CELS'O SENSOR from nke Watteco measures the temperature of refrigerating and climatic chambers in the agrifood and transport sectors. The data transmission through a public or private LoRaWAN™ network is carried out periodically. In case of alarms, the temperature is instantaneously transmitted to the distant server.

The CELS'O sensor is easy to use, deploy and maintain thanks to the magnetic switch and associated LED indicator to activate/de-activate the sensor.

The temperature data can be locally stored, concatenated and compressed before the transmission on the LoRaWAN™ network. This transfer technique significantly reduces the amount of data transmission. It increases the autonomy of the sensor and reduces the subscription costs.

The memory capacity of the CELS'O'S SENSOR enables to locally store 30 days of data on the basis of 1 measure per hour.

Powered through a Lithium battery, it allows an autonomy superior to 7 years when measuring 4 times per hour and transmitting data one time per hour.

### NKE WATTECO, YOUR PARTNER IN SMART SENSORS & ACTUATORS

We are a European leader in designing and manufacturing highly reliable and low power consumption smart sensors, actuators and multiprotocol remote data solutions.

nke Watteco is an adopter member of the LoRa® Alliance

© nkeWatteco - Head Quarter: rue Gutenberg, ZI Kerandr  , 56700 Hennebont, France - Tel: 33 (0)2 97 36 10 12

Paris Office: 33, rue Pierre Marin, 91270 Vigneux sur Seine, France - Tel +33(0)1 69 52 28 31

For further information, please contact us: [info.watteco@nke.fr](mailto:info.watteco@nke.fr) - [www.nke-watteco.com](http://www.nke-watteco.com)

## TECHNICAL CHARACTERISTICS

RF TRANSCEIVER	
Frequency (MHz)	EU: 863-870
Transmit Power (dBm)	+14
Receiver Sensitivity (dBm)	-140
FIRMWARE	
Protocol	LoRaWAN™, Class A
Measure cycles	15 mn default setup, reprogrammable from distant server
Transmission cycles	60mn default setup, reprogrammable from distant server
Time stamping	Each measurement is time stamped
Local storage	up to 30 days storage capacity assuming one temperature measurement is stored every 60mn. Temperature is stored at +/- 1 °C
Data compression	Yes (differential coding) or no
Activation method	Activation by Personalization (ABP) Over-The-Air Activation (OTAA)
Data encryption	AES128
Transmission of battery tension	Every 7 days default setup, reprogrammable from distant server
TEMPERATURE MEASURE	
Range (°C)	-30°C / +35°C
Accuracy (°C)	+/- 1°C within a -30°C +9°C temperature range +/- 0.5°C within a +9°C +35°C temperature range
Resolution (°C)	+0,1°C
POWER	
Power supply	3,6V / 3600mAh lithium battery
Autonomy within a +10°C to +25°C temperature range	> 7 years
INTERFACE	
LED Indicator	Network pairing & configuration
Magnetic switches	Reset, ON/OFF
NFC Tag / QR Code	Product number, serial number, batch number
Remote probe (option)	14 or 200 cm cable length
ALARMS	
Temperature	Immediate transmission on a +/-5°C variation between measurements (defined by network)
MECHANICAL FEATURES	
Dimension (mm)	100x100x25 (thickness)
Installation	Dual-sided adhesive, or screw (non furnished)
IP Class	IP66
Fire protection	UL94-V0BH
ENVIRONMENTAL	
Operating temperature (°C)	-40°C/+40°C temporarily
Storage	+10°C / +30°C ; +20%rH / +60%rH
DIRECTIVES & STANDARD	
EN, 61000-4-2 EN 300-220-1 V2-4-1, EN 301 489 V1-6-1 CE, RoHS recommendation compliant	



## ORDERING INFORMATION

REFERENCE	MODEL DESCRIPTION
50-70-049	LoRaWAN™ CELS'O SENSOR, EMBEDDED PROBE
50-70-096	LoRaWAN™ CELS'O SENSOR, REMOTE PROBE WITH 14CM CABLE
50-70-097	LoRaWAN™ CELS'O SENSOR, REMOTE PROBE WITH 200CM CABLE