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LGG43 - Logger with CO2 sensor Product Specification

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Revisions

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1 Introduction

Object : Define the product specifications in term of technical characteristics, physical dimensions, aperture, accessories and casing.

Product: PFPN-LGG43-001

Temperature, humidity, CO2, air pressure.

2 Summary of the product functioning

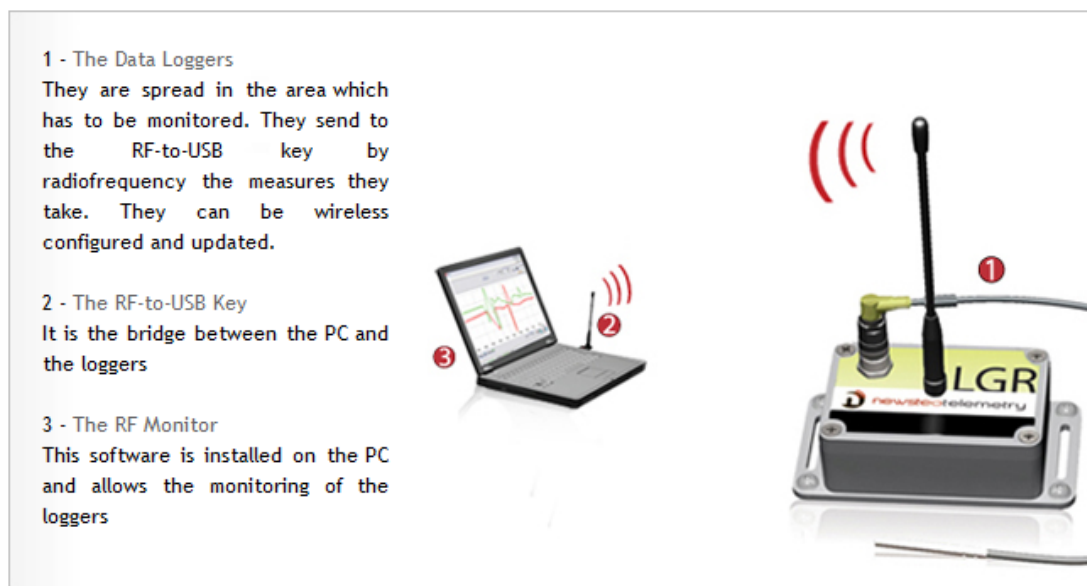


Figure 1: Functioning

The loggers can be used in two different modes:

- **Monitoring** (real time monitoring applications): the logger sends in real time its measurements to the PC. If a measurement is not received by the PC, it stores it inside its internal memory and sends it to the PC on the next communication channel
- **Record / Restitution** (a posteriori monitoring): the logger records in its embedded memory the measurements it takes. The user can download on the PC all the stored measurements when he wants.

2.1 Functioning details

The product is delivered with a battery inserted, in hibernate mode. This mode enables to save the battery.

1. To wake the logger up :
 - a. Pass 3 times the magnet on the ILS zone. The LED blinks RED, then ORANGE and finally GREEN.
 - b. The user does not need the RF Monitor software for this step.
2. The product starts to take measures and to store them with the frequency defined by default (10 minutes).
3. At the end of the campaign, the user has to:
 - a. Download immediately the data OR

- b. Put the product in hibernate mode. Pass 3 times the magnet on the ILS zone. The LED blinks RED, then ORANGE and finally GREEN. To download the data, the user must wake the logger up and then initiate the download.
4. After the data downloaded, the user erases them.
5. Then, if there is no need for a new campaign, the user must put the product in Hibernate mode to save the battery.

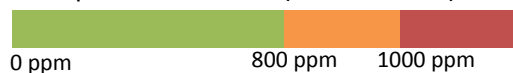
2.2 LED functioning

The LED flashing light can be activated or disabled via RF Monitor software.

The colour of the LED flashing light is associated with the CO2 measurement. It enables the user to see the alerts directly on the logger (only for CO2 thresholds).

The CO2 over threshold alerts can be customizable via RF Monitor software. 2 over threshold alerts are available: pre-alert and alert.

Example of thresholds (customizable):



1. LED Status

- i. When the user passes the magnet on the ILS zone :
 1. The product is not on the over threshold alert : GREEN Blinking x 5
 2. The product is on the over threshold pre-alert : ORANGE Blinking x 5
 3. The product is on the over threshold alert : RED Blinking x 5
- ii. Every minute¹ :
 1. The product is not on the over threshold alert: GREEN Blinking x1, very brief
 2. The product is on the over threshold pre-alert: ORANGE Blinking x1, very brief
 3. The product is on the over threshold alert : RED Blinking x1, very brief

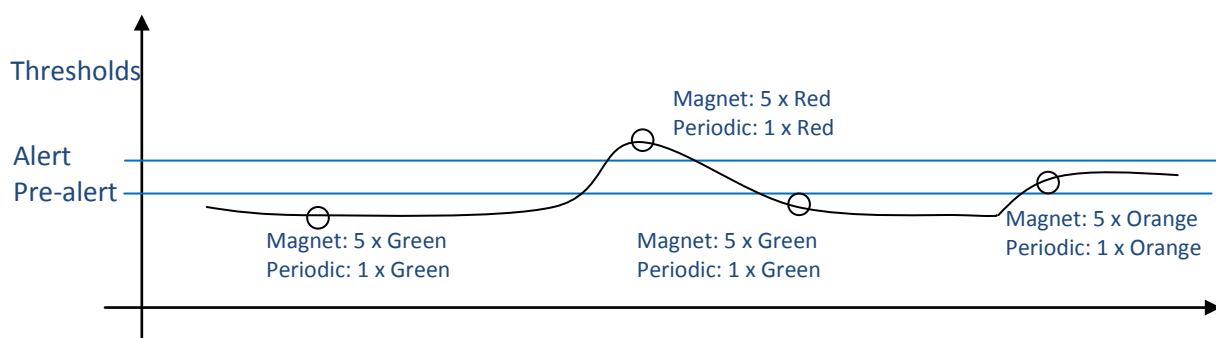


Figure 2: LED Status

¹ Flashing frequency to set up according to the power supply autonomy

2.3 Calibration

The product is delivered calibrated by Newsteo.

3 Technical characteristics

3.1 Sensor characteristics

The sensor is not exchangeable because it is welded to the circuit board.

3.1.1 CO2 Measurement

Characteristics	Logger LGG43
Sensor technology	Non-dispersive infrared (NDIR) absorption
Range	0 ... 5000 ppm
Accuracy	+/- 50 ppm +/- 3% of reading

3.1.2 Temperature Measurement

Characteristics	Logger LGG43
Range	- 25°C ... 55°C
Accuracy	+/- 1°C (from 0 to 55°C) +/- 2°C (the full range)

3.1.3 Humidity Measurement

Characteristics	Logger LGG43
Range	0 ... 95% RH
Accuracy	+/-3% (from 20 to 50°C) +/-5% (full range)

3.1.4 Air pressure Measurement

Characteristics	Logger LGG43
Range	300hPa ... 1100hPa
Accuracy	700->1100hPa from 0 to 65°C +/-1.0typique, +/-2.5hPa max
Resolution	+/-0.01 hPa
Accuracy long term drift (1 year)	+/-1.0hPa
Maximum Absolute air pressure	10 000hPa

3.1.5 IP Level

Characteristics	Logger LGG43
IP level	IP30

3.1.6 Power supply / Autonomy

Without LED, the product reaches 5 years autonomy:

- 1 radio data download a day
- Product functioning 5 days a week, during 52 weeks
- Recording a measure every 10 minutes, the recorded measure is an average from 2 to 4 measures taken during these 10 minutes.
- Disabled LED

Characteristics	Logger LGG43			
Delivered battery	1 Lithium Thyonile A with cables and JST connector (delivered by default in Hibernate mode) 1 battery support with blades connection enabling the use of AA or LR6 batteries: 1.5 V alkaline			
Autonomy @ 25°C	Estimation A measurement every 10 minutes			
	Battery type	No led signal	led signal every 10s	led signal every 2s
	A Lithium Thyonile	5 years	6 months	20 days
	AA primary alkaline 1.5V	2 years	3 months	10 days

Note : The batteries power depends on the brand and the quality chosen.

3.1.7 Antenna and radio range

Characteristics	Logger LGG43
RF Connector	SMA connector
Antenna	1/2 wave antenna (included)
Radio range	100m to 1Km, depending on the antenna used on the reception side

3.1.8 Other features

Characteristics	Logger LGG43
LED	1 LED Red/ Orange / Green
Embedded Memory Capacity	32 256 timestamped measurement blocks (T, H,Air Pressure, CO2) With 1 measurement every 10 minutes, 224 days of memory autonomy.
Frequency	Customizable from 1 measurement per minute to 1 measurement every 4 hours
Timestamp Resolution	1s
Clock time drift	+/- 2 min/month @ 25°C
ILS	Magnet sensor integrated for user actions : <ul style="list-style-type: none">- Wakeup of the product in hibernate mode- Take of a measure outside of the frequency measure set- Alert display

3.1.9 Factory settings

The product will be delivered with the features below:

- Hour of Paris Time zone
- LED activated
- Measurement Frequency : 10 minutes

3.2 Casing Specification



Figure 3: Casing

Characteristics	Logger LGG43
Dimensions	Casing dimensions Width : 100.90 mm Height : 22.25 mm Depth : 51.40 mm

3.3 Certification

Products certified for radio use in Europe, on the frequency of 868 MHz (ISM band, Short Range Device ; Cf. *Annexe 1* for details). For use in another area, check with local authorities.

Annexe 1. Newsteo Radio Technology Specification sheet

The Newsteo products communicate on the **ISM 868 MHz bands**. The ISM bands (industrial, scientific, and medical) are frequencies which can be used freely for industrial, scientist and medical applications in Europe. The Newsteo technology enables a high range of communication with a high autonomy.

Newsteo wireless technology characteristics

Frequency	<i>868 MHz (Europe)</i>
Available channels	<i>12 channels from 865.2 to 869.6 MHz</i>
Carrier spacing	<i>400kHz</i>
Modulation width	<i>100kHz per channel, i.e. +/-50kHz</i>
Bandwidht	<i>50 Kbits/s</i>
Modulation	<i>Modulation GFSK with Manchester encoding</i>
Protocole type	<i>Bidirectional Owner Protocol with "LBT" technique: Listen Before Talk</i>
Transmitter nominal power	<i>10mW (+10dBm)</i>
Available power at the SMA connector	<i>+6.6dBm</i>
Emitted radiated power (ERP) with 1/4 wavelength antenna	<i>+3dBm i.e. 2mW (standard permission : +14dBm i.e. 25mW)</i>
Sensibility reception	<i>-100dBm</i>
Range with ¼ wavelength antenna	<i>Up to 1km</i>
Bandwidth occupation	<ul style="list-style-type: none"><i><1% for a standard using (record/presence/buffer)</i><i>During data downloading : 60% of LBT</i>
ISM Standard	<i>European norm REC0073 in g, g1, g2 and g3 categories</i>