Device

The LAST Series is a range of IoT devices intended for variables logging and supervision of assets. They allow, for example, the temperature loging of medicines, food, equipment and any other kind of asset, commercial and industrial system.

The LAST series and was developed with focus on temperature logging and long battery life. It can be used in different scenarios in the cold chain of foods, beverage and medicines, covering the production, logistics and storage of goods.

LAST devices can be configured to send Bluetooth beacon messages in a periodic behavior (called log) or when is detected a specific condition (called alarm). These messages can be read by a mobile device, using dotsApp (Coldtrack) or by Ayga gateways.

Additionally, LAST acts as a data logger and the stored data can be accessed directly in a PDF format through USB or Bluetooth interface.

The available variables are:

- Temperature measurement, internal or external probe;
- Humidity measurement;
- Motion detection- Using a 3-axis accelerometer, LS devices are able to count motions and log when the motion was detected (useful for mechanical shock detection log);

Main features of LAST:

Image TBD	• Temperature and humidity monitor and data logger. • Internal and external temperature; • Motion sensors. • Long life battery. • Remote parameterization. • Compatible with the AYGA Coldtrack/dots platform. • Compact size. • Up to IP67 class. • High level of flexibility intended for different applications. • Compact dimensions.

Product code	Mechanical case	Description
LS1-010/2-8	Soft plastic	Single use device - fixed temperature range of monitoring (2 to 8°C) with local storage log.
LS1-010/C	Soft plastic	Single use device - configurable temperature range of monitoring with local storage log.
LS2-020/15-30H	IP20 case	Single use device - fixed temperature range of monitoring (15 to 30°C) and humidity with local storage log.
LS2-020/C	IP20 case	Multi use device - configurable temperature and humidity range of monitoring with local storage log.
LS3-030	IP67 case	Multi use device - configurable temperature and acceleration range of monitoring with local storage log.

Compatible products

AYGA dots platform is fully compatible with LS devices and is an extremely easy and powerful way to deploy LS devices.

Examples of usage

The LS devices are intended for the supervision of assets without electrical interconnection, using only its own sensors to check temperature, humidity and motion or vibration. Power is provided exclusively by the internal battery.

The devices are highly configurable, serving a wide range of applications, such as:

- Temperature/Humidity monitor and data logger.
- Indoor tracking.
- Supervision of vaccine coolers and thermolabile drugs.
- Supervision of equipment such as welding machines, diesel power generators, cranes, conveyor belts, commercial water filters, among others.
- Supervision of cold chain equipment, refrigerated containers, cold rooms, coolers and freezers.

Interfaces

LS has different interfaces ranging from a simple LED to data visualization in cloud platform. All possibilities of interfaces are described in this chapter:

Status LED

LS has a status LED used for indicating the following condition:

- Turned/off -> Device is not running;
- Flashing green LED -> Device is running and during the entire span of time there isn't found any out of range condition (temperature, humidity and vibration);
- Flashing red LED -> Device is running and at least one out of range condition was found;
- Flashing yellow and green -> Device is running but it is not storing data for PDF generation, no out of range condition was detected;
- Flashing yellow and red -> Device is running but it is not storing data for PDF generation, at least one out of range condition was detected;
- Steady yellow -> USB or Bluetooth communication is running.

Status on App

LS broadcast the same status indicated by Status LED using Bluetooth beacon messages. For accessing Status on App, dotsApp (Coldtrack) must be installed. With dotsApp (Coldtrack) running, please press in Scan for checking the status of surrounding devices.

Compared to Status LED, Status on App has the following advantages:

- Accessing status with no direct visual contact. For example: checking status of a internal temperature previously to open the box it is possible
- Indication of time out of range and temperature limits

PDF file on USB

LS generate internally a PDF file with the following information:

- General status: No out of range or at least one out of range.
- Temperature and humidity chart.
- Maximum, minimum, and average temperature and humidity.
- Time stamp of motion detection.
- Log values.

For accessing the PDF file, please connect a USB cable to BT1. And access directly from a PC/Notebook.

PDF file on App* (this feature will be launched in further product version)

The same PDF generated by LS can be read directly by dotsApp (Coldtrack) using Bluetooth. In this case it is not required to have a USB connection. The dotsApp (Coldtrack) can forward to a pre-defined group of e-mails.

Dots platform* (this feature will be launched in further product version)

The dots platform allows more complex data analysis, alarm generation and correlation with assetIDs. The dots platform receives data from LS thought two different methods:

- Smartphone with dotsApp (Coldtrack) installed, or by
- Ayga gateways installed near LS devices.

Product features

General features

Feature	LS
IoT interface	Bluetooth
USB	Yes, for LS 1-0xx devices
Internal temperature sensor	Measurement range: -20 to 60°C Resolution: 0,1°C Precision: += 0.5 °C
Motion sensor	Maximum acceleration: +- 16 g Maximum update rate: 200 Hz
Battery monitoring	Yes
Real time clock	Yes, for precise log
Battery	Battery lasting up to 5 years, depending on parameterization. The battery is replaceable for multi-use devices (BT1-1xx and BT1-2xx)
Status LED	Yes
Status on App	Yes
PDF file on USB	Yes
Remote parameterization	Yes, for configurable devices
Certification	Anatel, FCC*, CE*
Operation temperature	-20 à 65°C
Mounting[2]	Double side tape for multi-use devices
Dimensions	TBD
Weight	TBD
IP level	IP67 - s
AYGA dots compatible	Yes