

# ISURLOG Compact

On-the-cloud Self-powered  
wireless sensors access point



**ISURLOG Compact** IIoT data logger is based on the cutting-edge SP-IIoT-SAP (Self Powered Industrial Internet of Things Sensor Access Point) technology, offering the next outstanding features:

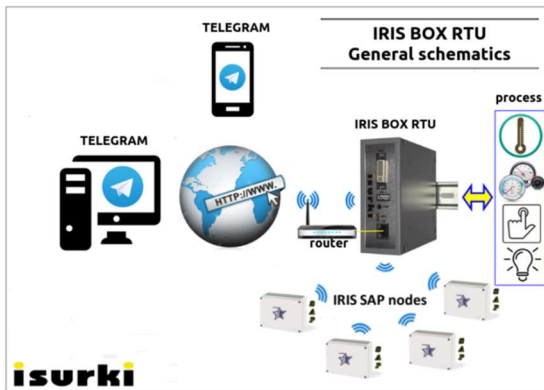
- Integrates as a **node of a LoRa network** into the Internet of Things environment.
- Provides constant information on sensor parameters and connected device statuses.
- Allows **remote configuration**, from either local wifi or internet, of the device's operating parameters.
- *WhatsApp* and *Telegram* real time messaging of **alarms and diagnostics**.
- **On-the-cloud data logging** uploading and downloading, thus allowing the user the analysis and optimizations of the controlled infrastructure.
- **User friendly interface to third party devices**, (PLCs, controllers etc) by means of **MQTT protocol**.
- **Embedded atmospheric and air quality sensor** as an option.

**ISURLOG Compact** is based on **SP-IIoT-SAP** (*Self Powered Industrial Internet of Things Sensor Access Point*), therefore standing out for:

- Using Energy Harvesting / rechargeable batteries for the supply of the unit.
- Allowing the data monitoring and device management from/to any smart device.
- Wireless access point to any 4/20 mA sensor.
- Cloud based uploading of the logged data.
- The use of WiFi and LoRa connectivity.



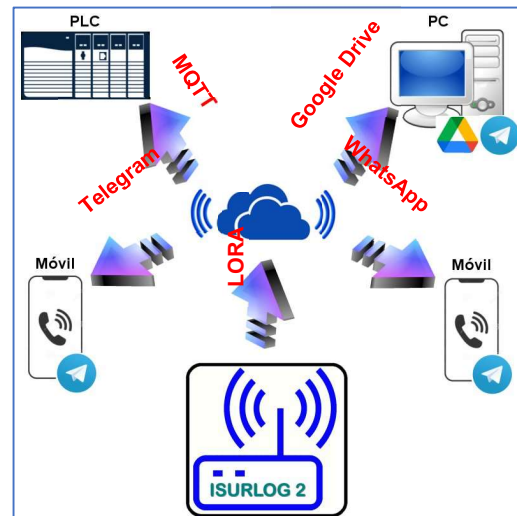
**ISURLOG Compact** deployed unit remotely monitoring flow and temperature on a hot water distribution network with LoRa comms.



**ISURLOG Compact** may be deployed as either stand-alone units or as a decentralized distributed periphery of the IRIS IIoT ecosystem (i.e., as a wireless sensor access point of the IRIS BOX RTU neural network controller and gateway, providing remote access to a wide geographical area), featuring an unlimited programming capability.

**ISURLOG Compact** uploads logged data files to the cloud on a user-configurable interval, ranging from 1 up to 1440 minutes.

Logged data files are Google Drive accessible in a .csv format, thus providing direct importation from any datasheet application.



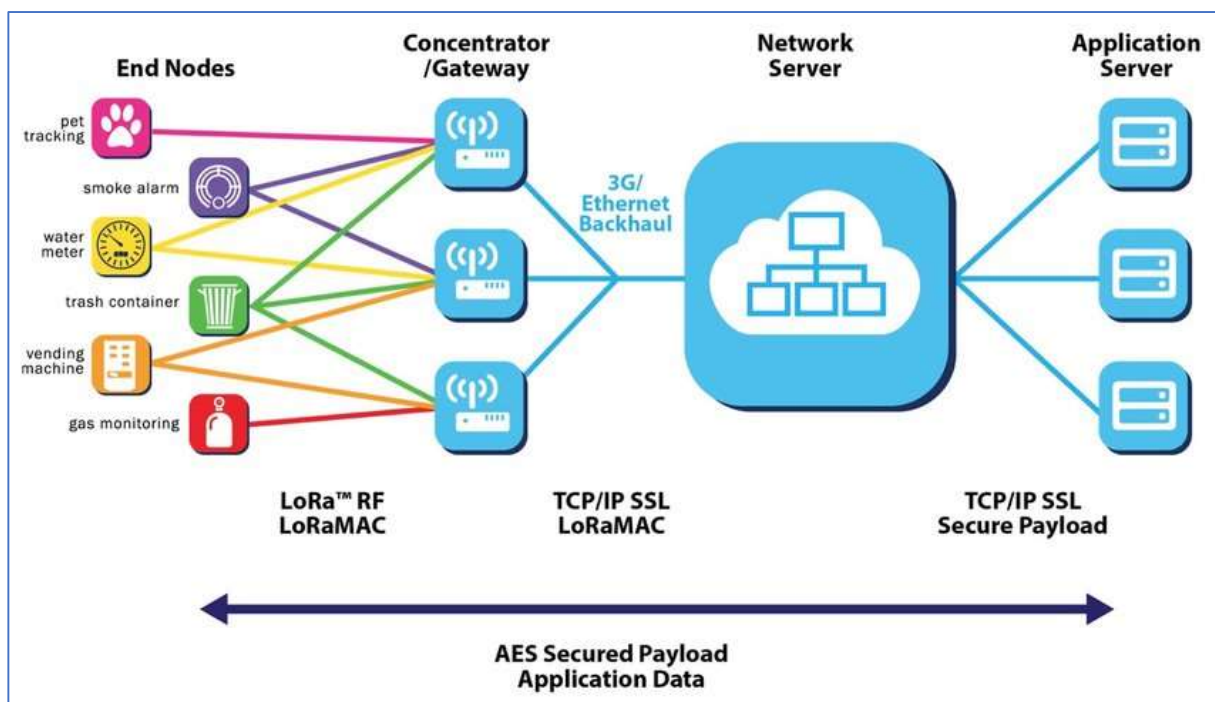
**ISURLOG Compact** features user-friendly configurable MQTT links to third-party industrial automation devices, such as PLCs, PCs, controllers etc automatically transmitting ASCII strings containing the last logged parameters' values (*date;time;parameter;batteryLevel*).

## LoRa

LoRa is a long-range licence-free radio communications infrastructure that entirely fits the requirements of the IIoT ecosystem, featuring:

- ✓ **Ultra-low power consumption.**
- ✓ **Long range.**
- ✓ **Licence and access free.**
- ✓ **Low cost of investment.**
- ✓ **Easy to deploy.**
- ✓ **High data security.**

Any Lora module/node requires a LoRa gateway for access to the internet, in the way that a traditional personal computer needs a gateway as an interface between the local area network and the internet. Both the node and the gateway must be registered in one of the currently existing network servers like [The Things Network](#), [Helium](#) or [ChirpStack](#). These servers channel the data traffic towards a cloud base data host like Google Drive, Azure, AWS... from where the user can either directly download the logged data by the **ISURLOG Compact** registered unit or run other related apps (see ↴). The basic execution of the **ISURLOG Compact** requires the optional LoRa module to be attached to become a LoRa node.



Beyond the on-the-shelf ready-to-use standard product, ISURKI provides the user with excellence-based support for the customization of any particular applications in the case the standard OSS software does not fulfil the customer's requirements, including tailored software solutions and on-site commissioning, thus delivering turn-key projects seizing our engineering skills.

For these locations in which a LoRa link is unavailable, ISURKI's NB-IoT based **ISURLOG-2** series provides LTE mobile network communications. Both LoRa and LTE based units can coexist within the same **IRIS-IIoT** ecosystem.

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✉ Gabiria 2, 1-L E-20.305 Irun SPAIN ☎ (34)943-635437  
✉ tecnica@isurki.com 🌐 [www.isurki.com](http://www.isurki.com) [www.irisboxpc.com](http://www.irisboxpc.com)



## LoRa CONNECTIVITY RANGE

One of the most outstanding features of LoRa connectivity lies on its long-distance range, even in urban environments.

Although there are documented success cases of links up to 200 km under exceptional propagation conditions, the most common guaranteed peer-to-peer links are in the 20 km range.

According to our experiments through currently running LoRa connected systems deployed in the areas nearby our location, success links of up to 15 km have been achieved, even under unfavourable conditions due to hilly orography and intermediate urban and industrial settlements.

The attached pictures illustrate one such case.

⇒ ↓



*Embedded solar panel powered Isurlog Compact LoRa outpost at the Urgull mountain in San Sebastian (Spain), linked to ISURKI's headquarters based LoRaWAN gateway through 13 km of hilly terrain. ↑ ↓*



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✉ Gabiria 2, 1-L E-20.305 Irun SPAIN ☎ (34)943-635437  
✉ irisboxpc@isurki.com 🌐 [https://isurki.com/Isurlog\\_2.html](https://isurki.com/Isurlog_2.html)

## AREAS OF APPLICATION



- ✓ Environment and climate change.
- ✓ Green energies.
- ✓ Instrumentation and sensors.
- ✓ Smart cities.
- ✓ Smart buildings.
- ✓ Industrial control.
- ✓ Sustainable agriculture.
- ✓ Health care.
- ✓ Weather.
- ✓ Road and transport networks.



## TECHNICAL SPECIFICATIONS

### BASIC EXECUTION

- Processor: ESP32 WroverE 16MB.
- 4 x 4/20mA analogue inputs, active or passive sensors, including detachable protection fuse.
- 12Vdc managed power supply for sensors.
- 1 x voltage-free digital input (status/counter).
- 1 x I2C sensors input.
- Wifi and Bluetooth comms. WiFi Access Point created by pressing the inner pushbutton.
- Reset pushbutton.
- The dedicated pushbutton + UART port allows direct upload of user's code to the ESP32.
- Twin battery holder with 2 x NRC18650 batteries featuring a capacity of 6800mAH.
- RTC: Maxim Integrated DS3231M +5ppm plus CR1220 battery included.
- Ultra-low consumption: 5  $\mu$ A in sleep mode.
- NRC18650 embedded battery charger with LED-based charge indicator. Compatible charging sources: USB type C or photovoltaic solar panel up to 6V of output voltage.
- Compact sized PCB: 90x65mm.



### OPTIONAL DISPLAY:

- OLED de 0.96", 128x64, blue digits, black background.
- Delivery options:
  - Unassembled.
  - Embedded in the frontal face of the plastic case (not suitable for outdoor use). Requires PC1 option (waterproof plastic case assembling).

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✉ irisboxpc@isurki.com 🌐 [https://isurki.com/Isurlog\\_2.html](https://isurki.com/Isurlog_2.html)

**AIR QUALITY SENSORS (OPTIONAL):**

- BME280. Temperature, humidity, and atmospheric pressure digital sensor.
- BME680. Temp, humidity, atm. pressure and air quality index digital sensor for indoor use.
- BME390. Altitude and atmospheric pressure digital sensor.

**ADDITIONAL COMMUNICATIONS (OPTIONAL):**

- LoRa/LoRawan chip (RFM95W).
- Embedded UFL connector for external LoRa antenna.
- 3dbi LoRa external antenna for outdoor installation.

**ADDITIONAL EXTERNAL POWER SUPPLY OPTIONS:**

- 0,6 W solar panel. No direct exposition to sunlight required. Unassembled or embedded.
- USB 230Vac charger.
- Coming soon: “Energy harvesting” version providing automatic recharge of batteries.









**WATERPROOF PLASTIC CASE EXECUTION (OPTIONAL)**


- polycarbonate plastic case. External dimensions: 120x80x56 mm. UV protection, IP66 / IK08 protection degree. -40 to +85 °C extended temperature range. IP67 cable glands for cables inlet.

**SOFTWARE OPTIONS**

- Arduino IDE or MicroPython environment programmable.
- Arduino IDE free code available for different applications: 4-20 mA analog input reading, digital input reading, LoRa/LoRaWAN data transmission, current consumption management, RTC, battery voltage reading).
- Software **ISURLOG OS**. Allows configuration of the unit's operating parameters, enabling automatic data transmission, and uploading of logged data to the cloud:
  - Analog input: range, Hi & Lo alarms thresholds, engineering units, latency time.
  - Digital input: selection among “status mode” (with alarm) or “counter mode”.
  - Air quality sensor: enabling.
  - LoRa: External server credentials.
  - Data logging:
    - Logging interval (from 1 up to 1.440 minutes).
    - Data download to PC.



 <b>ORDER CODING</b>		
Item	Description	Reference
	Data logger IIoT, basic execution. <ul style="list-style-type: none"> <li>Delivered format: PCB (no housing).</li> <li>With WiFi chip.</li> <li>Without LoRa chip.</li> <li>Pack of 2 batteries included.</li> </ul>	<b>ISURLOG Compact</b>
	OLED Display, 0.96", 128x64, blue digits, black background. <ul style="list-style-type: none"> <li>⚠ <u>Unit does not fulfill IP67 protection degree when the display is factory embedded, Therefore, outdoor use is not supported.</u></li> <li>⚠ <u>PC1 option must be ordered together with this option.</u></li> <li>x (0,1,2) <ul style="list-style-type: none"> <li>x = 0: without display.</li> <li>x = 1: with not mounted display (spare part).</li> <li>x = 2: factory embedded display as shown left ⇐.</li> </ul> </li> </ul>	- DISx
	Embedded weather / air quality BMA digital sensor: <ul style="list-style-type: none"> <li>x (0,1,2) <ul style="list-style-type: none"> <li>x = 0: without sensor.</li> <li>x = 0: BMA280 (temp., humidity, and atm. pressure.).</li> <li>x = 1: BMA680 (temp., humidity, atm. pressure and air quality).</li> <li>x = 2: BMA390 (temperature and altitude).</li> </ul> </li> </ul>	- BMAx
	Additional communications (optional): <ul style="list-style-type: none"> <li>x (0,1,2) <ul style="list-style-type: none"> <li>x = 0: no additional comms.</li> <li>x = 1: embedded Lora/Lorawan chip RFM95W + embedded antenna gain=1 dBi.</li> <li>x = 2: embedded Lora/Lorawan chip RFM95W + external UFL connector + external antenna 3 dBi. ⇐</li> </ul> </li> </ul>	- COMx
	External additional power supply (optional): <ul style="list-style-type: none"> <li>x (0,1,2) <ul style="list-style-type: none"> <li>x = 0: no additional external power supply.</li> <li>x = 1: embedded solar panel, 80x55 mm, (⇐ see pic), not suitable for outdoors use.</li> <li>x = 2: 230V USB charger.</li> </ul> </li> </ul>	- EPSx
	Waterproof plastic housing, IP67, 120 (width) x 80 (height) x 56 (deep), in mm. <ul style="list-style-type: none"> <li>x (0,1,2) <ul style="list-style-type: none"> <li>x = 0: without housing.</li> <li>x = 1: full unit, options included, all assembled in the plastic case.</li> </ul> </li> </ul>	- OPCx
	x (0,1) = 1: <b>ISURLOG OS</b> software.	- OSSx

<b>SPARE PARTS</b>		
Figura	Descripción	Referencia
	Pack of two ion-lithium batteries.	- BP





+34-943-63.54.37

[irisboxpc@isurki.com](mailto:irisboxpc@isurki.com)<https://isurki.com/>

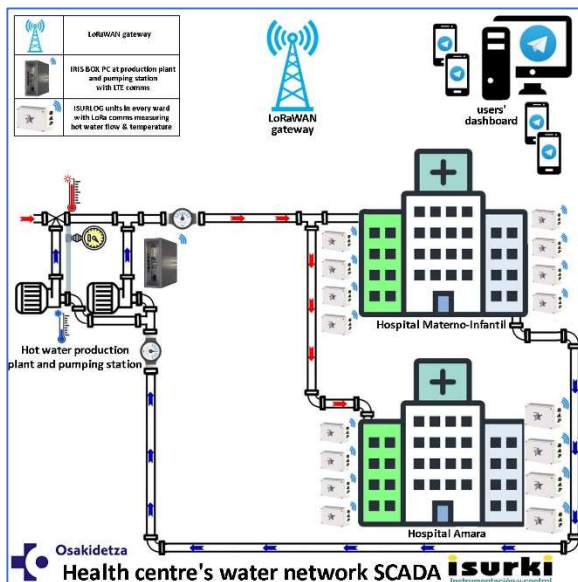
## A BIT OF HISTORY

ISURKI was founded in 1992 with the aim of providing the most advanced electronic, computing & communications technologies to the industry and the resources and facilities management companies to improve the supervision and control of their processes and infrastructures.

use within the **IRIS IIoT** Industrial Internet of Things ecosystem.

This background and mastery of the aforementioned technologies allow us to design tailor-made solutions adapted to the requirements of each application, offering an extremely competitive final product in terms of price and performance.

Last but not least, excellence-based technical assistance and hotline service during the pre-sales and after-sales stages, together with the support of our matrix suppliers, guarantee the best results for the **ISURLOG Compact** unit in your application.



Sanitary hot water control system based on **IRIS IIoT** ecosystem at the Hospital Universitario Donostia (Spain).

**ISURLOG Compact** is the result of applying all this expertise to the hardware and software design of this industrial device, focused on its



Company headquarters in Irun, Basque Country, Spain.

Information contained in this data sheet is up-to-date and correct as of the date of issue. The constant evolution of our products can lead to differences between the features of the currently available product and those stated in this document. Please, contact us to get the last updated information.



✉ Gabiria 2, 1-L E-20.305 Irun SPAIN ☎ (34)943-635437  
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