iJiNUS
GROUPE CLAIRE

CSCV4 - LSCV4

Overflow detector

User guide

User guide: Version 04

Publication date 01/07/2025

Table of Contents

Chapitre 1. Document information

1.1. Background

This user guide contains all the information required to install, connect and commission the unit, as well as important notes concerning maintenance. It is therefore essential to read it before commissioning any Ijinus equipment.

1.2. Symbols used

This symbol indicates a situation or use that may result in damage, fault or equipment malfunction.

This symbol indicates additional information useful for the understanding and correct use of the equipment.

This symbol indicates a prerequisite for performing a task.

Chapter 2. Safety

2.1. General instructions

This document presents a number of operations and programming to be performed on a data logger, a sensor or an accessory supplied by Ijinus. These operations must only be performed by personnel qualified to use Ijinus products. The information provided in this user guide only ensures operational safety if the equipment is used correctly. Performing any work on the device requires the use of appropriate personal protective equipment. Below we have provided a non-exhaustive list of recommendations to apply to ensure the safety of Ijinus data logger users:

- Only use batteries specified by Ijinus.

- Risk of fire or burns with lithium batteries: do not short-circuit, recharge, puncture, incinerate, crush, immerse, fully discharge or expose the batteries supplied by Ijinus to temperatures above the operating temperature range.

- Do not shake the sensor.

- Do not physically modify the sensor.

- Do not clean the device with an aggressive product, particularly Acetone and similar.

- The device contains components that may be damaged or destroyed by electrostatic discharge. Release any electrostatic charge from your body before opening the device and handling it. To do this, touch a grounded metal surface. Ijinus assumes no liability for damage resulting from incorrect or non-compliant use.

Chapter 3. Product marking information

The CE mark indicates that the product complies with current European directives.

Consult the user manual before using the product.

Do not dispose of this product in household waste. The product must be sent to a specific collection point, or collected by an organization that will ensure its further processing.

Direct current

Meaning of symbols

Chapter 4. Declarations

4.1. Note for users in Canada

In progress.....

4.2. CE conformity

The detector is equipped with a Bluetooth LE radio transmitter.

Frequency band	Max. power
2400-2483.5 MHz	+ 5 dBm

IJINUS declares that CSC and LSC radio equipment are compliant with European Directive 2014/53/EU.

The CE declaration of conformity is available for download from the website *www.ijinus.com*.

4.3. FCC compliance

The OVERFLOW detector, models CSCV4 and LSCV4, comply with 47 CFR Part 15.107 & Part 15.109 regulations.

The detector carries the FCC ID: S9NBNRGM2SA.

This equipment must be installed by a professional. This equipment has been tested and found to comply with the limits imposed on Class B digital devices under Part 15 of the FCC rules. These limits are designed to provide sufficient protection against harmful interference in residential installations.

This equipment generates, uses, and may release radio frequency energy and, if not installed and used in accordance with the manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that a particular piece of equipment will not suffer from interference.

If this equipment causes harmful interference to the reception of radio or television broadcasts, which can be identified by turning the device off and on again, the user is advised to attempt to resolve this problem by using one or more of the following measures:

- by orienting the receiving antenna differently or by changing its position;

- by increasing the distance between the equipment and the receiver;

- by connecting the equipment to an outlet on a circuit different from the one to which the receiver is connected;

- by getting help from the dealer or an experienced radio/TV technician.

Chapter 5. Description

5.1. Principle of operation

The overflow detector is a binary sensor that emits a signal when it comes into contact with the effluent. The purpose of the overflow detector is to indicate the presence of water above a certain threshold by means of a digital "On/Off" state.

The overflow detector decides on the ON/OFF status based on a capacitive measurement of its environment and modifiable thresholds.

The overflow detector takes into account elements in physical contact with the housing and up to a few centimeters away from it. The detector is highly insensitive to fouling. It is possible to adjust the overflow recording threshold to take account of restrictive external conditions in particularly congested networks.

The detector is fitted with an internal battery, so that recording can continue even if the external power supply is cut off. It stores digital state switching events in its internal memory. In its CSC cabled version, the detector can be powered from the mains, thus preserving its autonomy. It controls a digital output according to the digital status. The Modbus RTU protocol is used to transfer detector configuration data and data measurements made by the detector.

5.1.1. Capacitive saturation

An electric field is created between the electrode attached to the inner wall of the detector and the external medium (capacitance). The capacitance varies according to the dielectric constant of the medium (the dielectric constant of water is about 78 times greater than that of air). The detector converts the measured medium capacitance (values in Farads) into a value known as capacitive saturation (value in %), which can be determined from terminals measured during a calibration procedure. Standard calibration consists of defining a 0% air saturation for a dry product and a 100% saturation for a fully submerged product.

5.1.2. Detection area

The detection area, identified by a silk-screen print on the surface of the housing, is the part that must be submerged.
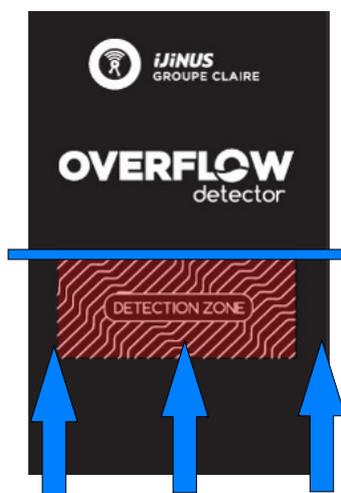
Overflow detection threshold

5.1.3. Communication

Bluetooth (CSC & LSC)

The overflow detector is configured in Bluetooth Low Energy (BLE) using the Overflow mobile App (see *Chapter 10, Configuration on the OVERFLOW application*).

The use of BLE allows permanent "listening" to the overflow detector. It is therefore not necessary to activate the detector to communicate with the OVERFLOW application.

Modbus (CSC)

In its bare wire version and connected to a PLC, the overflow detector can transmit a change of state as well as a fouling indicator (if the Modbus connection is configured). Refer to the paragraph *Chapter 12, Modbus configuration* for more information on Modbus configuration.

Digital output (CSC)

The overflow detector controls a digital output according to the On/Off status. 3 types of output control are possible: NO (Normally Open), NC (Normally Closed) and pulse. The output control mode can be selected via the "OverFlow" mobile application (see *Chapter 10, Configuration on the OVERFLOW application*).

5.2. Technical specifications

5.2.1. LSCV4

LSCV4: Capacitive overflow logger	
Technology	Capacitive
Detection threshold	Factory setting: 90% on dynamic threshold for wastewater
Refresh time	Min. 1 second
Memory capacity	200 events
HF antenna	Internal
Temperature range	-20°C to 50°C
Housing	Black crystalline polymer
Backplate	Stainless steel
Ingress protection	IP68
Max. operating altitude	2000 m
Pollution degree	4 (supports outdoor use)
Supported humidity	100% - submerged operation
Power supply	Internal battery: 3.6V - 3 Ah Li-ion battery (model: SAFT LS17500), factory replaceable (5-year lifespan on factory settings)
Configuration	Bluetooth Low Energy
Weight	300 g

5.2.2. CSCV4

CSCV4: Capacitive overflow sensor Use with LOG03V4, LOG04V4 and LNU06V4	
Technology	Capacitive
Detection threshold	Factory setting: 90% on dynamic threshold for wastewater
Refresh time	Minimum 1 second
Temperature range	-20°C - 50°C
Housing	Black crystalline polymer
Backplate	Stainless steel
Ingress protection	IP68
Max. operating altitude	2000 m
Category of installation	CAT II
Pollution degree	4 (supports outdoor use)
Supported humidity	100% - submerged operation
Internal power supply External power supply	Internal battery: 3.6V - 3 Ah Li type battery (model: SAFT LS17500) replaceable in factory (5-year lifetime on factory settings) 9 - 24 V DC - 100 mA max.
Configuration	Wireless programming kit (SN: M0C0000x), via Modbus LOG V4 or LNU V4 sensor or Bluetooth Low Energy
Weight CSCV4-110	approx. 800 g (including cable)
Cable length	10 meters
Outputs	1 Modbus RS485 output 1 Open drain output Pulse / NC / NO
Connector type	• Connectorless, 8-strand bare wire: CSCV4-110 • ISCO sampling connector: CSCV4-1610-ISCO • M12 8-pin connector: CSCV4-810
Mounting kit: H0T00054 (without tube) - Extension kit: H0T00056	

5.3. Detector dimensions

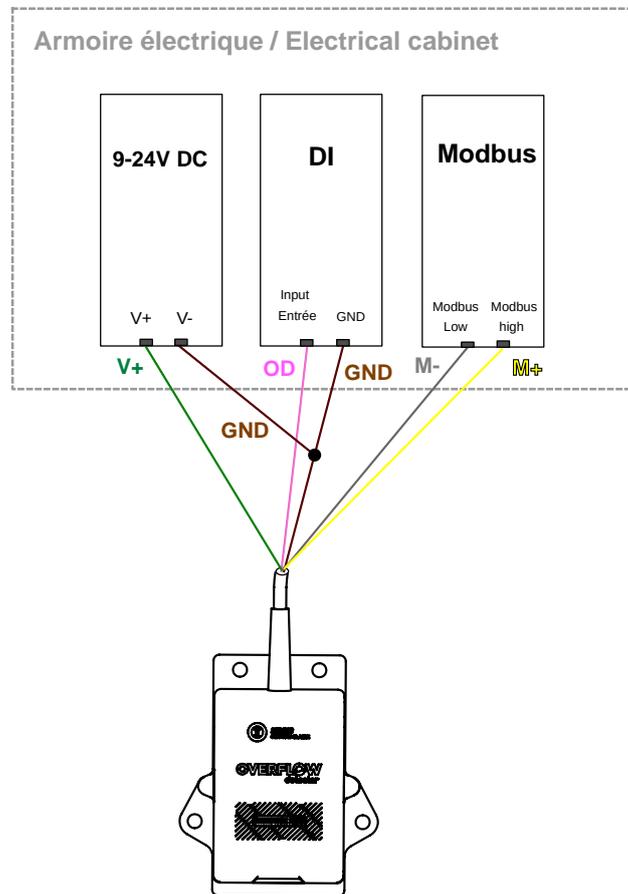*Values in mm*
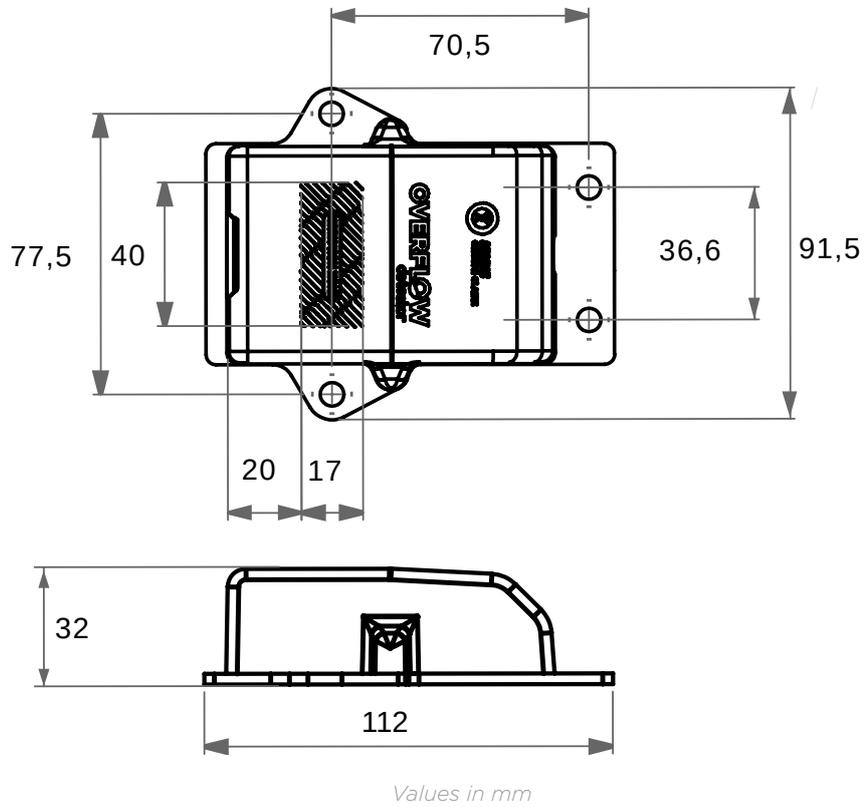
Chapter 6. Connection (CSC only)

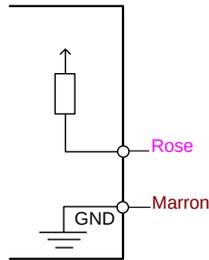## 6.1. Overflow detector wiring

6.1.1. Connections

⚠️ Making electrical connections is strictly reserved for authorized personnel.

Electrical connections must always be made with the power off.

Digital output

- Connect the pink wire (Open-Drain) and the brown wire (V-) to the Open-drain digital input.

Digital input on PLC

External power supply

⚠️ The overflow detector must be electrically powered using a voltage source between 9 and 24V DC. Power is supplied via the green wire (V+) and the brown wire (V-)

Connection is made to a secure voltage source equipped with a 100 mA limitation.

Modbus (RS485)

⚠️ The detector must be powered by an external power supply as indicated in the paragraph *the section called "External power supply"*.

● Connect the yellow wire (Modbus high) and the grey wire (Modbus low) to the PLC Modbus board.

6.1.2. Wiring - Bare wire version

Color	White ⚪	Brown 🟤	Green 🟢	YELLOW 🟡	Grey ⚫	Pink 🟣	Blue 🔵	Red 🔴
Signal Assignment	/	V-	V+ (+9 to 24 V DC)	Modbus High	Modbus Low	Open-Drain	/	/
Characteristic				Modbus RTU RS485 A	Modbus RTU RS485 B	Open drain output (30V 2A) Overflow status NO, NC or pulse depending on configuration		

6.1.3. M8-Male connectorised version

Wiring
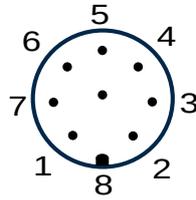
Male

Pin No.	1	2	3	4	5	6	7	8
Signal Assignment	none	V-	V+ (+9 to 24 V DC)	Modbus High	Modbus Low	Open-Drain	none	none
Characteristic				Modbus RTU RS485 A	Modbus RTU RS485 B	Open drain output (30V 2A) Overflow status NO, NC or pulse depending on configuration		

Chapter 7. Power supply

7.1. Internal power supply

Battery life is in excess of 5 years if the detector is set to its default configuration, i.e. a frequency of 1 measurement every 4 seconds. Any modification to the measurement frequency will impact the autonomy of the product.

The battery charge level can be viewed via the OverFlow application (see *Status display on the OverFlow app*).

- On the wireless version, the internal battery is essential for detector operation.

- On the wired version, the use of an external power supply preserves the life of the internal battery.

7.2. External power supply (CSC only)

The CSC version of the detector can be connected to an external 9V - 24V DC power supply.

The power supply must be a current-limited source delivering a maximum of 100 mA.

If the external power supply fails, the detector's internal battery takes over, enabling continuity of measurements.

Chapter 8. Commissioning

8.1. Checks

It is important to check that the overflow detector is in good "mechanical" condition before checking its operation.

Check the integrity of the housing and cable:

- Check that the housing has not suffered impacts that could cause it to crack and lose its watertight seal.

- On wired detectors, check that the cable is not damaged or cut.

- Check the battery voltage level using the color of the symbol in the app (see *Status display on the OverFlow app*).

8.2. Operating test

The product is designed to activate if the overflow area is fully submerged in water.

Consequently, applying a wet cloth will alter the saturation level slightly, but will not be sufficient to activate the overflow condition.

- Submerge the detector. It must be placed in at least 3 cm of water around the detector. This water must have a conductivity greater than 1000 μS/cm.

- Use raw sewage water or lightly salted water (1 gram of salt in 1 litre of drinking water should be sufficient).

- Use the OverFlow application to view the capacitive saturation value (in %).

Chapter 9. Installation

9.1. Positioning

The detection area is shown by a screen print on the surface of the housing, which allows the detector to be positioned according to the desired actuation threshold.

⚠️ Avoid installing the detector in a location that would subject it to constant splashes. Such conditions are likely to disrupt detection.

Avoid installing the detector in an area where metal parts are facing the electrode.

9.2. Mounting
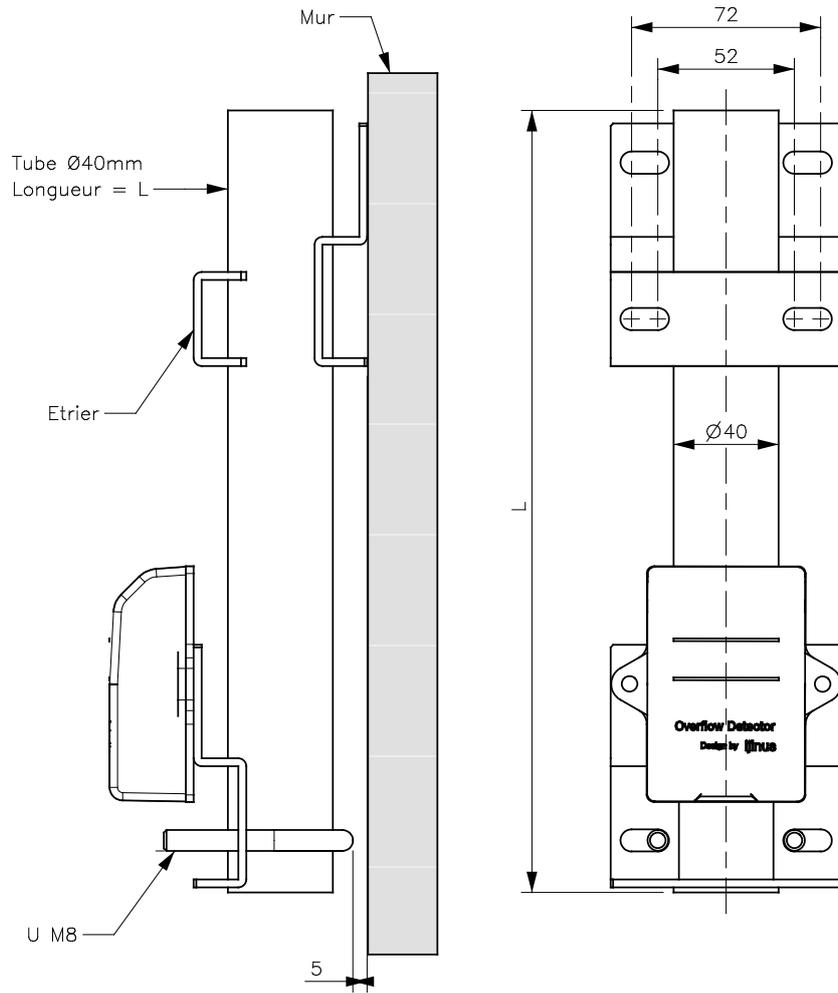
- Secure the unit to a flat, rigid support using four M6 screws. If using an ijinus mounting kit, two screws are all you need.

9.3. Attachment using kit

- Use screws suited to the holes in the stainless steel backplate (maximum diameter 6 mm).

Mur

Tube Ø40mm
Longueur = L

Etrier

U M8

72

52

Ø40

L

Overflow Detector

5

Mounting kit: HOT00054 (without tube)

9.4. Examples of installation

Installation in storm drain

Installation for monitoring grid fouling

Chapter 10. Configuration on the OVERFLOW application

10.1. Equipment required

- The **OVERFLOW smartphone app**

- An overflow detector

10.2. Installing the application

The OverFlow application is available to download from Google Play.

10.3. Bluetooth connection

To ensure optimum connectivity between the phone and the detector:

- The distance between the two products in an unobstructed field must be less than 10 m.

- and the detector must not be submerged to a depth greater than 10 cm.

- On the phone, activate the Bluetooth and location features.

- Open the OverFlow application.

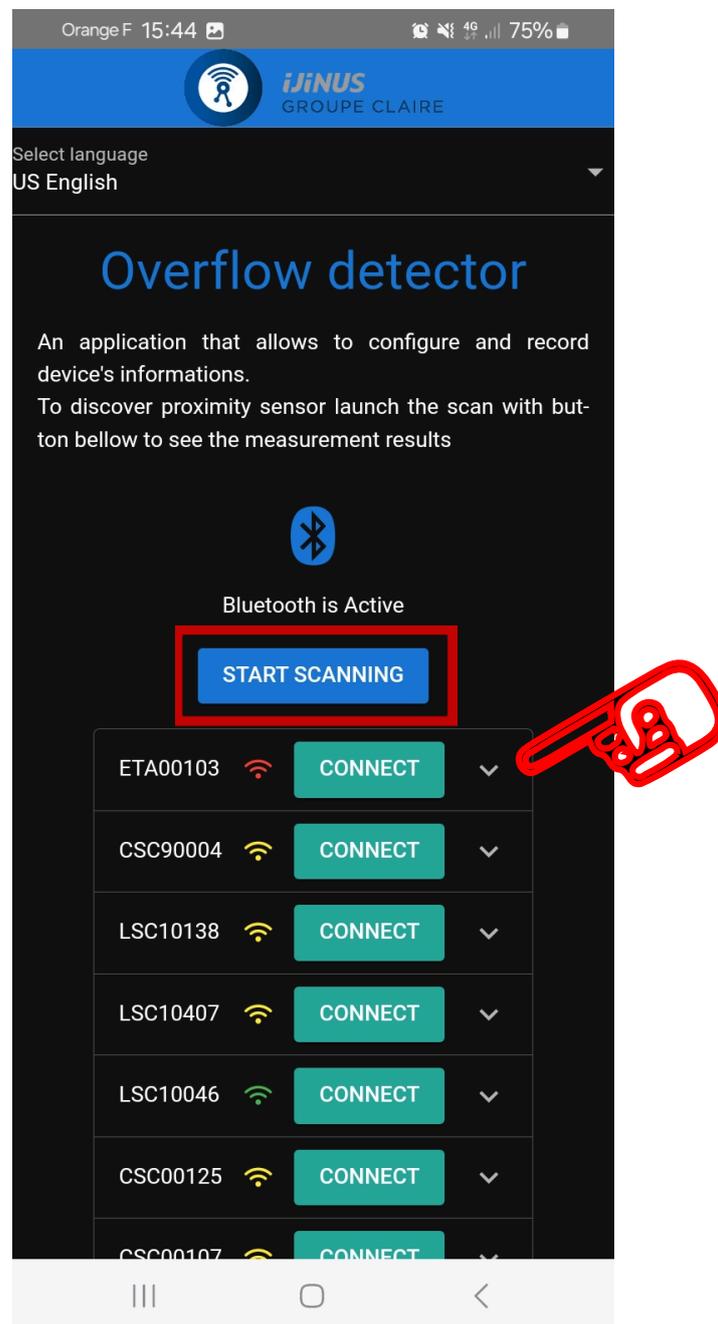- Allow the application to access the device location.

If you do not enable access it will be impossible to connect to the detector.

- Press "SCAN" to display nearby detectors.

Using BLE, it may take several attempts before the product appears.

- Press the arrow to view its serial number, current status (submerged = 1 / not submerged = 0) and the measured capacitive saturation rate.

- Press "CONNECT" to activate the connection with the detector.

- Enter the password. The default password is ijinus29. We strongly advise you to modify it. Refer to the paragraph *Change login password*.

10.4. Status display on the OverFlow app

A -> Detector name, can be modified on the configuration page (see paragraph *Configuration of detection*).

B -> Digital state detected according to threshold and number of minimum values set:

C -> Disconnect from the detector.

D -> Internal battery charge status. If the indicator turns red, contact the customer service department.

E -> Real-time capacitive saturation measurement display (values updated every 1 second in connected mode).

3 levels:

- Green: Not submerged.

- Orange: Maintenance. Requires verification of the consistency of its status (fouling or partial immersion possible).

- Red: Submerged.

F -> Internal temperature.
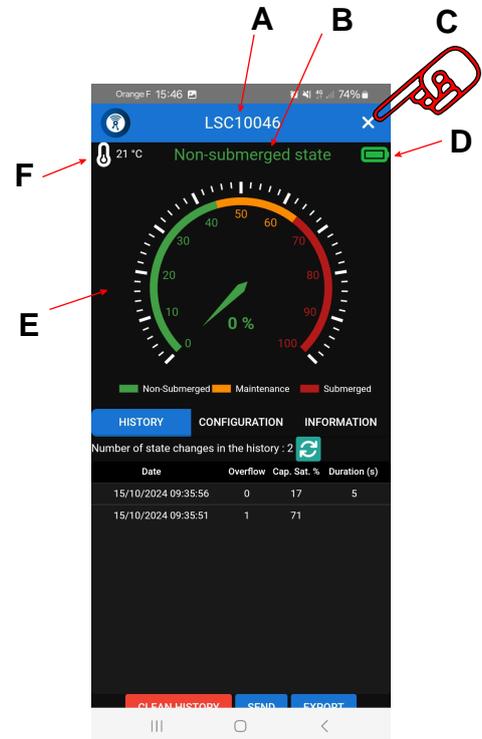
Depending on the size of the phone screen, the "DELETE HISTORY", "SEND" and "EXPORT" buttons may not appear correctly. Scroll down if necessary.

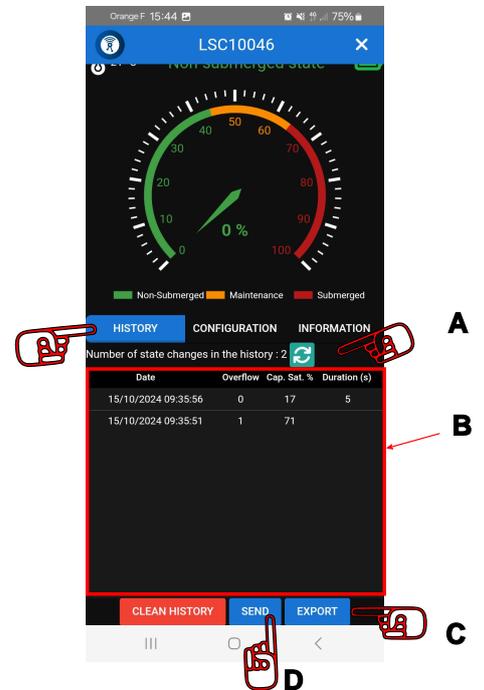# 10.5. Manage measurement history

A -> Button to update the display of the 200 switching event history of the digital output.

B -> Recording history table.

C -> **SEND**: Allows you to send a .csv file containing history data by e-mail.

D -> **EXPORT**: Downloads the .csv file into the application folder. To retrieve the file, use a cable to connect the phone to a computer.

10.6. Configuration of detection

A -> **Name**: Customizable name of the connected detector.

B -> **Immersion threshold**: Threshold corresponding to the percentage of capacitive saturation actuating the overflow state ("submerged" or "not submerged"). The default setting is 90%.

C -> **Measurement period**: Time interval between each measurement. This period is set to 4 seconds by default.

D -> **Min. number of values**: The time delay (the number of successive measurements above the detection threshold) which determines the activation of overflow state. The default setting is 3. Thus, three successive measurements taken every 4 seconds will show the change in overflow status on average after 12 seconds.

E -> **Digital output** (wired detector only): Normally Open or Normally Closed. Pulse O, Pulse C.

Restore: Used to retrieve the configuration saved on the detector.

Save: Saves the current detector settings.
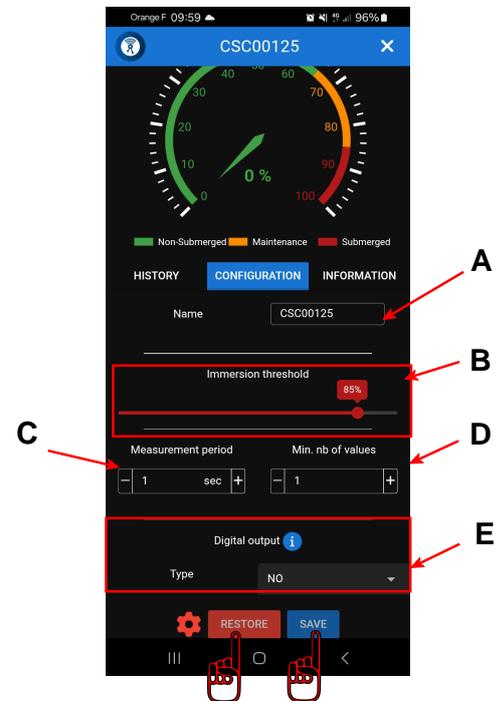
A 5% hysteresis is set on the capacitive saturation value threshold before state change. This means that for a value set at 80%, the overflow state will no longer be active as soon as the value falls below 75%.

When the application is connected to a detector, the measurement period is automatically reduced to 1 second and the time delay remains the same. Using the default information, the status change will take effect after 3 seconds.

10.7. On-site calibration (advanced configuration)

- Press the cogwheel (bottom left) and enter the password. Contact Ijinus after-sales department if necessary.

A -> **Current value**: Display of raw value (pF).

B -> **Calibration**: Allows you to modify the raw values of the **min**imum and the **max**imum, whose values are used to calculate the capacitive value in %.
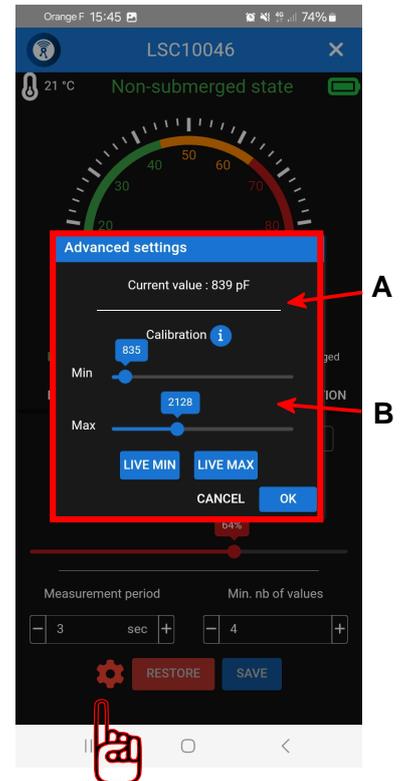
For the record, Ijinus calibration adjusts these minimum and maximum raw values with specific water to achieve 90% capacitive saturation. Any modification of these raw values will invalidate the Ijinus calibration guarantee.

10.8. Modbus communication (advanced configuration)

- Press the cogwheel (bottom left) and enter the password. Contact Ijinus after-sales department if necessary.

Modbus: Allows you to change the modbus **Slave ID** address of the product (by default to 1) and the communication **speed** (by default 9600 baud).
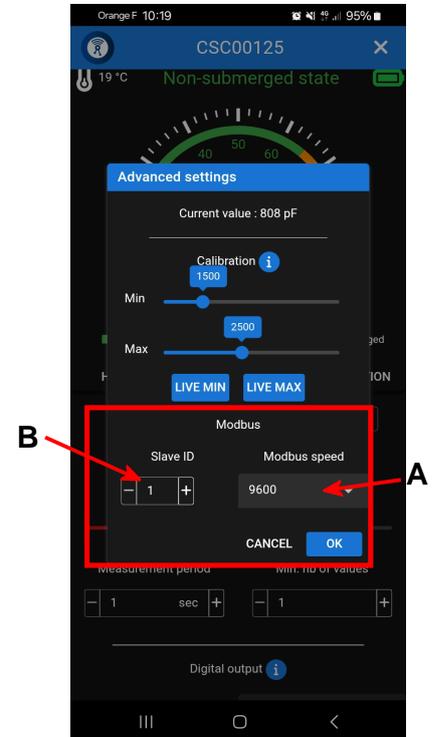
10.9. View detector information

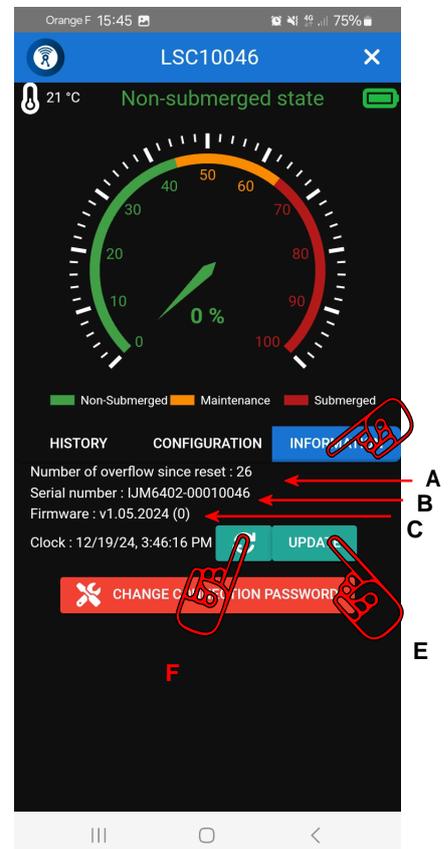**A** -> Number of overflows since last data purge.

B -> Product serial number.

C -> The firmware version (embedded software).

D -> Current date and time, with option to refresh **E** or if necessary, setting it to another time **F**.

10.9.1. Change login password

The default password for logging on to the detector is **ijinus29**.

- Go to the INFORMATION tab, click on **CHANGE PASSWORD**.

- Enter the new password and confirm.

Chapter 11. Configuration on Avelour

A detector can be connected to a stand-alone Ijinus data logger.

11.1. Equipment required

- Avelour software version 7.1 or later.

- A Wiji radio antenna in "long range" or "USB device" format.

- A wired overflow detector.

- Logger type LNR06V4, LNU06V4, LOG03V4 & LOG04V4.

11.2. Installing the Avelour software

The Avelour software can be downloaded from the Ijinus website (*www.ijinus.com*) in the "Download" section.

- To install it in the background, open the Avelour software via the command line interface using space + / S after its name.

Example: `Setup_Avelour_7.1.2-Signed.exe /S`

11.3. Connecting to a logger

- Connect the Wiji radio access point and its antenna (or the Wiji USB device) to your computer's USB port.

  If the Wiji USB device is not detected:

  - Remove the USB device from the port, reboot the PC and reinsert the device.

  - If the device is still not detected, remove it and reinstall the drivers.

   `C:\Program Files (x86)\Ijinus\Avelour_7.1.2\Driver`

  - Restart the PC and reinsert the USB device.

- Position your Wiji antenna at least one meter from the logger.

- Open the Avelour software.

- Open the logger selection window by clicking on "Connect to a wireless device".

- Select the logger identified by its serial number (refer to its nameplate) and click "OK".

BLUE-92-LTE
DATALOGGER
T°C:-40...+80°C
S/N: IJH0102-0000 0129

www.ijinus.com

Location of serial number
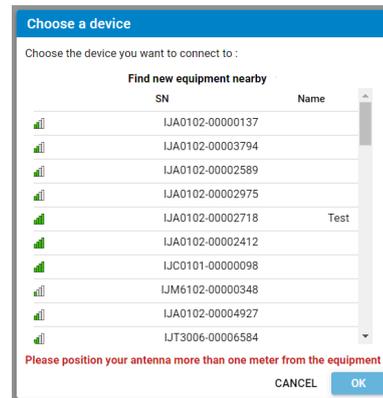
-> The logger configuration window opens.
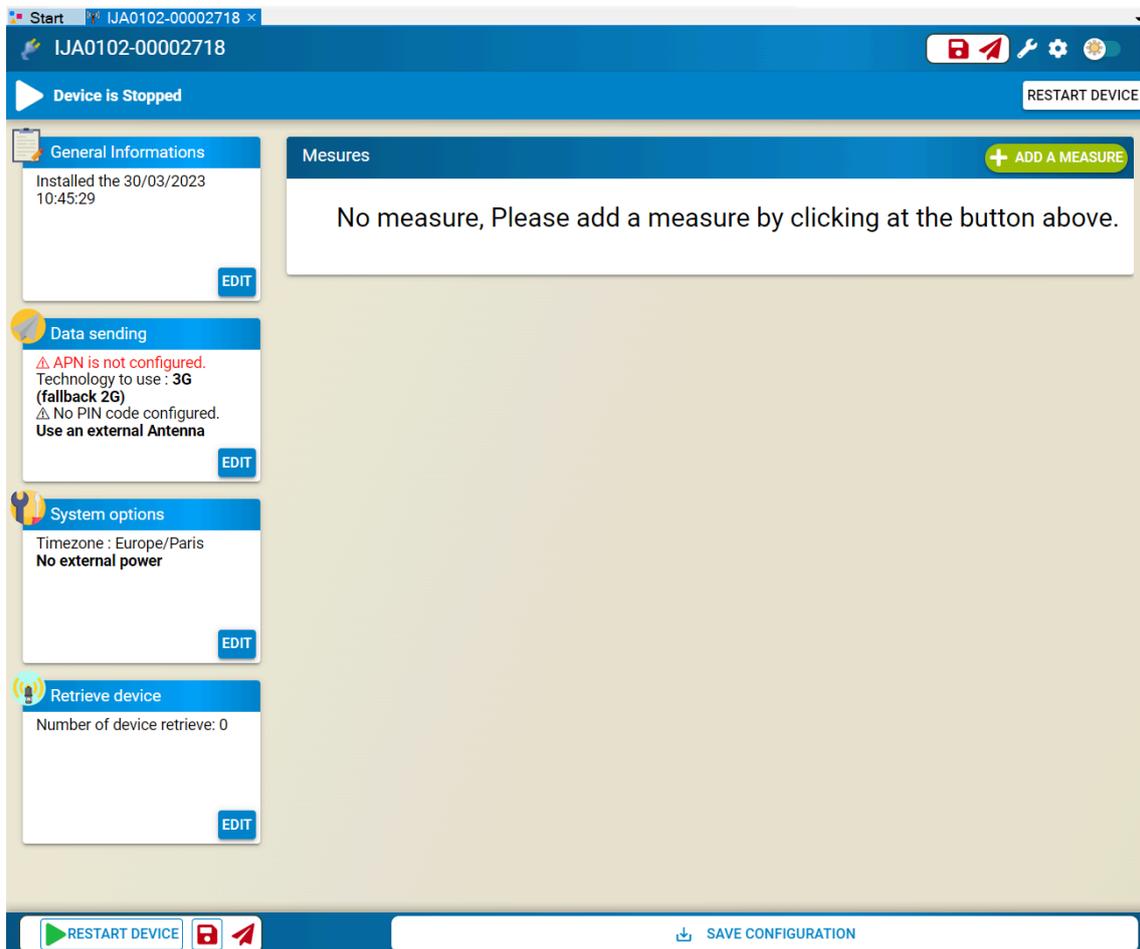
Configuration window for logger S/N: IJA0102-00002718

-> A configuration file is automatically created.

-> A folder is created in the following directory: `C:\ProgramData\Ijinus\Avelour_Main_7.1.2\SavedSensors\IJA0102-00002718`

Configuration file in the saved data browser.

11.4. Configuration

✅ Prerequisite: In Avelour, the Wiji connection to the logger must be established, see. *???*

- Click on ⊕ to add a measurement configuration and select "Wired overflow".

11.4.1. Configuration

Delay to validate activation: 🔵 A delay can be set to activate and deactivate the overflow state.

Anticipate data sending: Data transmission can be forced to activation, deactivation or both overflow states.

Repeat sending: 🔵 : Activates modification of the data transmission period.

Cumulate the time in overflow every: Define a recording frequency for cumulative time spent in overflow.

11.4.2. Modbus features (CSC-810-MOD)

Read the configured detection threshold: Click on ⚡ to display the threshold set on the detector.

CSC slave address: 🔧 select the expected channel as configured in Modbus master.

Modify the detection threshold

Desired detection threshold: define the percentage of the capacitive saturation detection threshold.

- Click on ⚡ **Execute** so that the updated detection threshold is taken into account on the detector.

A 5% hysteresis is set on the capacitive saturation value threshold before state change. This means that for a value set at 80%, the overflow state will no longer be active as soon as the value falls below 75%.

11.4.3. Configuration summary

To view the configuration summary:

- Click on   to display a summary of the configuration.

Wired overflow detector

FIRST CHANNEL :
Wired overflow with no delay
Recording of **infinite cumulative time** spent in overflow

Test measure   EDIT

Chapter 12. Modbus configuration

12.1. Configuration of the RS485 connection

The default communication parameters are 9600 baud, 8 data bits, 1 stop bit and no parity bit.

- To change the communication speed, refer to the paragraph *Modbus communication (advanced configuration)*.

12.2. Modbus RTU configuration

By default, the device Modbus ID is 1.

- To change the Modbus ID, refer to the paragraph *Modbus communication (advanced configuration)*.

12.3. Table ID

This table contains product identification data.

Register no.	Field description	Description	Values
0	**Sn1 SN[0]**	Serial number in IJM format X Y Z	IJ (ascii)
1	**Sn2 SN[1]**	Displayable on 16 characters Example: IJM6102-00012745 X=61 Y=02 Z=12745	M (ascii) + X (1o)
2	**Sn3 SN[2]**		Y (1o) + Z(23b:16b)
3	**Sn4 SN[4]**		Z(15b:0b)
4	**HardVer Version[0]**	Hardware Version Code	Manufacturer value
5	**SoftVer Version[1]**	Software Version Code	Manufacturer value

All fields are read-only

12.4. Configuration table

Register no.	Field description	Status	Description	Values
4096	**ModbusSpeed Mb Speed**	R	Modbus communication speed	4: 9600 Baud 6: 38400 Baud
4097	**ModbusAddr Mb Addr**	R	Modbus address	[1;247]
4098	- MbTimer	NU	Value set to 0	0
4099	**MesPeriod CapCycle**	RW	Measurement period in seconds	[1;60] - 0: inactive
4100	**InhibCycles AvgSize**	RW	Number of cycles before activation	[1;10]
4101 to 4103	**- CapDiff...**	NU	Value set to 0	0
4104	**CapMini _ CapDiffrangemin**	RW	10% fF capacity value for 0% saturation	[1000; 6000] **below CapDiffrangeMax**
4105	**CapMaxi CapDiffRangeMax**	RW	10% fF capacity value for 100% saturation	[1000; 6000] **above Capdiffrangemin**
4106	**OvTh CapDiffTh**	RW	Capacitive saturation threshold for activation of overflow state	[1; 99] **above CapDiffhyst**
4107	**NovTh CapDiffHyst**	RW	Capacitive saturation threshold for activation of dry state	[1; 99] **below CapDiffth**
4108 to 4110	**- OutputMode OD...**	NU	Value set to 0	0
4111	**OutputMode OutputMode SW**	RW	Behavior of digital outputs	0 – Inactive; 1 – normally open 2 – normally closed; 3 – pulse
4112	**PulseW PulseWidth**	RW	Pulse duration in cycles	[1; 60] below Pulse Cycle
4113	**PulseT PulseCycle**	RW	Pulse period in cycles	[1; 60] below Pulse Cycle
4114 to 4115	**Ov...**	NU	Value set to 0	0
4116 to 4118	**Status & error management**	RW	BLE control / Device status / Error	-

R: Read/RW: Read write/NU: Not used

12.5. Data table

All fields are read-only.

Regis-ter no.	Field description	Description	Values
8192	**-** **Reboot**	Value set to 0	0
8193	**Vbat PowerSupply**	Battery voltage in thousandth of a volt -> 3300=3.3V	[1100;3900]
8194	**Temp Temperature**	Temperature map in hundredths of degrees (two's complement)	[-4000;6000]
8195	**CapMes CapExt**	Measurement electrode capacitance	[1000;6000]
8197	**Saturation CapDiff**	Instantaneous Capacitive Saturation value (%)	[0;100]
8198	**SaturationAvg CapDif-fAvg**	Capacitive Saturation value taken into account (%)	[0;100]
8199	**OvStatus OvStatus**	Overflow status	[0;1]
8200	**OvCntr OvCnt**	Number of overflow events	[0;65535]
8201 to 8204	**...**	Value set to 0	0
8205	**OvLength**	Cycle duration of current overflow event	0[0;65535]

Chapter 13. Maintenance

⚠️ We strongly advise against installing the product close to a magnet or putting a magnet close to the product!

In fact, the product features a magnetic contactor which is used to reset the product to its factory configuration when a magnet is present. It is not envisaged that a user will need to perform this maintenance operation.

In the event of a problem with an Ijinus recorder or sensor, we recommend that you contact our customer service department either by e-mail: *sav@ijinus.fr* or by telephone: +33 (0)298 090 332

You will be informed of the applicable procedure, so that you can either test the product yourself or return it to the factory for testing on our premises.

13.1. Internal battery discharged

⚠️ If the internal battery is discharged (see paragraph *Status display on the OverFlow app*), contact the customer service department.