



## DELTA X-Hs

Volumetric soil water content monitoring





**The DELTA X-Hs is a connected sensor equipped with an electronic probe. This system measures variations in soil moisture with high accuracy and operates autonomously.**

Installed underground at the base of structures, the DELTA X-Hs provides key data for shrink-swell (clay) diagnosis and can also be installed behind a wall to measure water saturation levels.



**Compact & Resistant**  
IP66



**Precise**  
1%



**Plug & Play**  
Easy to use and install



**Autonomous**  
3.6 V – 17 Ah battery



**Connected**  
LPWAN radio  
or Bluetooth



**01**  
Sealed transmission line

**02**  
Sensor blade

**03**  
Sensor head with sealed printed circuit board

**04**  
Connector for DELTA X

## Features

<b>Battery</b> 3,6 V - 17 Ah - <b>Battery life</b> 1 to 7 years*	<b>Enclosure protection</b> IP66	<b>Operating temperature</b> -25 °C to +70 °C
<b>Resolution</b> 1 %	<b>Bluetooth &amp; LPWAN Radio connection</b>	<b>Measurement range</b> 0 to 60% vwc (upper limit depending on soil)
<b>Accuracy</b> 3% up to 50 vwc** **(Volumetric Water Content)	<b>Measurement interval</b> from 10 min to 24 h	External temperature measurement
<b>Internal memory</b> 250 000 measurements	<b>Probe cable length</b> 10 m	<b>Probe</b> 18.2 cm x 3 cm x 1.2 cm

\*depending on measurement interval, sensor exposure, and data transfer mode (Bluetooth, LPWAN...)

# TABLE OF CONTENTS

01

## Packing list

**P04\_** Package contents

02

## Recommendations

**P05\_** Mounting advice

03

## Sensor start-up

**P06\_** Battery connection

04

## The application

**P07\_** Download the application

**P08\_** Connect your sensor

05

## Install your sensor

**P09\_** On-site installation

06

## Webmonitoring

**P10\_** Web monitoring access

**P10\_** Remote connection

07

## Use cases

**P11\_** Use case overview

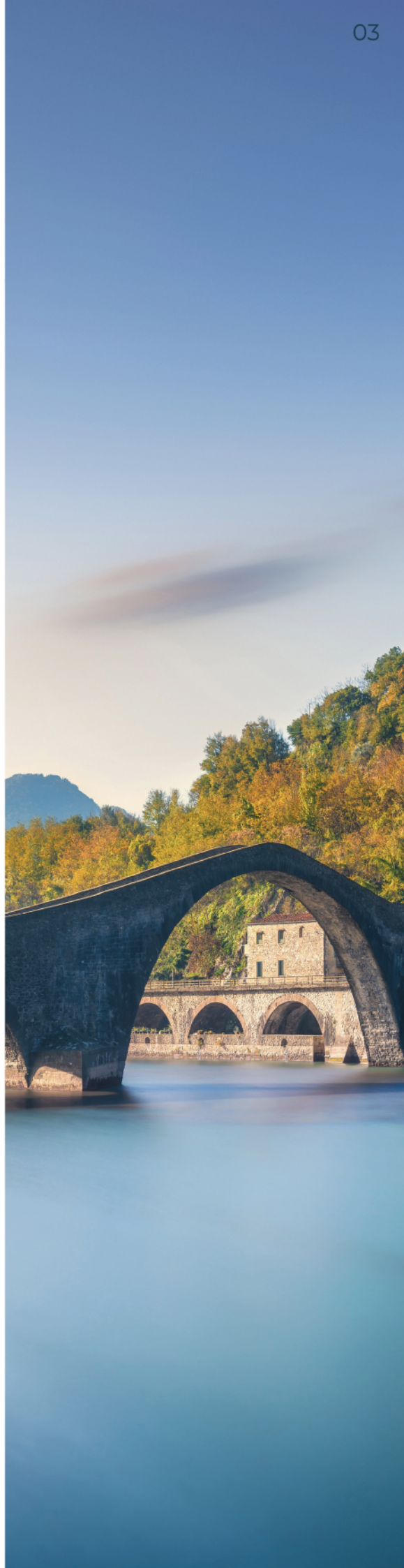
**P11\_** Shrink-swell clay (RGA)

08

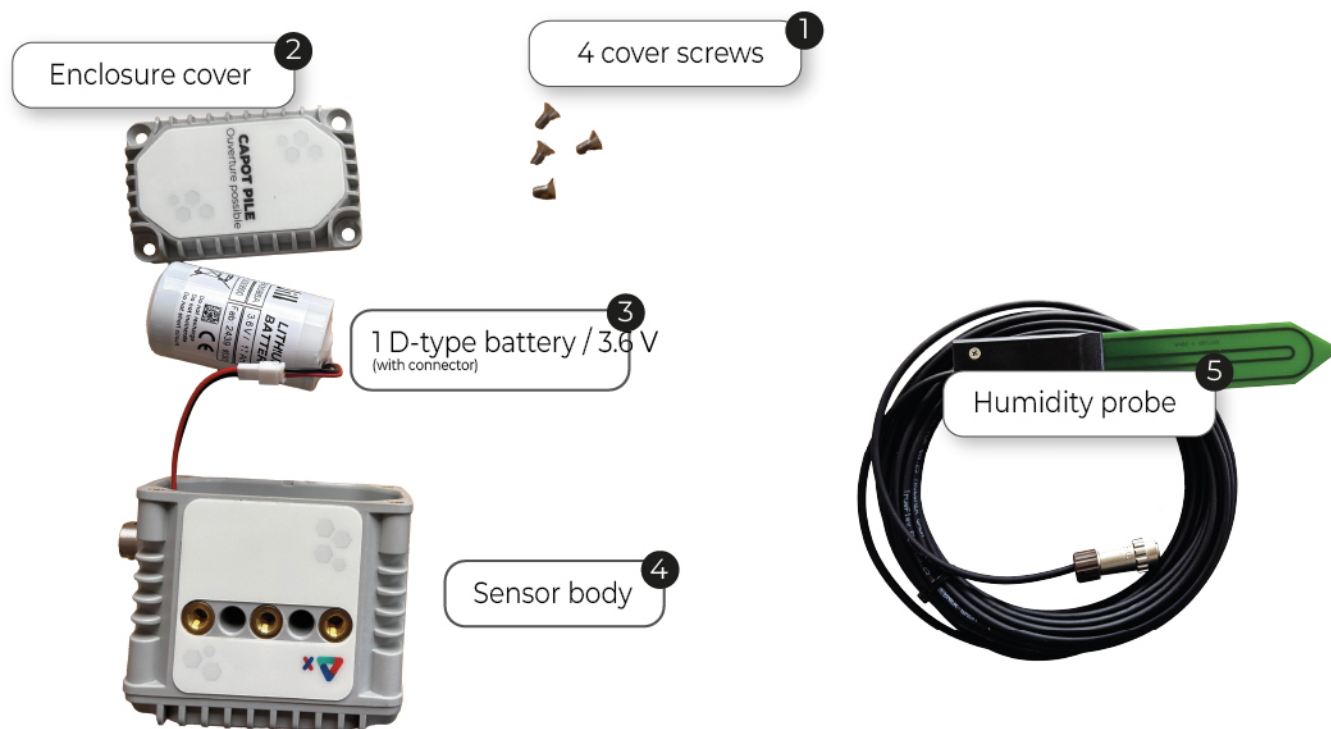
## Useful information

**P12\_** Warranty

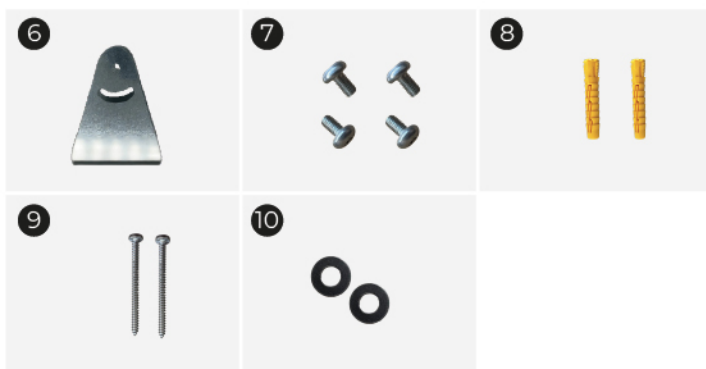
**P12\_** FAQ



# 01 Packing list



## Fixings



- 6 Galvanized wall mounting bracket
- 7 4 M6 screws
- 8 2 multi-material nylon wall plugs
- 9 2 stainless steel A2 screws 5.5 x 70 mm
- 10 2 stainless steel A2 washers Ø6 mm



## 02 Recommendations



**This installation guide is also available as a video**

[Watch the DELTA X-Hs installation video](#)

### Mounting advice

- TORX T20 screwdriver
- Ø10 mm drilling for nylon wall plug
- TORX T30 screwdriver for fixing screws
- PH3 Phillips screwdriver



## 03 Sensor start-up



We strongly recommend connecting and configuring your sensor via Bluetooth before going to the job site. It is essential to prepare your equipment 48 to 72 hours in advance and to test the Bluetooth connectivity beforehand.

### Step 1

Before installing your sensor, you must connect the battery.

Please follow the numbers shown in **vert**, which correspond to the items in the packing list.



To begin, **remove the DELTA X cover (2)** by unscrewing the 4 screws (1) using a TORX T20 screwdriver.

**Warning:** Do not remove the cover marked "Radio wave" → do not open.



Remove the battery, then **connect it (3)**

Use the keying notch for connection; do not rely on wire colors.



Carefully note the **serial number** (located behind the battery): you will need it to connect the sensor to the application.



**Reinstall the cover (2)** making sure the O-ring seal is correctly positioned before closing.

Pay attention to the sensor orientation; a keying system is provided to help you (orange arrow).



Press on the cover (2) then reinsert the screws (1).



Tighten without forcing.

Use silicone grease (not supplied) to lubricate the seal during reassembly and ensure watertightness. Do not overtighten; the screws are only used to hold the cover in place.



Your sensor is almost ready to be installed on site.

**Your sensor is now:**

- ✓ **Connected**
- ✓ **Prepared**



## 04 Download the app

To connect your sensor, install the FEELBAT mobile app:



**Download the FEELBAT app** from your smartphone's app store.



**Accept all access requests** to use the app properly.



**Sign up**, then a confirmation email will be sent to you.

If you encounter any issues, please contact us at: (may end up in your spam folder)  
**SAV@feelbat.fr**



## 04 Connect your sensor

After signing up, **open the FEELBAT app**.

You will be guided step by step to add and configure your first sensor.



### Stay nearby!

When connecting your sensor, it must be close to you in order to receive the Bluetooth signal.

Position yourself at a maximum distance of 30 to 40 meters from the sensor, in open field (no obstacles between you and the device).

**Without a LINKFEEL token, you will not be able to receive data remotely, and data synchronization will only be possible via Bluetooth.**

If you wish to activate remote connectivity, you must have at least 10 credits. To do so, please contact your sales representative or write to us.



**Do not forget to enable Bluetooth on your phone.**



Click on 'Add a new sensor'



## 05 Install your sensor



01

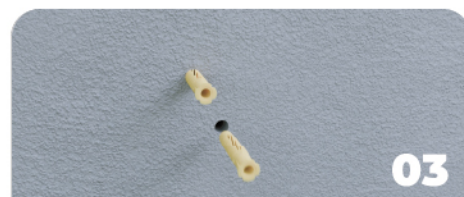
You can use the mounting bracket (5) to mark your reference points.



02

Using a drill with a bit suitable for the material, **drill on the marks with a 10 mm bit (approx. 6 cm depth).**

⚠ Remember to remove dust using a blower bulb.



03

**Insert the wall plugs (8) supplied with the sensor.**



04

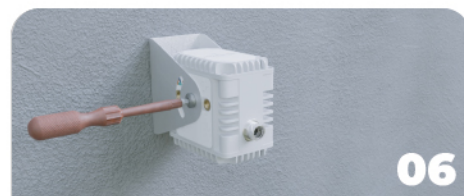
Drive the wall plugs in using a hammer.



05

**Then place the straight bracket, followed by the washers (9) and the screws (10).**

Tighten using a T25 screwdriver until the wall plugs are securely anchored.



06

**Place your sensor, then insert the screws (7) into the designated holes and tighten using a TORX T30 screwdriver.**

⚠ Orient the "Do not open" label upwards to optimize signal reception.



07

Connect the probe to the sensor.



08

Wrap the probe cable around the sensor to prevent damage.



09

**Insert the probe into the hole you previously drilled (approx. 1 m deep).**



10

Backfill the hole so the probe is completely buried.



11

**Before leaving the site, remember to reset your data by tapping:** Connection → Configuration → Action → Reset data.

**Your sensor is now:**

- ✓ Connected
- ✓ Configured
- ✓ Prepared
- ✓ Installed



**Haven't activated your LINKFEEL token yet? It's not too late!**

Tap Connection, select LINKFEEL Activation, and run a network test.

**You must be connected via Bluetooth to activate the token.**

Once activated, the sensor will communicate every 4 to 8 hours, depending on site exposure.

[Watch the video](#)

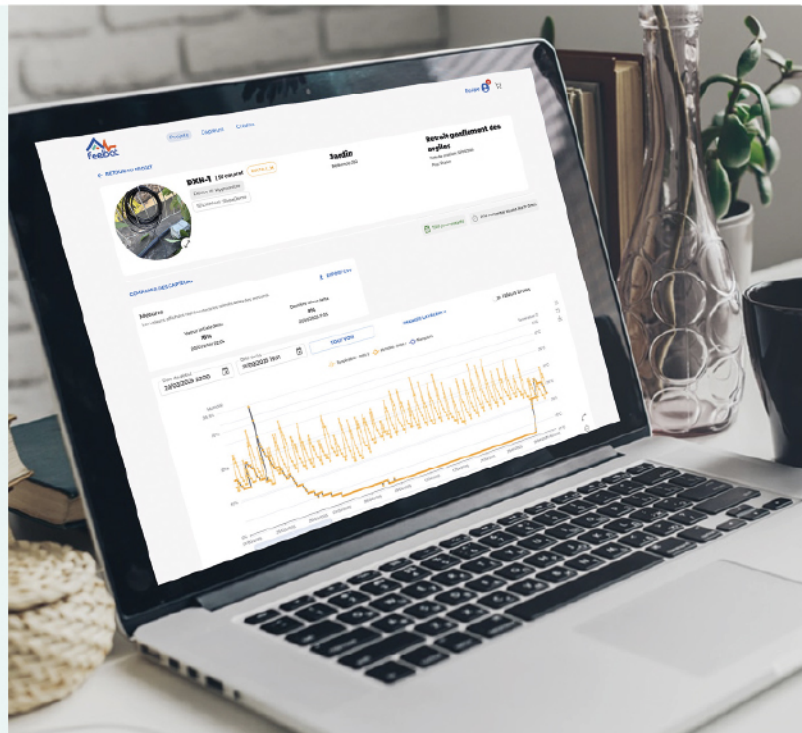
## 06 Webmonitoring

### Go further!

All the features available on the application are also accessible via the web, making it easier to analyze and compare charts.

- ✓ SIMPLIFIED PROJECT MANAGEMENT
- ✓ ZONE VISUALIZATION
- ✓ CURVE ANALYSIS
- ✓ PDF REPORT GENERATION

ACCESS THE WEB APPLICATION



#### Test Button

The test button allows you **to check Sigfox coverage** when the exact address or location of the sensors has not yet been defined, thus ensuring the proper functioning of the device.

### Solutions to extend your network and ensure data recovery from your sensors



#### The FEELBOX

**The FEELBOX is a 4G gateway that ensures data transmission from your FEELBAT sensors when Sigfox coverage is insufficient.**

Wherever a 4G connection is available, your sensors can transmit their measurements.



#### The Repeater

**The repeater extends the range of sensors in low Sigfox coverage areas.**

It can relay up to 15 sensors (140 messages/day) and operates on battery power with a battery life of 1 to 7 years depending on use. A 1-year subscription is included, renewable with a LINKFEEL token.



#### Sigfox Microstation

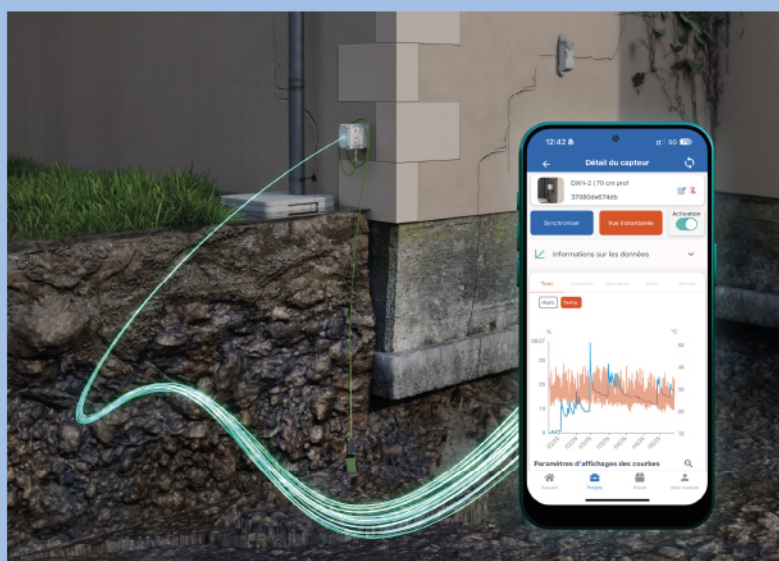
**The Sigfox microstation extends Sigfox coverage indoors or in poorly covered areas.**

It operates on 220 V with Ethernet or 3G/4G connection (optional). An IP65 enclosure is recommended for outdoor use. 3G/4G USB dongles are available as an option (SIM card not included).

If you have any questions, please contact us:  
**SAV@feelbat.fr**



## 07 Cas d'usage



### An ally for RGA

Thanks to its correlation system between soil moisture and structural movements, the DELTA X-Hs provides an accurate reading of the impact of RGA on infrastructures.

It therefore becomes a strategic tool for local authorities, engineering firms and insurers, in order to:

- Better anticipate damage related to droughts
- Reduce maintenance and repair costs
- Ensure long-term protection of exposed buildings



## 08 Useful Information

### **FEELBAT products are covered by the legal warranty of conformity.**

This warranty covers defects of conformity with respect to the sales contract that appear within two years following delivery of the product.

They are also covered by the warranty against hidden defects, which applies to defects not apparent at the time of sale and which render the product unfit for use or significantly reduce its use.

**As such, the warranty does NOT apply in the following cases:**



The sensor has fallen



The housing is damaged  
(impacts, cracks, marks)



The sensor is used for  
non-compliant purposes



The sensor has been  
immersed in water



The sensor is stored or used  
outside the temperature  
range (-25 °C to +70 °C)



The fixings restrict the  
linear operation of the  
sensor



The sensor is used beyond  
its measurement range



The sensor was purchased  
more than 2 years ago



### **Have a question?**

Visit our FAQ: it gathers answers to the most frequently asked questions and guides you step by step in using our solutions.

[Access the FAQ](#)





# If you have a crack **You FEELBAT**

**Discover our tutorial videos**

**Watch the help videos**



info@feelbat.fr  
**04 123 800 90**



4 rue Louis Breguet  
JACOU 34830 FRANCE  
Head office 20 rue Maxime Riviere  
97490 SAINT-DENIS



www.feelbat.fr  
in f o