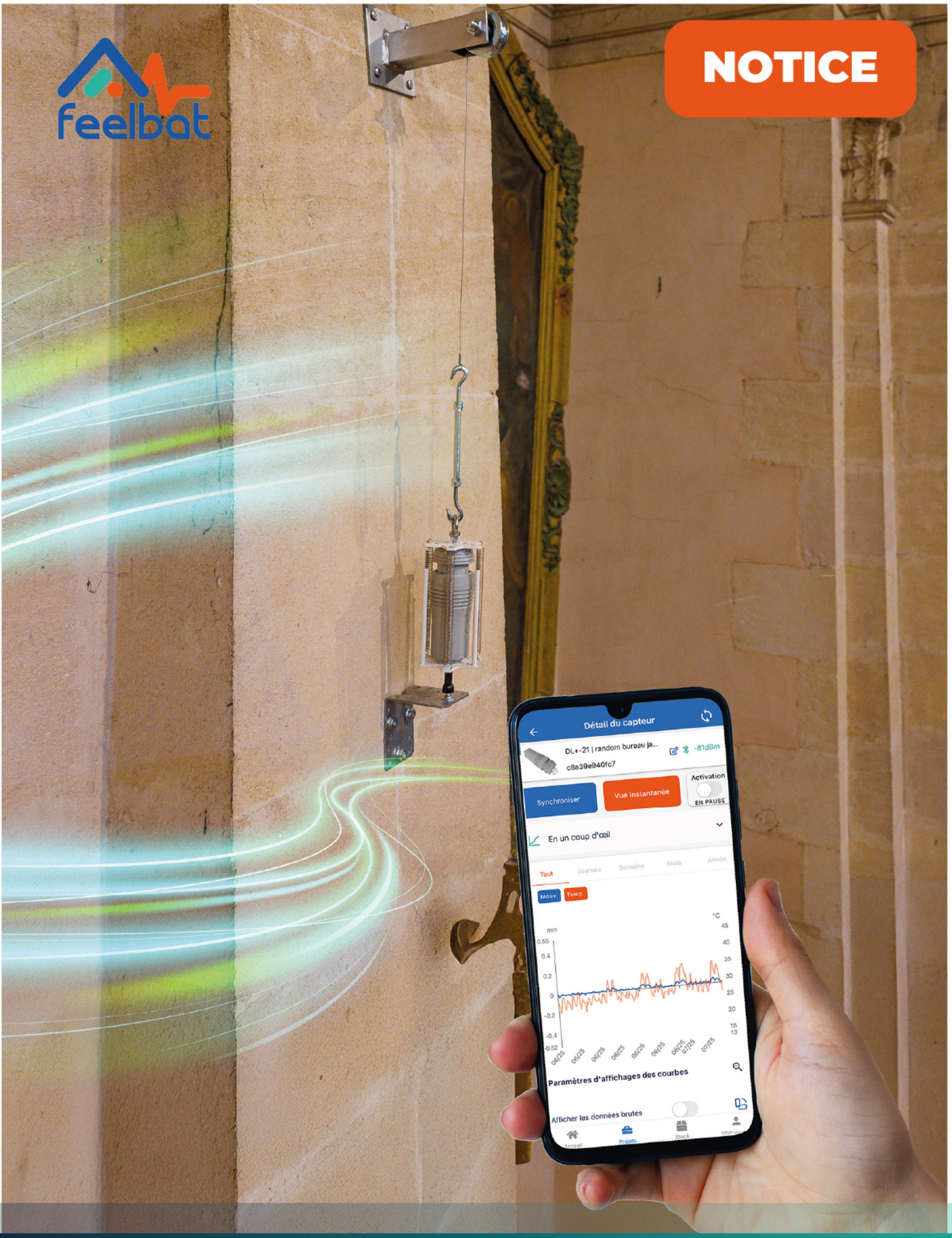
feelbat

NOTICE



EXTENSO DELTA L+ PACK

Monitoring of convergence measurements

Pack Extenso

The Extenso pack includes all the components required for installing the extensometer.

It enables the assessment of structural stability and integrity by detecting changes in convergence.
A DELTA L+ sensor is required (sold separately).

Compact & resistant
IP66

Precise
0,01 mm / 1 °C
Measurement range
25 mm

Plug & Play
Easy to use and install

Autonomous
Battery 3,6 V - 2,6 Ah

Connected
LPWAN Network
or Bluetooth

Features

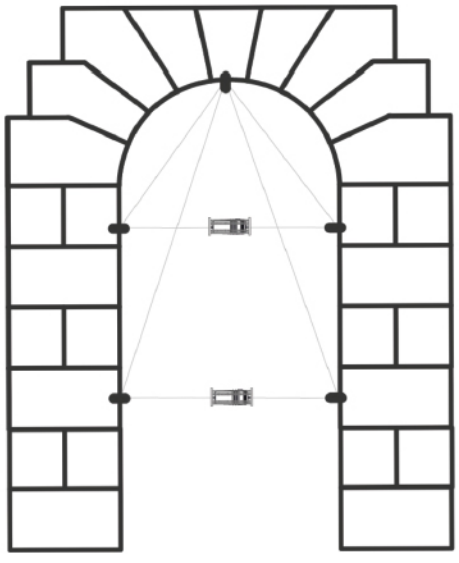
Battery 3,6 V - 2,6 Ah - **Battery life** 1 to 4 years*	**Weight** 450 g	**Dimensions** 20 cm x 85 cm
Resolution 0.01 mm - 1 °C	**Connectivity** Bluetooth & LPWAN network	**Protection** IP66
Accuracy 5 µm - 0,5 °C (+ or -)	**Measurement interval** from 10 min to 24 h	INVAR wire available in various lengths
Internal memory 250 000 measurements	**Operating temperature** -25 °C to +70 °C	**Measurement range** 0 to 25 mm (+ or -)

**Depending on the selected measurement interval, sensor exposure, and data transmission mode (Bluetooth, LPWAN, etc.)*

When should convergence measurement be used?

Typical use cases include:

- Monitoring the evolution of an arch
- Measuring the behavior of vertical walls
- Monitoring slab deflection
- Monitoring cracking or movement between two tunnel walls
- Structural or building monitoring during construction works
- Preventive monitoring for short-, medium-, or long-term maintenance
- During demolition works



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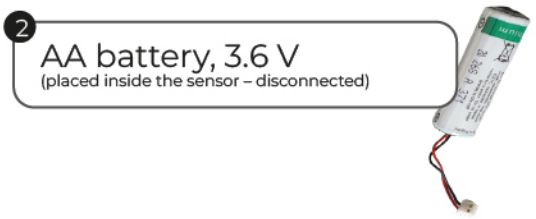
01 Packing list



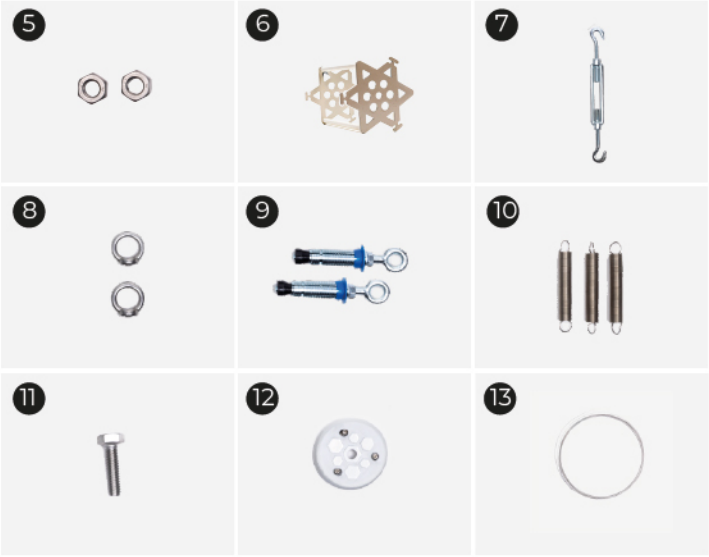
2 AA battery, 3.6 V
(placed inside the sensor – disconnected)

4 2 connection covers
+ 8 connection screws

1 Cover with seal

3 Sensor body

Standard mounting



5 2 low M6 nuts

6 1 DELTA L+ extenso cage

7 1 tensioner

8 2 M6 A4 stainless steel eye nuts

9 2 eye anchors

10 3 springs

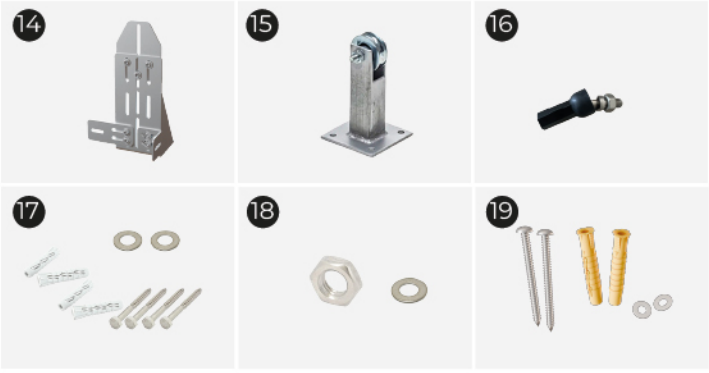
11 1 hex head screw M6 × 20

12 1 threaded rod fixing cap

13 Linear wire – 10 m

Angled mounting - with remote pulley

Optional mounting pack



14 TRIAXE pack

15 1 pulley – 15 cm or 45 cm

16 1 straight rod end for angled mounting

17 4 universal nylon wall plugs 12 × 60 with washers and hex head wood screws 8 × 70

18 1 low nut + 1 medium flat washer M6 (included in TRIAXE pack)

19 4 universal nylon wall plugs 10 × 60 with hex head wood screws 6 × 70 and washers (included in TRIAXE pack)

02 Recommendations

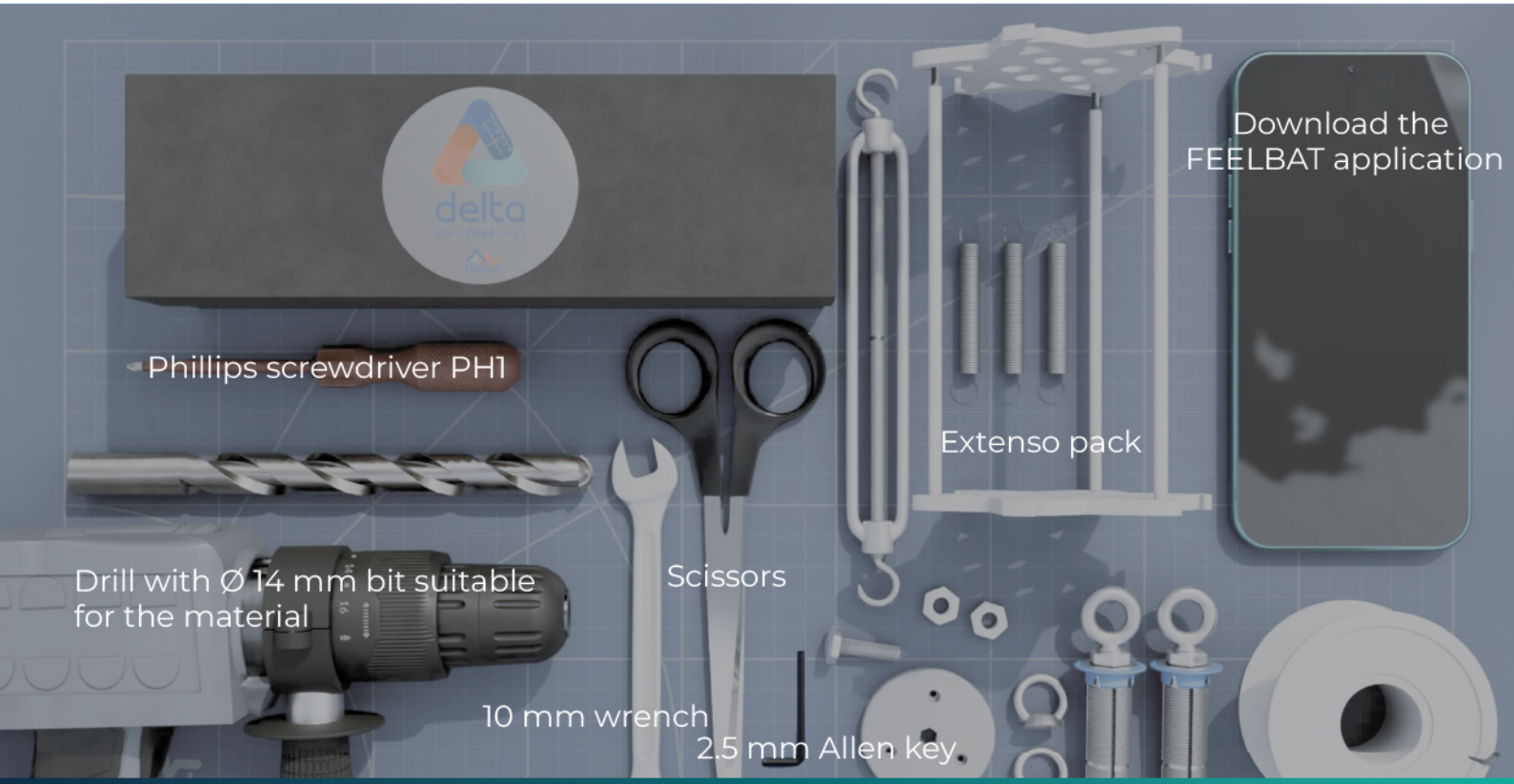
Standard mounting

This installation guide is available as a video

Watch the DELTA L+ extenso installation video Simple fixing

Mounting advice

- An air blower to remove dust after drilling
- A flat wrench (or socket wrench) size 10 mm to assemble screws and nuts
- A Phillips (PH1) screwdriver
- Scissors
- A 2.5 mm Allen key
- A drill with a bit suitable for the material (Ø 14 mm)
- A 13 mm wrench
- A TORX 25 screwdriver



There are different wire lengths available.

For more information, please consult the catalog available for download on our website.

02 Recommendations

Angled mounting

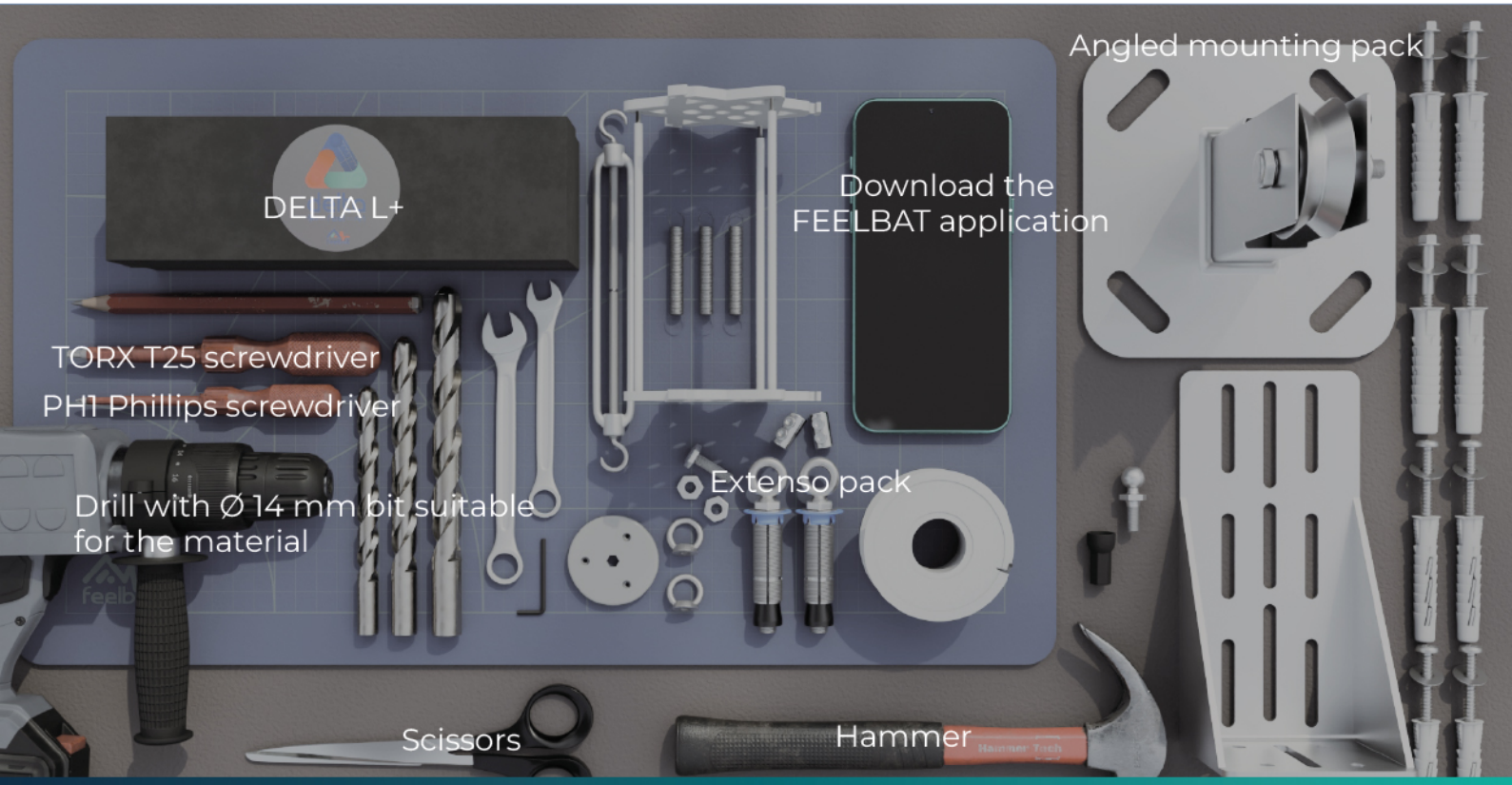
This installation guide is available as a video

Watch the DELTA L+ extenso installation video

Fixation en angle

Mounting advice

- A hand air blower to remove dust after drilling.
- A 10 mm open-ended wrench (or socket wrench) to assemble screws and nuts.
- Scissors.
- A 2.5 mm Allen key.
- A drill with a bit suitable for the material (Ø 14 mm).



There are different wire lengths available.

For more information, please consult the catalog available for download on our website.

03 Starting the sensor

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.

Before installing your sensor, you must connect the battery.
Please follow the numbers shown in green, which correspond to the items in the packing list.

Carefully write down the serial number: it will be required to connect the sensor to the application.

Using a PH1 Phillips screwdriver, **unscrew the cover screw** *(1)*

Fully compress the sensor travel to unscrew the cover without damaging it, by turning counter-clockwise.

Remove the battery, **then connect it** *(2)*

Use the keyed connector to make the connection, regardless of wire colors.

Place the battery at the bottom of the housing *(3)* and **push the connector** into its designated slot to prevent the wires from being pinched when closing

Close the cover by tightening clockwise **until the two alignment arrows are aligned.**

Reinsert the screw and tighten without forcing.

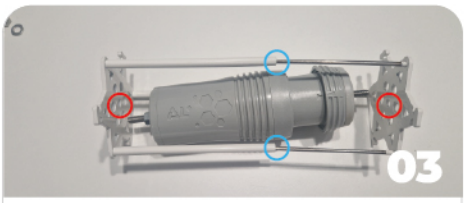
04 Prepare the sensor

Standard mounting

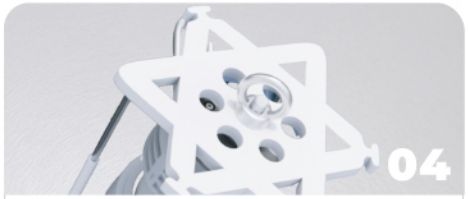
Assemble the screw *(11)* **onto the cover** *(12)*, then add the nut *(5)* to secure it.

Place the cover onto the DELTA L+, then screw it in.

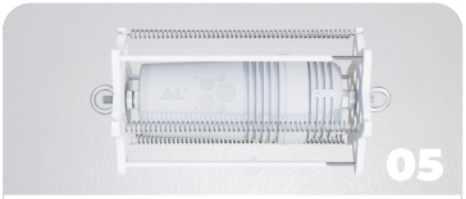
⚠ Pay attention to the cover orientation; a positioning key is provided to guide you (orange arrow).



Insert the DELTA L+ into the extenso cage *(6)* : the threaded rods fit into the red housings, and the three blue tips fit into each other.



Place the rings *(8)* on each side, then tighten.



Then install the springs *(10)*.
Your sensor is almost ready for on-site installation.
Go to the FEELBAT application.

Your sensor is now

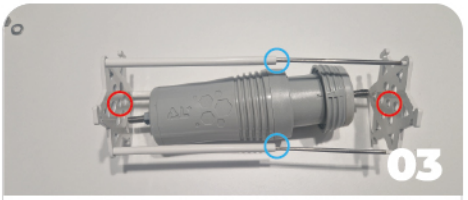
- ✓ **Connected**
- ✓ **Configured**
- ✓ **Prepared**

Angled mounting

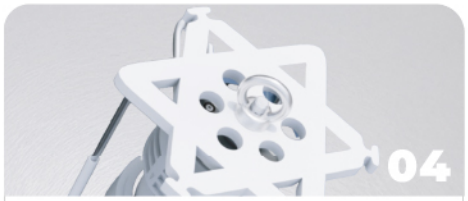
Assemble the screw *(11)* **onto the cover** *(12)*, then add the nut *(5)* to secure it.

Place the cover onto the DELTA L+, then screw it in.

⚠ Pay attention to the cover orientation; a positioning key is provided to guide you (orange arrow).



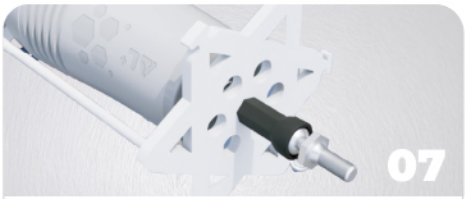
Insert the DELTA L+ into the extenso cage *(6)* :the threaded rods fit into the red housings, and the three blue tips fit into each other.



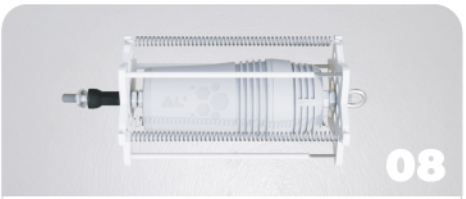
Place the rings *(8)* on the top side of the sensor, then tighten.

Assemble the ball joint for angled mounting *(16)* as shown.

Tap the ball joint with a hammer to push the ball inside.



Turn your sensor over and attach the ball joint *(16)*, then tighten it using a 10 mm open-ended wrench.



Next, install the springs *(10)*.
Your sensor is almost ready for on-site installation.
Now go to the FEELBAT application.

Your sensor is now

- ✓ **Connected**
- ✓ **Configured**
- ✓ **Prepared**

05 Download the application

To connect your sensor, install the FEELBAT mobile application:

GET IT ON Google Play

Download on the App Store

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

Accept all access requests to fully use the application.

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

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

05 Connect your sensor

After signing up, **open the FEELBAT application.**
You will be guided step by step to add and configure your first sensor.

Stay close!

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

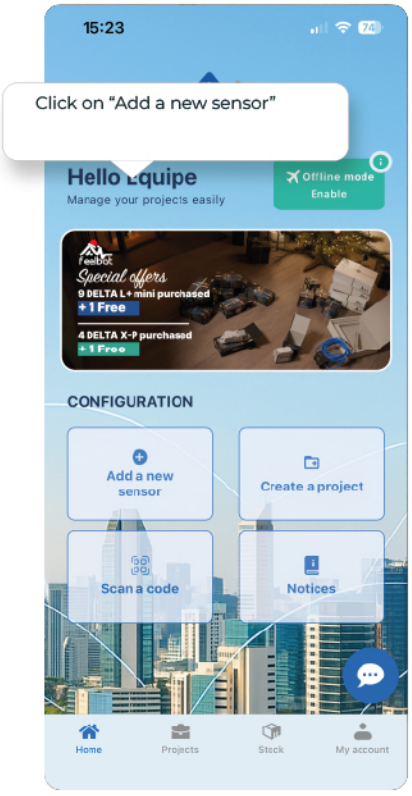
Stay within a maximum distance of 30 meters from the sensor, in open field conditions (no obstacles between you and the device).

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

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

<u>You must be connected to the sensor via Bluetooth in order to activate the token.</u>

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



06 Install your sensor

Standard mounting

Drill to a minimum depth of 6 cm using a 14 mm drill bit for the first anchoring point.

Insert the eye bolt anchor *(9)* then screw the ring in to firmly anchor it into the support.

Form a loop with the extenso wire through the ring, then secure it using a cable clamp.*

* The cable clamp is intended only for DYNEEMA wire.

Tighten using a 2.5 mm Allen key.

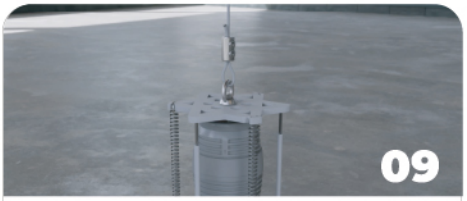
Drill to a minimum depth of 6 cm using a 14 mm drill bit for the second anchoring point.

Insert the eye bolt anchor *(9)* then screw the ring in to firmly anchor it into the support.

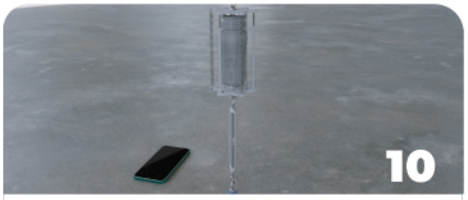
Cut off the excess wire, leaving enough length to attach the sensor.

Insert the cable clamp onto the wire.*

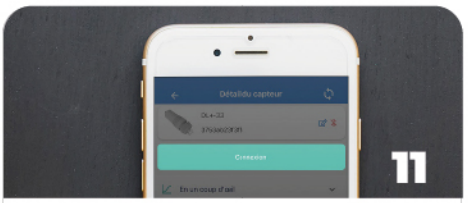
* The cable clamp is intended only for DYNEEMA wire.



Attach the sensor by forming a loop, then tighten the cable clamp using a 2.5 mm Allen key.



Use the tension hook *(7)* **to tension the sensor** until it is approximately at mid-stroke (1.25 cm).



Remember to reset your data before leaving the site by tapping:
Connection → Configuration → Action → Reset data.

Your sensor is now:

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

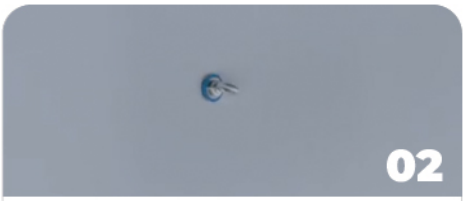
If you have not yet activated your LINKFEEL token, it's not too late!
Tap Connection, select LINKFEEL activation, and run a network test.
You must be connected via Bluetooth to activate the token.
Once activated, the sensor will communicate within a few seconds to 4 hours, depending on site exposure.
It is recommended to activate the token 24 hours before the mission.

Watch the video

06 Install your sensor

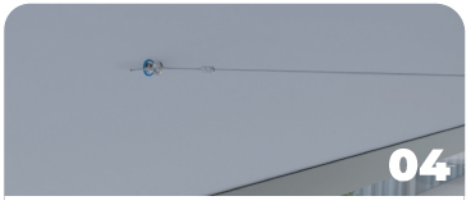
Angled mounting

Drill to a minimum depth of 6 cm using a 14 mm drill bit for the first anchoring point.



Insert the eye bolt anchor *(9)* then screw in the ring to firmly anchor it to the support.

Pass the extenso wire through the pulley.



Form a loop through the ring *(9)* and secure it using a cable clamp.*

* The cable clamp is intended only for DYNEEMA wire.

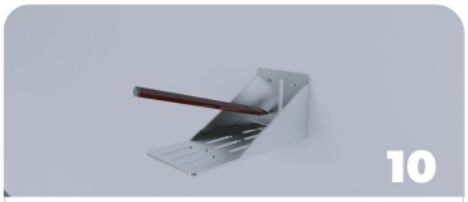
Tighten using a 2.5 mm Allen key.

Use the pulley to position your reference points.
Ensure that the pulley and the first anchoring point are correctly aligned.

Drill following the guides using a 12 mm drill bit.

Position and then **drive in the universal nylon wall plugs***(17)* using a hammer.

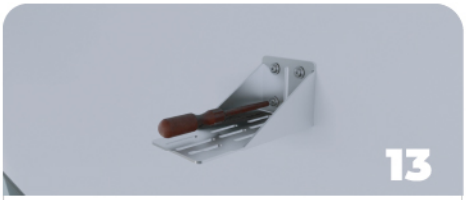
Fix the pulley to the wall using the screws and washers *(17)* then tighten with an 8 mm wrench.



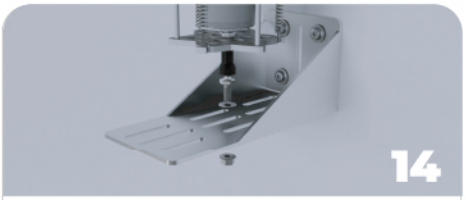
Use the bracket to position your reference points.
Make sure the bracket is vertical relative to the pulley.

Drill following the guides using a 10 mm drill bit, then insert the 10 mm nylon wall plugs*(19).*

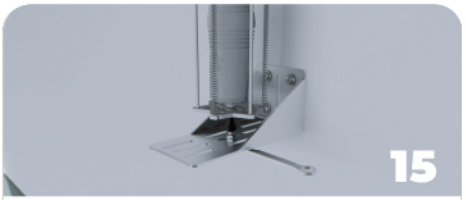
Hammer in the nylon wall plugs *(19)*.



Place the screws and washers *(19)* then tighten using a TORX 25 screwdriver.



Position the sensor, ball joint side, onto the bracket using the lock nut and washer *(18)*.



Tighten using a 10 mm open-ended wrench.

Cut off the excess wire, leaving enough slack to hang the sensor.

Insert the cable clamp onto the wire.*

* The cable clamp is intended only for DYNEEMA wire.

Tighten using a 2.5 mm Allen key.

Use the tension hook *(7)* **to tension the sensor** until it is approximately at mid-stroke (1.25 cm).

Remember to reset your data before leaving the site by tapping:
Connection → Configuration → Action → Reset data.

Your sensor is now:

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

If you have not yet activated your LINKFEEL token, 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 within a few seconds to 4 hours, depending on site exposure.
It is recommended to activate the token 24 hours before the mission.

Watch the video

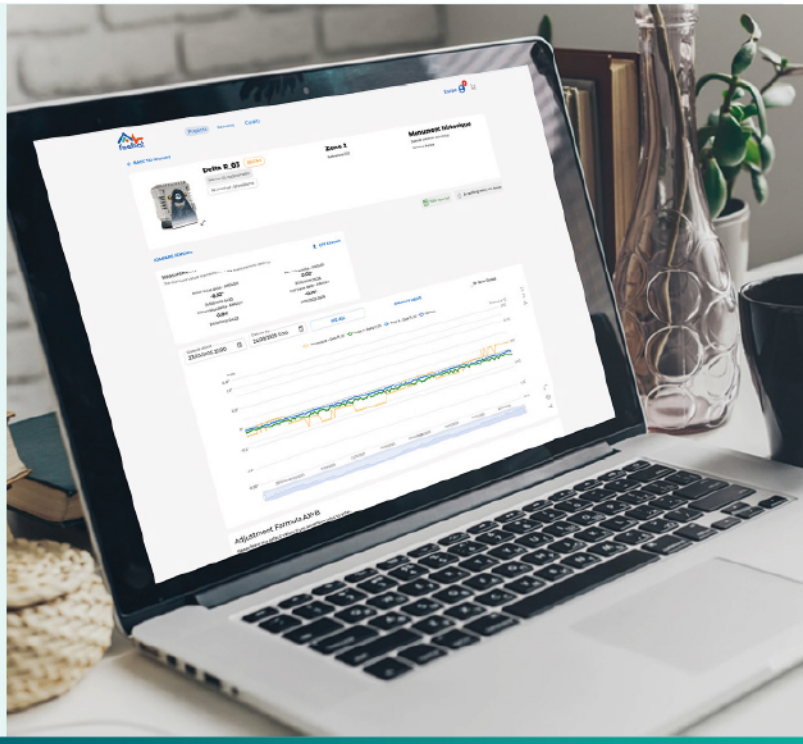
07 Webmonitoring

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

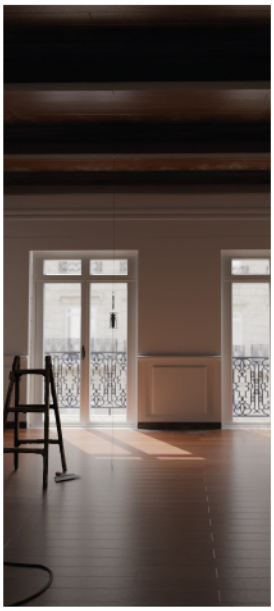
The repeater extends the range of sensors in low Sigfox coverage areas.
It can relay up to 15 sensors (140 messages/day) and operates on battery power with a battery life of 1 to 7 years depending on use.
A 1-year subscription is included, renewable with a LINKFEEL token.

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

08 Use case



08 Other possible mounting configurations

Arch

Vertical

Angled

Horizontal

09 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?

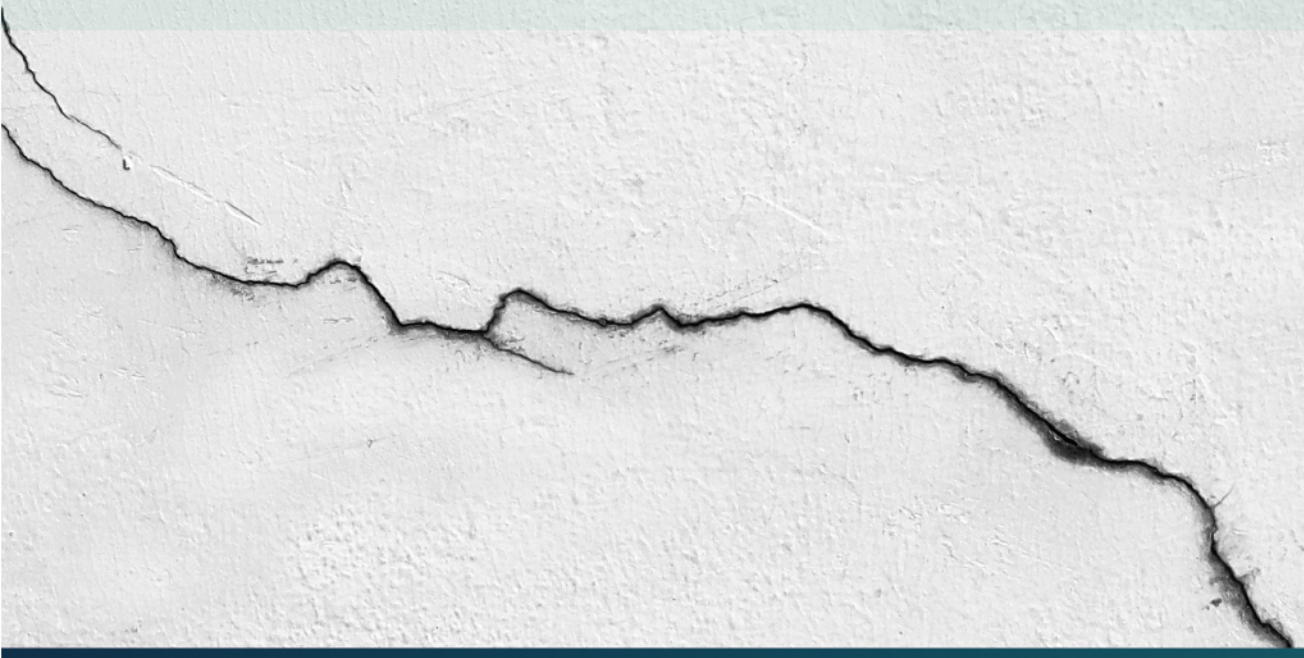
Visit our FAQ: it gathers answers to the most frequently asked questions and guides you step by step in using our solutions.

Access the FAQ

If you have a crack
You FEELBAT

Discover our tutorial videos

Watch the help videos



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