




ELIOS 3 UT PAYLOAD

# Safe remote thickness measurements



—  — In partnership with Cygnus Instruments

## Remotely capture A-scans at height and in hard-to-reach spaces

Location-Tagged  
UT Measurements

Smart Couplant  
Dispenser

Smart  
Probe Arm

Modular  
Probe Head

Cleaning  
Module

Live  
A-scans

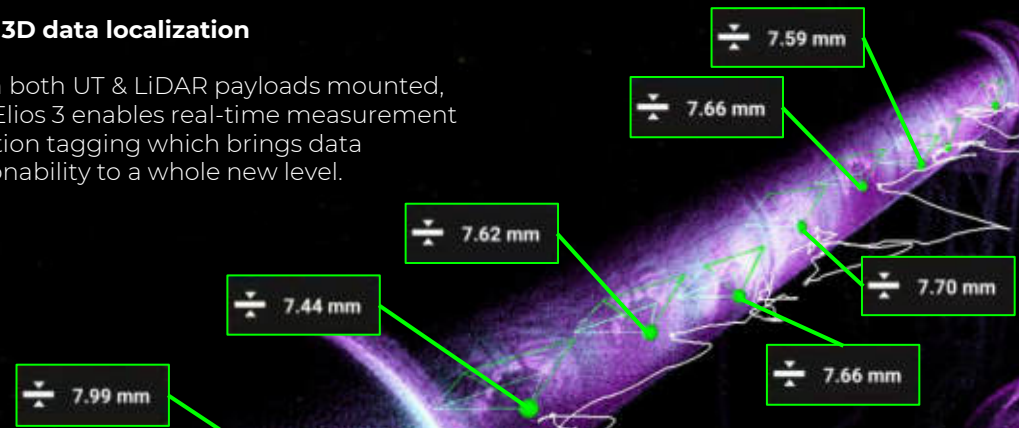




# Location-Tagged UT Measurements

## Live 3D data localization

With both UT & LiDAR payloads mounted, the Elios 3 enables real-time measurement location tagging which brings data actionability to a whole new level.





## Smart Probe Arm

### 1. Versatile orientation

The Elios 3 UT Payload can be mounted on top of, in front of, or below the drone, and the probe arm can be shaped to your needs, ensuring the necessary adaptability and accessibility to perform thickness measurements in a wide range of locations.



# DRAFT Tech Spec.

UT PAYLOAD SPECIFICATIONS	
Probe type	Dual element transducer (piezo-composite crystals)
Probe Frequency Range Options	2MHz, 5MHz, 7.5MHz
Brush options	Multiple brush options to adapt different surfaces
Measurement Range in Steel	0.8mm to 250mm Depending on probe and configuration, material, temperature
Probe Hoods	Set of interchangeable probe hoods to adapt different geometries
Gel acceptable viscosity (for Pump)	Integrated gel dispensing
Display	Dedicated UT tab in Cockpit with A-scan display
Certifications	RoHs, CE, FCC, FDA, IC (only for final MP)

CYGNUS COMPONENTS	
Measuring Mode	Mode 2 (Single Echo) and Mode 3 (Echo-to-Echo)
Accuracy	±0.1 mm (±0.004")
Calibration Mechanisms	Automatic V-path correction for twin crystal probes. Option of One or Two point calibration for twin crystal probes.
Laser	Laser for targeted measurements

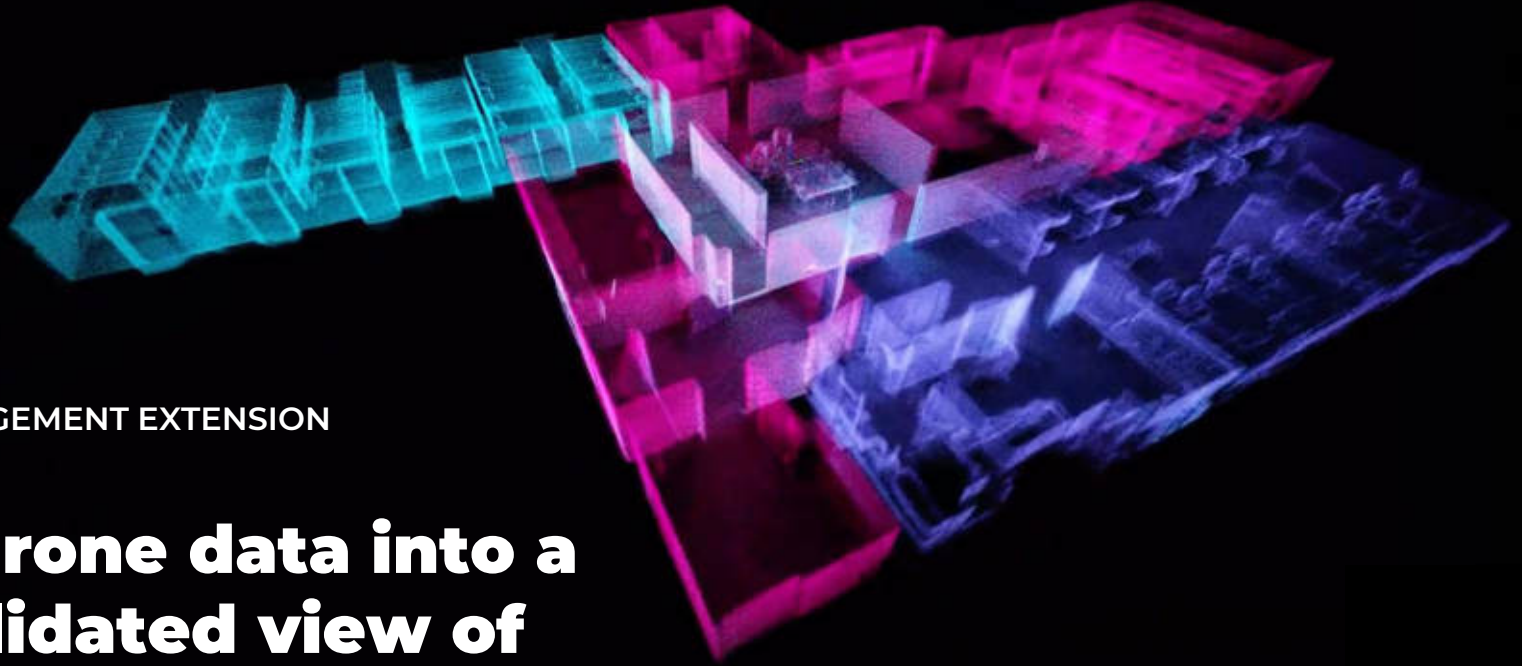
E3 with UT SPECIFICATIONS (Drone system specs when UT is mounted)	
Flight time in hovering	7min40* E3 + Lidar Rev7 + UT with probe
Flight time in normal UT use (4 POM / Minute)	7min** E3 + Lidar Rev7 + UT with probe

\*At Sea Level, 20°C, no wind, hovering in ASSIST, Lighting by default (20W), new battery full capacity 98.8Wh, 100% to 0% on tablet (a margin of 10% is kept by the system), no collisions.

\*\*At Sea Level, 20°C, no wind, in ASSIST, Lighting by default (20W), new battery full capacity 98.8Wh, 100% to 0% on tablet (a margin of 10% is kept by the system)

All specifications are preliminary and subject to changes

Software



ASSET MANAGEMENT EXTENSION

**Turn drone data into a  
consolidated view of  
your asset**

## FAQ

### Is the gauge certified?

- The gauge follows BS EN 15317:2013 standard and allows it to operate according to ISO 16809. It comes with a calibration certification from the manufacturer. We plan to offer a yearly calibration service at convenient locations (Cygnus Resellers). Other calibrations can be done but the drone must be sent back to Flyability.
- Performance Calibration according to ASTM 317 ~ 6.7 available at selected resellers.

### What probes do you have for it?

- 3 x Twin Composite Crystal Probes by Cygnus Instruments:
    - **Frequency: 2 MHz**
    - **Ideal for:** Attenuative Material
    - **Diameter: 12 mm (0.5 in)**
    - Tip Size: 17 mm (0.67 in)
    - Range in Steel Single Echo: 2.5 - 350 mm (0.1 -13.8 in)
    - Range in Steel Echo Echo: 5-50 mm (0.20 - 2 in)
    - Weight: 56 gr (1.98 oz)
    - Temperature Range: -10 C + 70 C (14 F to 158 F)
  - **Frequency: 5 MHz**
  - **Ideal for:** *General Purpose, extremely heavy front/back wall pitting or corrosion*
  - **Diameter: 9.5 mm (0.37 in)**
  - Tip Size: 12.7 mm (0.5 in)
  - Range in Steel Single Echo: 1.5 - 200 mm (0.059 -7.9 in)
  - Range in Steel Echo Echo: 4-50 mm (0.16 - 2 in)
  - Weight: 90 gr (3.2 oz)
  - Temperature Range: -10 C + 70 C (14 F to 158 F)
- **Frequency: 7.5 MHz**
  - **Ideal for:** *Small Diameter Pipes, e.g. boiler tube. Thin corroded plate*
  - **Diameter: 4.5 mm (0.18 in)**
  - Tip Size: 6.5 mm (0.26 in)
  - Range in Steel Single Echo: 0.8 - 50 mm (0.031 - 2 in)
  - Range in Steel Echo Echo: 3-35 mm (0.12 - 1 in)
  - Weight: 68 gr (2.39 oz)
  - Temperature Range: -10 C + 70 C (14 F to 158 F)
- Interchangeable plastic hoods with 2 and 3 magnets (two for curved surfaces, three for flat);
- Modular arm with 2 bendable nodes, spring head to absorb and compensate for movements and angles and mechanism to avoid crashes if case of probe collisions during flight;
- Couplant Gel Doser (any couplant could be used within certain limits of viscosity);
- Laser Pointer;
- The arm can be mounted on 4 different points on the frontal cage piece (Upper Left, Upper Right, Lower Left, Lower Right) and measure points at 180° (top to bottom).

### Can you perform surface prep?

- Yes, Hemisphere plastic bell with magnets and laser pointer with Epicycloid rotating plastic and brass brushes;

### Can you calibrate the UTM Payload in the field?

- The system offers the possibility to perform 1 point and 2 points calibration procedures in the field.

### What's the flight time with the UTM Payload?

- UT Kit: 7m40s with Rev6, 7m20s with Rev7
- Cleaning Kit: 7m20s with Rev6, 7m00s with Rev7



### Can you measure through paint?

- Yes, it is possible to measure metal thickness through paint thanks to the echo-to-echo measurement mode. However, it is not possible to measure paint thickness.

### Can you take measurements on non-ferromagnetic materials?

- Yes.

### Can you take measurements on ceilings and floors?

- The payload will allow it to perform measurements, below, in front, and above the drone and everything in between.

### What type of UTM will the payload be capable of?

- The payload will be able to perform A-Scan / Spot measurements. The system **won't be capable of performing:**
  - B-Scan
  - C-Scan
  - Phased Array UT (PAUT)
  - Flow detection
  - Weld inspection

### What type of localization will be available?

- Every measurement and cleaning will create a POI in the 3D dense Lidar point cloud;
- At every new flight in the same asset, the previous measurements and cleaning points of interest will appear in the live map and in Inspector.
- Measurements and Waves will be visible in Inspector.

























7.99 mm

7.44 mm

7.62 mm

7.66 mm

7.59 mm

7.66 mm

7.70 mm