CALYPSO
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Ultra Low Power (ULP)
Ultrasonic wind sensor

User manual

English version 2.1
15.02.2021

CE FC 0809

If you want to know more about our new ULTRASONIC ULP wind meter, please keep reading or visit our website www.calypsoinstruments.com

0. Index

1. Product overview

Thank you for choosing the ULP Ultrasonic Anemometer from Calypso Instruments. This ULP is the first model or our generation II, representing an important technology breakthrough condensing an extensive R+D investment:

· Both shape and firmware have been enhanced for an improved rain performance, being this point key for static applications such as weather stations.
· Mechanical design has been revamped making the unit more robust and dependable.
· We feel very proud to release a unit that requires under 0,4 mA of power at 5V, sampling at 1Hz.
· Different output options available: RS485 and UART/TTL

Applications for the ULP are the following:

Weather Stations | Drones
Temporary Scaffolding and construction | Infrastructures and building | Cranes
Spraying | Irrigation | Fertilizing | Precision Agriculture
Smart Cities | Wild fires | Shooting | Scientific

2. Package content

The package contains the following:

· Ultrasonic Wired Wind Instrument + cable 2 meters for connection
· Serial number reference in the back of the packaging
· Quality control referece in the same place as the previous one.
(Both shown in the Image 1)
· User Quick guide at the back of the packaging and some more information useful for the customer.
· Connection instructions picture including at the box package.
· M4 headless screw (x6)
· M4 screw (x3)

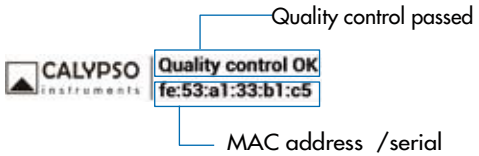

Image 1. Serial number/Control quality label

3. Technical specifications

ULP incorporates the following technical specifications:

3.1. Dimensions	· Diameter: 68 mm · Height: 65 mm
3.2. Weight	· Weight: 210 grams

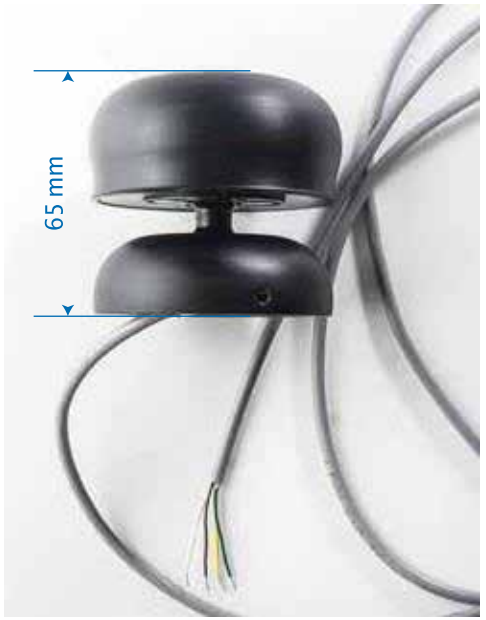

Image 2. Main dimensions of the unit.

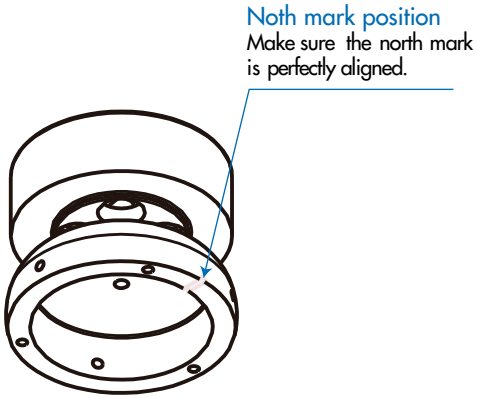

Image 3. North mark.

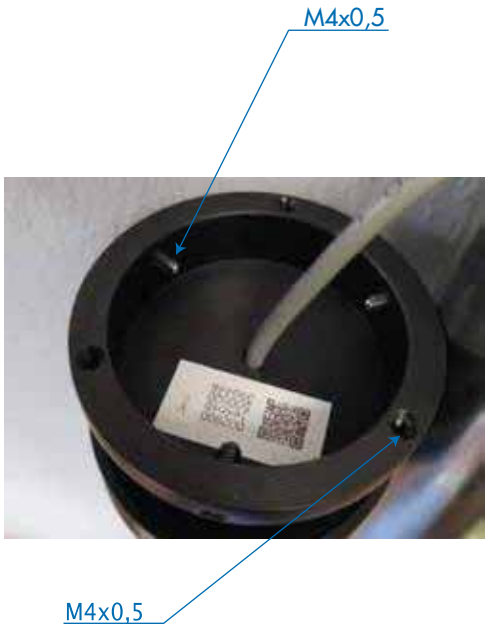

Image 4. Screw holes position .

3. Technical specifications
(continuation)

3.3. Power
· 3,3-24V

ULP 485 has to be connected as is shown below:

RS485 Output:

White GND (Power -)	Yellow DATA (B -)
Brown VCC (Power +)	Green DATA (A +)

UART/TTL Output:

White GND (Power -)	Yellow DATA Rx
Brown VCC (Power +)	Green DATA Tx

Image 5. Cable connections.

Data interface	1-Continuous output 2-POLL output 3-Any other ptrotocol under demand.
Data format	NMEA0183
Baudrate	2400 to 115200 bauds
Voltage range	3,3-24V

3.4. Sensors
· Ultrasonic transducers (4x)
· Sample rate: 0.1 Hz to 20 Hz

The ULP has been designed to avoid any mechanical parts to maximize reliability and minimize maintenance.

The transducers communicate between themsel - ves two by two using ultrasonic range waves. Each couple of transductors calculates the signal delay and gets information about both, wind direction and wind speed.

3.5. Wind information
· Windspeed
· Wind direction

Wind speed
Range: 0- 40 m/s
Accuracy: ±0.1 m/s at 10m/s

Wind direction
Range: 0- 360°
Accuracy: ± 1°

3.6 Easy mount
- 3 x M4 lateral female thread
- 3 x M4 inferior female thread

Lateral and inferior female thread. It can be mounted either on a plate (inferior screws) or on a tube (lateral screws).

North mark position
Make sure the north mark is perfectly aligned

Mounting accessories

Pole mount up to 52 mm

Flat mount

Adapter to Poles up to 39mm

Adapter to Carbon and Aluminum poles

3. Technical specifications
(continuation)

3.7. Firmware

· Upgradable via RS485 or UART/TTL

3.8. Limitations

ULP is engineered to be a robust device with minimal downtime. This new shape has been designed for optimum water spillage which implies lower probability of ice formation. Frost might affect measurements if it blocks the wave path.

The input wires are protected by Transient Voltage Suppression (TVS) diodes. Also, the instrument body is built in Polyamide.

3.9. Quality control

Every single unit is automatically calibrated on a wind tunnel. A Q/C report for both module and angle is generated and kept in our files. Standard deviation is checked to warranty that each unit is been calibrated to the hightest standards.

4. Configuration options

baudrate 2400 to 115200 (8n1) bauds
output rate: 0.1 to 20 Hz.
output units: m/sec., Knots or Km/h.

The Ultrasonic ULP can be set up by using a special App made by Calypso Instruments.

In order to use the APP you should download the following documentation:

Ultrasonic ULP configurator.exe

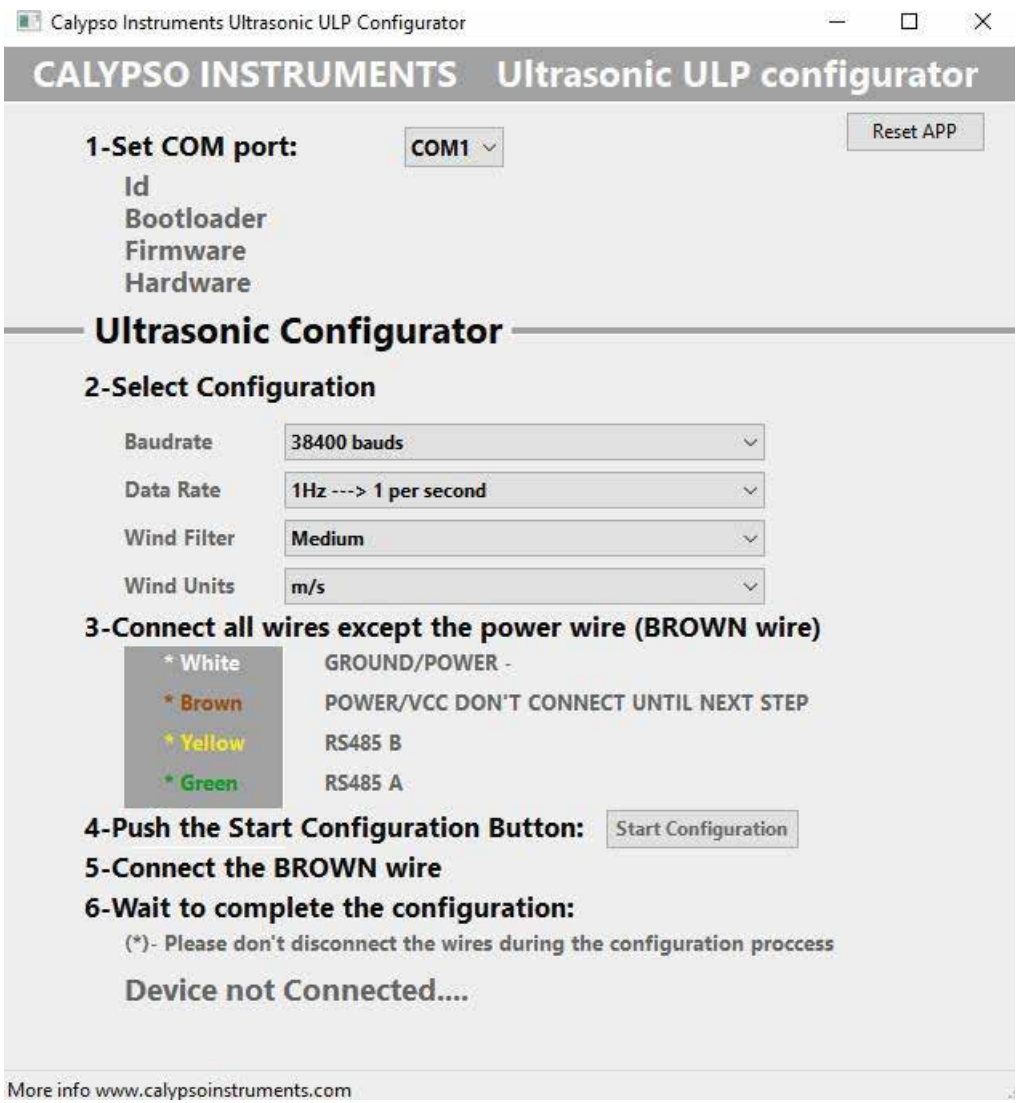

Image 8. Main screen.

5. General information

5.1. General recommendations

As described previously is important to understand that the unit can be mounted directly on a pole or using a flat bracket. In either case make sure the north mark is perfectly aligned.

Then install the sensor in a location free from wind perturbation.

Other important aspects

· Do not try to modify by any case the unit.
· Avoid touching the transducers
· Do not modify/customize the surface of the unit.

If you have any questions or doubts, please contact directly with us. We will be glad to assist you in any time.

5.2. Maintenance and repair

Thanks to the mechanical simplicity the ultrasonic does not require mechanical maintenance.

Transducers must be kept clean and aligned. Impacts or incorrect impulsive handling may lead to transducers misalignment.

The space in between the transducers and its reflection surface must be empty and clean. Dust, frost, water, etc… will make the unit stop working. Rinse with fresh water and let it dry.

5.2. Warranty

Warranty is void in case of non-following the instructions of use, repair or maintenance without written authorization. Every Calypso product offers a 2-Year Performance Warranty.

Calypso Instruments shall not be liable for any damages arising out of:

-Exposition of the Ultrasonic at temperatures out of the range stated above.
- Transducers misalignment or damage due to external impact.
- Solar cell damage due to removing the protecting film.
- Geometry changes on the flow channel due to external actions.
- Use inappropriate voltages.
- Do not installed the ultrasonic as stated above which causes damage on the ultrasonic.

You can return unopened items in the original packaging within 30 days of your purchase with proof of purchase. Upon receipt of the returned item, we will fully examine it and notify you via email, within a reasonable period of time on the status. If we decide a return is appropriate, we will refund your purchase price and a credit will be applied to your original method of payment.

For further information please contact Calypso Technical Support through
aftersales @calypsoinstruments.com
or visit www.calypsoinstruments.com .

Calypso Instruments team thanks you for your confidence.

CALYPSO instruments

C/Alfonso Solans 20, local 12
5014 - Zaragoza
Spain
Telephone number: +34 976 291 839
E-mail: sales@calypsoinstruments.com
aftersales@calypsoinstruments.com

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