

Commercial proposal for a goniometer

Istituto Nazionale di Oceanografia e di Geofisica Sperimentale -
OGS

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CHRONOLOGY ISSUES

Version	Date	Reference	Written by	Checked by
1	09/10/2023	CLS-ENV-PC-23-0582	S. Routaboul	

INFORMATION ON THE OFFER

Type of sale	Incoterm	Type of order	Activity code	Technology code
Hardware	DAP	Direct sale	Oceanography	ARGOS

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2. CLS profile

Collecte Localisation Satellite – CLS – is a subsidiary of CNES (French Space Agency) and CNP. We have been operating satellite systems and providing **high value-added products and services since 1986**.

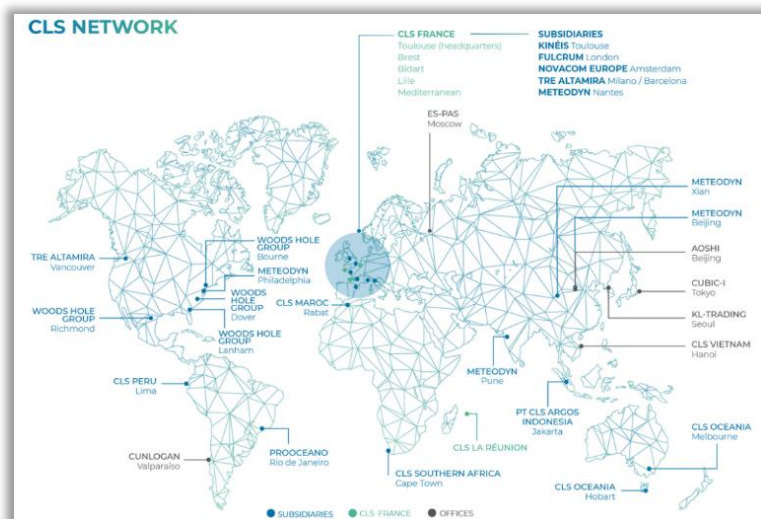
CLS is a worldwide **leader** in providing space-based solutions for environmental applications.



Working with the operational ocean & wildlife tracking community for over 30 years, CLS is also operating a full set of in-situ data collection and Earth observation satellite services for Hydrology & Agriculture, Soil & Air monitoring,

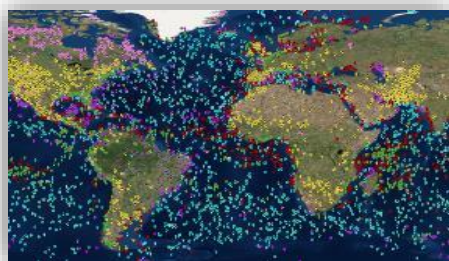


We are now a group of **900+ employees** with headquarters in Toulouse in France and an international network of **34 offices**.



CLS provides **2 global coverage** satellite systems services:

- ARGOS – legacy & Kinéis
- Iridium



With **2 processing centers** operated and **monitored 24/7**, CLS is receiving, processing, validating, distributing, and archiving data from these both satellite systems, everywhere on Earth.

CLS currently tracks more than **100,000 platforms** each day and is the partner of choice for all environmental projects that rely on satellite telemetry, with highly trained customer support and unmatched expertise in this field.



Operational excellence

- ✓ **2 redundant** processing centers, **operated 24/7**,
- ✓ More than **40 years of experience** in the operational ARGOS telemetry community
- ✓ More than **100 000 platforms tracked** worldwide by CLS satellite systems



CLS Experience

- ✓ CLS is dealing with the worldwide wildlife satellite tracking community since 1986. We have gathered a huge experience in term of operational practices, satellite data processing, archiving and all related data exchanges.
- ✓ The client is the only owner of data which are strictly confidential and protected.
- ✓ CLS is **ISO 9001 certified** and applies quality management to all its activities, including those with suppliers.

3. Technical proposal

3.1. Argos system



Argos is a global, satellite-based data collection and positioning system, dedicated to studying and protecting the earth's environment and is governed through a partnership between NOAA, NASA, CNES, ISRO and EUMETSAT.



Since the beginning, the ARGOS system has continued to improve in order to better meet the needs of our users, in particular through the regular launch of new satellites.

Currently, the ARGOS satellite system has the following characteristics :

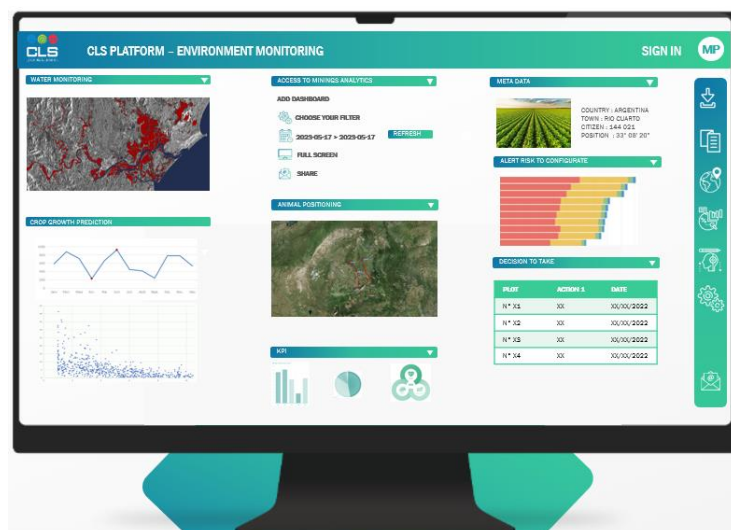
- ✓ Global coverage
- ✓ 8 operational satellites
- ✓ From 4 Kbytes to 12 Kbytes of data can be transmitted daily, per platform
- ✓ Low transmission power (from 250mW to 1W)
- ✓ DOPPLER positioning :
 - GPS-free positioning system
 - Accuracy up to 250 m

VA services



In addition to the basic data collection service, Argos offers a range of monitoring solutions for all your operational needs:

- ✓ Backup tracking
- ✓ Geofencing
- ✓ Sensor Alert
- ✓ Transmission monitoring
- ✓ Earth observation processing



3.2. Kinéis constellation

Kinéis, a subsidiary of CLS and CNES created in 2019, **fully funded**, is launching a new constellation of **25 nanosatellites**, which will be put into orbit and operational in 2024.

This constellation, with **full ARGOS compatibility** as well as retro-compatibility with all generations of ARGOS platforms, will therefore complement and improve the current ARGOS satellite system.

- ✓ **Better revisit time** - max **15 min**
- ✓ **More data to be transmitted**
- ✓ **Full & global two-way communications**
- ✓ **Low consumption** - down to **100mW**
- ✓ **Electric propulsion** - for reliability & durability improvement
- ✓ **Multi beam antennas**



Thus, thanks to Kinéis and its nanosatellites, **a new era is beginning** in satellite telemetry solutions for low power and low-cost systems.

3.3. Hardware

3.3.1 Argos Platform Finder – Goniometer

The Argos goniometer has been designed by CLS to specifically allow users to find active ARGOS PTTs in the field. Depending on the altitude and the reception conditions the [goniometer](#) can detect all transmitting platforms within a radius of 100 km or more.

This highly sensitive direction finder **allows field recovery of Argos platforms by detecting** :

- ✓ The direction towards the Argos platform
- ✓ The signal power of the Argos transmitter
- ✓ The GNSS positions transmitted by the platform (if any)
- ✓ Full compatibility with the current ARGOS constellation, ARGOS 4 and future KINEIS constellation
- ✓ Extended Internal Memory save up to 200 000 messages internally (shared between all favorites platforms)
- ✓ All to Favorite mode to automatically consider any platform received as a favorite (internally recorded)
- ✓ Proximity & Narrow band modes for last meters and difficult conditions

3.3.2 Technical Specifications

RXG-234 RECEIVER & AXG 234 ANTENNA

GONIO RXG 234 weight	565 gr
GONIO RXG 234 dimensions	135mm x 92.5mm x 34 mm
Dimension of AXG 234 antenna	400mm x 65mm
AXG 234 Antenna Weight (without cable)	650 gr
Frequency range (MHz) (to be selected)	B1 [401.610-401.690] B2 [401.530-401.610] B3 [401.460-401.540] B4 [401.390-401.470] B5 [401.310-401.390] B6 [401.110-401.190] B7 [401.010-401.090] B8 [399.970-400.050] B9 [399.900-399.980]
Frequency stability	±3.5ppm over the temperature range
Minimum detection sensitivity	-131dbm (63nVrms @50Ω)
Accuracy of angle measurement	±5°
Resolution of the measurement of the angle	T±1°
Standard length of RG58 antenna cables	5m
Maximum length of RG58 antenna cable with extension	25m
Battery Charging Time (External Charger)	7h
Battery charging time via USB	15h
Internal Battery Capacity	6800mAh
Autonomy (USB & GPS OFF)	> 50h @ 25°C
Temperature range	0°C to +45°C for battery charging -20°C to +50°C in use
Waterproof rating	IP 66

Specifications are subject to change without prior notice



CLS goniometer kit



KIT CONTENTS

- RXG 234 Goniometer
- AXG 234-A Antenna with a 5-m cable (25m extension available upon request)
- Software
- USB cable
- Power cord and charger
- Steel antenna mount (may be fixed to an existing structure)
- IP66 suitcase with preformed foam

4. Commercial proposal

4.1 Hardware price

Item	Description	Unit Price (in €)	Quantity	Total Price excl. taxes (in €)
1	Complete Argos Goniometer RXG-234 kit	€ 9 500.00	1	€ 9 500.00
2	Extension cable of 25 meters (optional)	€ 500.00	1	€ 500.00
3	Shipping to Mrs Elena Mauri Istituto Nazionale di Oceanografia e di Geofisica Sperimentale - OGS Centro Gestione Infrastrutture Navali - CGN Borgo Grotta Gigante n. 42/c 34010 Sgonico (Trieste) - Italia emaury@ogs.it +39 320 4324732 (DAP incoterm)	€ 50.00	1	€ 50.00
	Total Price excl. taxes (in €)			€ 10 050.00

5. Conditions

- ✓ **Validity:** this proposal remains valid until 31/12/2023.
- ✓ All prices are indicative and subject to modification according to technical needs
- ✓ **All prices are exclusive of VAT**
- ✓ **Delivery date:** 1 week after signature of the hardware contract
- ✓ **Payment Terms:**
 - Equipment - 30 days from date of receipt of equipment
- ✓ **Warranty:** Equipment is guaranteed for 1 year.
- ✓ **CLS General Conditions and Clauses** applicable to sales of services and equipment apply.
- ✓ CLS is **ISO 9001 certified** and applies quality management to all its activities, including those with suppliers.