



THE VERSATILE GPS POSITIONING SYSTEM

Aquarius

LRK®: BEYOND RTK

Aquarius is the ultimate answer to the expectations of the rigorous and demanding world of Marine Surveying. With our dual-frequency LRK® kinematic processing technology -today a standard renowned for its outstanding performance- you get fast, real-time centimeter-level positioning and fully operational radio link up to 40 km. With LRK®, you will be able to work at greater distances than conventional RTK.

Aquarius also comes in a single-frequency version featuring our KART technique.

RADIO LINK: YOUR CHOICE

In order to guarantee the level of performance and reliability for the reception of differential corrections on different frequency bands, all possible configurations have been thought up.

Not only can you take advantage of the high-performance UHF link designed by Thales Navigation ("U-Link") but you can also use an HF/MF link (HM-link) providing full compatibility with existing networks. For example, HF or IALA radiobeacons.

Choose the built-in radio configuration that best meets your needs: 1 or 2 U-Link modules, 1 or 2 HM-Link modules, or 1 U-Link module and 1 HM-Link module.



ERGONOMIC AND VERSATILE: AN ARRAY OF POSSIBILITIES

We have included in Aquarius all the features you need including a floating power input, a sealed ultra-resistant case as well as essential interfacing capabilities. Aquarius offers flexibility with its five I/O ports, the TRM100 navigation and control terminal and ConfigPack software.

Moreover, Aquarius has potential for additional expansion, depending on the chosen model: you can easily upgrade it from single to dual frequency, or even to Aquarius² which offers a combination of accurate heading and positioning.

Finally, like all Aquarius, Aquarius² and Sagitta are backward compatible with our Thales Navigation 5000 series.

TECHNICAL SPECIFICATIONS

APPLICATIONS

- Hydrographic Surveying
- Dredging
- Offshore Surveying
- Laying of Cables and Pipelines

MAIN FEATURES

- L1/L2 LRK® centimeter real-time positioning (Aquarius-O2)
- L1 KART centimeter real-time positioning (Aquarius-O1)
- Navigation Functions available using TRM100:
 - Profile and homing modes
 - Quality Control menus: GPS, radio, precision, etc.
 - Graphical menus including zoom function
- User Coordinate System:
 - Local datum, projection, geoid model
- Aquarius Configurations and Standard Supply

	Standard Features	Firmware Options	Hardware Options
Aquarius-O1	Receiver with keyboard & screen NAP 001 antenna with standard supply Firmware: DGPS, EDGPS, KART	REFSTATION RELATIVE OTF	Rx 4812 U-Link Reception Module (x1 or x2) Rx 1635 HM-Link Reception Module (x1 or x2) Tx 4800 U-Link Transmission Module
Aquarius-O2	Receiver with keyboard & screen NAP 002 antenna with standard supply Firmware: DGPS, EDGPS, KART	LRK® REFSTATION RELATIVE OTF	Rx 4812 U-Link Reception Module (x1 or x2) Rx 1635 HM-Link Reception Module (x1 or x2) Tx 4800 U-Link Transmission Module

Standard Supply List

- NAP 001 L1 geodetic antenna; Dia.: 143 mm (5.63"); 0.35 kg (0.77 lb)
- NAP 002 L1/L2 geodetic antenna; Dia.: 143 mm (5.63"); 0.35 kg (0.77 lb)
- Power cable, RS232 serial cables (x 2), RS422/RS232 adaptor
- TRM100 keyboard & screen terminal, its mounting kit and a 1 meter cable
- Mounting bracket and receiver mounting kit
- Rugged transport case

POSITIONING SPECIFICATIONS⁽¹⁾

- Real-Time Centimeter LRK® Mode (L1/L2)
 - Operating range up to 40 km (5 SVs or more) with OTF kinematic initialization
 - OTF initialization time: 30 seconds, typical
 - Precision:
 - In KR Fast Mode (20 Hz max. and 5-ms latency):
10 mm + 0.5 ppm, XY
20 mm + 1.0 ppm, Z
 - In KA Synchronous Mode (1 Hz and 1-s latency):
5 mm + 0.5 ppm, XY
10 mm + 1.0 ppm, Z
- Real-Time Centimeter KART Mode (RTK L1)
 - Operating range up to 12 km (5 SVs or more) with OTF kinematic initialization
 - OTF initialization time: 10 minutes, typical
 - Precision:
 - In KR Fast Mode (20 Hz max. and 5-ms latency):
10 mm + 0.5 ppm, XY
20 mm + 1.0 ppm, Z
 - In KA Synchronous Mode (1 Hz and 1-s latency):
5 mm + 0.5 ppm, XY
10 mm + 1.0 ppm, Z
- Real-Time Decimeter EDGPS Mode
 - No operational limits of distance; U-LINK radio reception required
 - Data convergence time: 2 minutes, typical
 - Precision: 20 cm + 2 ppm, XYZ
- Real-Time Metric WAAS/EGNOS Mode
 - Service area as defined for the system of satellites used. The different systems available are: WAAS in North America, EGNOS in Europe and MSAS in Japan
 - Precision: 1 to 2 meters, XY; 3 meters, Z
- Raw Data: 10 Hz output rate
- Computed data: 20 Hz output rate - Latency < 5 ms (0.005 s)

Local distributor

TECHNICAL SPECIFICATIONS

- GPS/GNSS
 - 16 x L1 channels (Aquarius-O1 & O2)- 12 x L2 channels (Aquarius-O2 only)
 - C/A code and L1 phase, P code and L2 phase with multi-path processing
 - Differential modes: WAAS/EGNOS, Numeric RTCM Version 2.2, messages 1, 3, 5, 9, 16, 18 & 19
- Interfaces
 - Integrated TRM100 Navigation & Control terminal, 1/4 VGA screen
 - GPS and Radio Antenna connectors: 1 female TNC (GPS) and 1 or 2 female TNC (Radio)
 - 4 two-way I/O ports (one RS232, three RS422) with baud rates from 1200 to 115200 bauds
 - AUX port (1 PPS output, external event input, etc.)
 - TRM100 remote display via VGA output
 - NMEA 0183 messages: GGA, GLL, VTG, GSA, ZDA, RMC, GRS, GST, GSV, GPM
 - User messages via ConfigPack
- Electrical
 - Power source: 9 to 36V DC, floating input
 - Consumption: 10 to 21 W depending on configuration used
- Environmental
 - IP 52 compliant, ultra-resistant aluminum case
 - Operating temperature range: -20 to +55°C (antennas: -40 to +70°C)
 - Storage temperature range: -40 to +70°C
 - Vibration: EN 60945 & ETS 300 019 (Shocks)
 - EMI: EN 60945
- Physical
 - H x W x D: 125 x 245 x 305 mm (4.92 x 9.64 x 12")
 - Weight: 4.2 kg (9.26 lb)

FIRMWARE OPTIONS

- LRK® - Dual-frequency OTF kinematic processing
- REFSTATION - Processing of corrections in DGPS or KART/LRK® mode
- RELATIVE OTF - Determination of non-fixed relative baseline between two mobiles

RADIO MODULE OPTIONS

- Tx 4800 U-Link UHF Transmission
 - Transmission module operating in UHF band 410 to 470 MHz
 - Data formats: LRK® (RTK) and RTCM
 - Modulation type: GMSK at 4800 bits/s
 - Radiated power: 4W or 0.5W (according to local authorization)
 - CXL-70 3 dB antenna
 - Norm ETS 300-113 - Certified in Europe, the US and most other countries
 - R & TTE 1999/5/CE
 - EMI specifications: EN60945
- Rx 4812 U-Link UHF Reception (1 or 2 built-in modules)
 - Reception module operating in UHF band 410 to 470 MHz
 - Reception module designed to be integrated into the receiver
 - Modulation type: GMSK 4800 bits/s or DQPSK 1200 bits/s (NDS 100 type)
 - CXL-70 3 dB antenna
- Rx 1635 HM-Link HF/MF Reception (1 or 2 built-in modules)
 - Reception module designed to be integrated into the receiver
 - Dual-channel in HF band 1.6 to 3.5 MHz; BCPSK modulation (NDS 200 type)
 - Dual-channel in MF band 270 to 330 kHz; MSK modulation
 - DHM 5000 dual-band antenna - H x Diameter: 245 x 135 mm (9.64 x 5.31")

(1) All performance figures are 1σ RMS values measured in normal conditions of GPS reception (normal ionospheric activity, 5 satellites used and HDOP < 4) on a clear site.

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Thales Navigation follows a policy of continuous product improvement; specifications and descriptions are thus subject to change without notice.
The US policy for GPS signal control (Selective Availability) was discontinued on 2 May 2000, but can be re-established without prior notification to users.