



## THE DUAL GPS FOR ACCURATE HEADING

### Aquarius<sup>2</sup>

#### HEADING PRECISION UP TO 0.01°

Aquarius<sup>2</sup> was developed for those who need to add a new dimension to marine surveying: precise heading with greater processing speed and more flexibility. Aquarius<sup>2</sup> adds a second set of GPS/GNSS channels to the Aquarius marine survey equipment offering up to 56 independent, parallel dual frequency channels. Unrivaled levels of performance are therefore reached: 0.01° dual frequency heading or 0.1° single-frequency heading, using a 2-meter baseline.

Moreover, Aquarius<sup>2</sup> offers high precision with ultra-high speed; thanks to our GYROSKY® technology that provides fast processing and high levels of availability.

#### ABSOLUTE OR RELATIVE POSITIONING

You will have at your disposal one of the best positioning products available today. By combining the different technologies used in Aquarius<sup>2</sup>, you will simultaneously get heading data and real-time kinematic positioning (single-frequency KART or dual-frequency LRK®). Aquarius<sup>2</sup> also offers you "Relative OTF" mode which computes the relative position of a second mobile: in real time and with centimeter precision.



#### UPGRADE YOUR AQUARIUS TO AQUARIUS<sup>2</sup>

Aquarius<sup>2</sup> is at the same standard of performance and quality as Aquarius. It delivers the same level of precision in RTK mode, fully integrated and configurable radio links, floating power input, numerous interfacing capabilities including five I/O ports and ergonomic keyboard and screen.

Aquarius<sup>2</sup> is also fully configurable using our ConfigPack software.

## TECHNICAL SPECIFICATIONS

### APPLICATIONS

- Multi-beam Sounding
- Dredging
- Construction
- Machine Automation

### MAIN FEATURES

- True heading function precise to within 0.1° or better
- L1/L2 LRK® or L1 KART centimeter real-time positioning
- Centimeter Relative GPS Function (Relative OTF)
- Navigation Functions available with TRM100:
  - Profile and homing modes
  - Quality Control menus: GPS, radio, precision, etc.
  - Graphical menus including zoom function

### Aquarius<sup>2</sup> Configurations and Standard Supply

	Standard Features	Firmware Options	Hardware Options
Aquarius <sup>2</sup> -11	Receiver with keyboard & screen NAP 001 antenna (x2) with standard supply Firmware: DGPS, EDGPS, KART, HEADING	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 <sup>2</sup> -12	Receiver with keyboard & screen NAP 001 antenna (x1) + NAP 002 antenna (x1) with standard supply Firmware: DGPS, EDGPS, KART, HEADING	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
Aquarius <sup>2</sup> -22	Receiver with keyboard & screen NAP 002 antenna (x2) and standard supply Firmware: DGPS, EDGPS, KART, HEADING, RELATIVE OTF	LRK® REFSTATION	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

### HEADING & RELATIVE GPS SPECIFICATIONS<sup>(1)</sup>

#### Heading

	Precision Range	Baseline Length	Heading Precision (RMS)	Initialization Time (s), Typical
Aquarius <sup>2</sup> 11 or 12	0.2 to 0.04°	1 to 5 m	0.2° / D *	10 s + 30 s/m
Aquarius <sup>2</sup> 22	0.1 to 0.01°	> 2 m	0.2° / D *	5 s/m

\* D= Baseline Length in meters

#### Relative GPS

- OTF initialization time: 30 seconds, typical
- Same level of precision as in positioning (EDGPS, KART, LRK®)

#### Computed data (heading & relative GPS): 20 Hz output rate - Latency < 5 ms (0.005 s)

### POSITIONING SPECIFICATIONS<sup>(1)</sup>

#### 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

Local distributor

#### 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)

### TECHNICAL SPECIFICATIONS

#### GPS/GNSS

- 32 x L1 channels (Aquarius<sup>2</sup> 11 & 12) 24 x L2 channels (Aquarius<sup>2</sup> 12 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 & Radio Antenna connectors: 2 female TNC (GPS) and 1 or 2 female TNC (Radio)
- 4 two-way I/O ports (1 x RS232, 3 x RS422), 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, GPR, HDT, HDG, ROT, VBW, VHW, OSD, HRP
- User messages via ConfigPack

#### Electrical

- Power source: 9 to 36V DC, floating input
- Consumption: 12 to 25 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®
- RELATIVE OTF - Determination of non-fixed relative baseline between 2 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/CEE
- EMI specifications: EN 60945

#### 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 Dia.: 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 SVs used and HDOP < 4) on a clear site.

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 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.