Gaps M3 (G5)

High-performance USBL positioning & communication system

Gaps M3 is a high-performance Ultra Short Baseline (USBL) positioning and communication system for locating and communicating with subsea assets. Available in a version free of export restrictions and an extended range version, Gaps M3 is a lighter and more compact version of the Gaps design ideal for permanent fit.

FEATURES & BENEFITS

- Wide bandwith signals
- Acoustic communication (telemetry & modem)
- Truly omnidirectional
- Suitable for DP class 2,3 (LUSBL mode)
- Third party transponder compatibility
- Easy interfacing with major navigation suites
- Embedded web-MMI
- Simultaneous multiple subsea asset tracking

APPLICATIONS

- ROV tracking
- AUV tracking
- Marine work
- Dynamic positioning (DP)

MULTIPLE TARGET TRACKING AND ACOUSTIC COMMUNICATION CAPABILITIES

Advanced acoustic techniques, including wide bandwidth signals, enable maximum performance even in the most challenging conditions. With its unique 3D acoustic array, the Gaps M3 allows for efficient tracking and communication from the deep sea to extremely shallow water, including at angles above horizontal. Gaps M3 embeds the latest improvement of the Gaps series with advanced features, including enhanced acoustic communication capability for commanding and controlling multiple subsea assets, a new web MMI with real-time 2D mapping, and additional compatibility with third-party transponders.

COMPATIBILITY WITH MAJOR GYROS, AHRS, AND MOTION SENSORS

Gaps M3 is compatible with Exail Phins surface INS and AHRS to achieve ultimate absolute positioning performance. It is also compatible with various third-party AHRS commonly used on worldwide vessels.

COMPATIBILITY WITH MAJOR DYNAMIC POSITIONING (DP) SYSTEMS

Developed to meet the requirement of DP class 2 and 3, Gaps M3 is a valuable equipment for all kind of DP vessels. It provides reliable USBL and LBL measurements (LUSBL mode) to ensure continuous operation even when other sensors are unavailable.

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GAPS M3 TECHNICAL SPECIFICATIONS

Positioning performance

Repeatability [1] [2]	0.10%SR – CEP50
Bearing accuracy [3]	0.03°
Range accuracy	1 cm
Max position update rate	3 Hz
Number of targets	40

Acoustic performance [4]

Operating frequency	18 – 34 kHz
Range	995 m 4,000 m (XR version [5])
Coverage	>200°

Acoustic communication

Frequency	18-34 kHz
Range	up to 3,000 m
Services	8-80 bytes messages, modem and file transfer
Bitrate	500 bps to 8 kbps

Mechanical

Housing	Carbon fiber
Weight (air/water)	12 kg / TBD
Dimensions (HxØ)	465x296
Depth rating	25 m

Environment

Temperature (operating)	-5°C to +35°C
Temperature (storage)	-40°C to +70°C
EMC	EN60945

Interfaces

Power supply	100 to 240 VAC / 50-60 Hz 24/36 VDC
Power consumption nominal with Gaps Box and 50m cable	14 W
Input/output ports	Ethernet 4 serial RS232/422 (with Gaps BOX)
Synchronisation	1 PPS + 3 IN/OUT (TTL or differential +/-5V)

(1): %SR = % of slant range; CEP50 = Circular Error Probability at 50%
(2): In vertical conditions at input SNR = 20 dB, with MF transponder
(3): RMS value at input SNR = 20 dB, with MF transponder
(4): Positioning max range is 995 m with M3 and M5 export free version. Extented range version is subject to export licence
(5): XR extended range version – requires export licence

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GAPS BOX SPECIFICATIONS

Dimension	233 mm x 330 mm x 94 mm
Weight	4.1 kg
Temperature (operating)	-25°C to +55°C
Temperature (storage)	-40°C to +70°C

GAPS SERIES TRANSPONDERS

Gaps is compatible with all Exail MF beacons including:

Name	Description	Acoustic communication	Applications
MT9x2 series 	Internal rechargeable battery, OEM, 1,000, 3,000 m depth rated		ROV, Tow fish and diver positioning
MTBx2 series 	Mini transponder for AUV OEM and 300 m depth rated	●	AUV positioning
Canopus 	LBL and Sparse LBL Intelligent transponder 4,000 and 6,000 m depth rated	●	AUV positioning, LBL calibration, Dynamic Positioning (DP)

Third-party transponders compatibility: contact Exail

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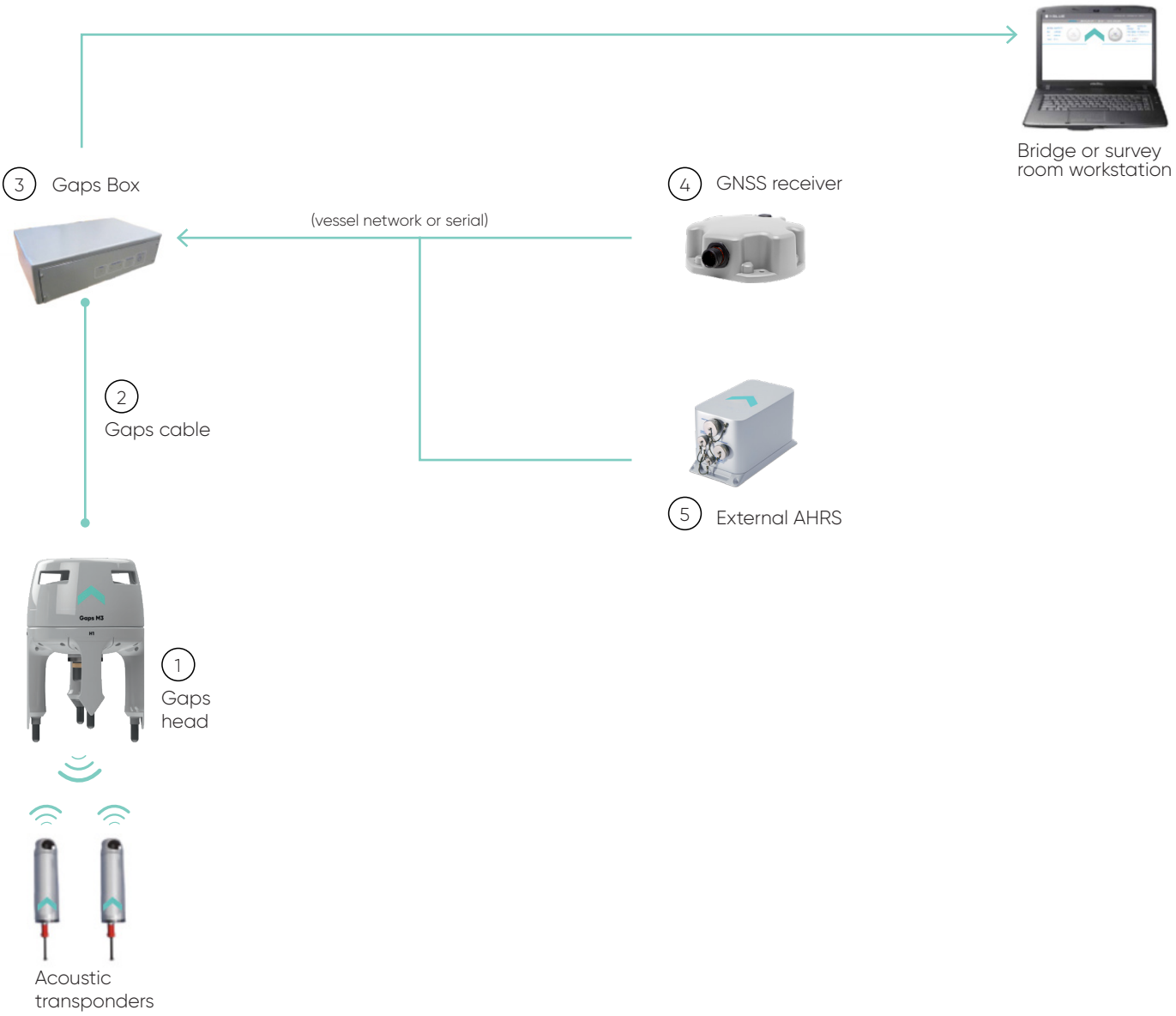
COMPONENTS & INTEGRATION



1 **Gaps head**
Gaps M3 acoustic transceiver head

2 **Gaps cable**
20/50/95m long cable used to communicate with Gaps head. Extendable up to 190m with a Repeater Box.

3 **Gaps Box**
Top side unit to interface between the Gaps head and external peripherals.

4 **External GNSS (in option)**

5 **External AHRS (in option)**
Heading, Attitude and Motion compensation from Exail or other manufacturer.

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