Ramses

LBL and sparse LBL intelligent transceiver

Ramses is an acoustic synthetic baseline positioning system (ASBL) designed to make LBL and sparse-LBL subsea navigation simple.

Tightly coupled with iXblue inertial navigation system (Phins, Rovins or Rovins Nano), it delivers extreme precision and robustness using a greatly reduced number of transponders compared to usual LBL systems.

Available in medium frequency version compatible with Gaps, Ramses is a key part of iXblue inertial-acoustic solutions for subsea positioning.

FEATURES

- Modes of operation: Sparse LBL positioning, with SLAM capability, and LBL
- Compatibility:
  - iXblue INS
  - Canopus supervision software
- Embedded Kalman filter and LBL algorithms
- Full embedded processing, no top-side required
- Millimetre range measurement precision
- Embedded SV, Pressure and Temperature sensors
- Subsea switch & logger functionalities
- Acoustic communication (500 bits/s)

BENEFITS

- Simplified mobilization, for ROVs and AUVs
- LBL navigation accuracy, with superior precision
- Reduced number of required transponders
- Flexible array deployment thanks to SLAM
- Fully operable in existing fields, reducing seabed transponders maintenance and vessel time

Next generation LBL

Thanks to its fully embedded architecture, Ramses delivers the best possible acoustic aiding data to the INS, with perfect time-stamping and extremely reduced latency. This optimum data fusion brings amazing robustness to the positioning, easily allowing 90% savings on transponder batteries and perfect navigation with one single transponder deployed. This is the iXblue Acoustic Synthetic Base Line concept (ASBL).

Using Ramses, both LBL and sparse-LBL features are natively offered to the operator depending on the number of available transponders:

- With 1+ transponder, sparse LBL position is obtained from the fusion of acoustic ranges with navigation equations from the INS
- With 4+ transponders, embedded LBL algorithms provide high performing 100% acoustic navigation and efficient environmental QC

APPLICATIONS

 AUV

 Metrology

 Salvage

 ROV

 Oil & Gas

 Survey

 Oceanography

iXblue
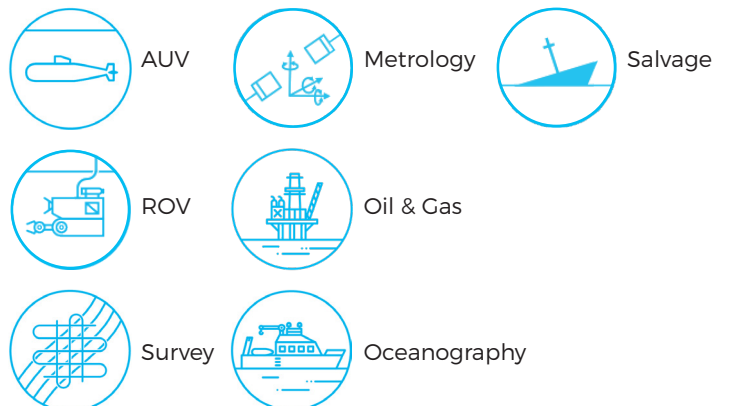
TECHNICAL SPECIFICATIONS

Performance / Characteristics

|	Ramses (MF band)
Acoustics	
Frequency band	18 - 36 kHz
Remote Transducer Beam-shape	Omni-directional
Tx Level	196 dB (ref. 1 µPa @ 1 m)
Position accuracy	
Standard LBL, 4 transponders	< 0.10 m
INS aided, 2 transponders	< 0.10 m
Ranging	
Precision	> 0.01 m (1 sigma)
Maximum range	4,000 m
Sensor precision	
Sound Velocity Probe	1375 m/s to 1900 m/s, ± 0.020 m/s
Pressure	±0.03% full scale
Temperature	±0.1°
Compatible Transponders	Full range of iXblue MF range (mini, releasable and Canopus)
Compatible USBL	iXblue Gaps
Interfacing	iXblue web MMI Ethernet, Serial, pulses Subsea switch & UPS for connected INS
Power supply	
IN	External, 12 / 36 VDC - 5W average - 15W peak (positioning) - 50W peak (communication)
OUT	24 VDC - 25W max
Mechanical specifications	
Construction	Aluminum
Weight (air / water)	16 / 6 kg
Depth rating	4,000 m
Size (OD x length)	Ø 180 x 727 mm
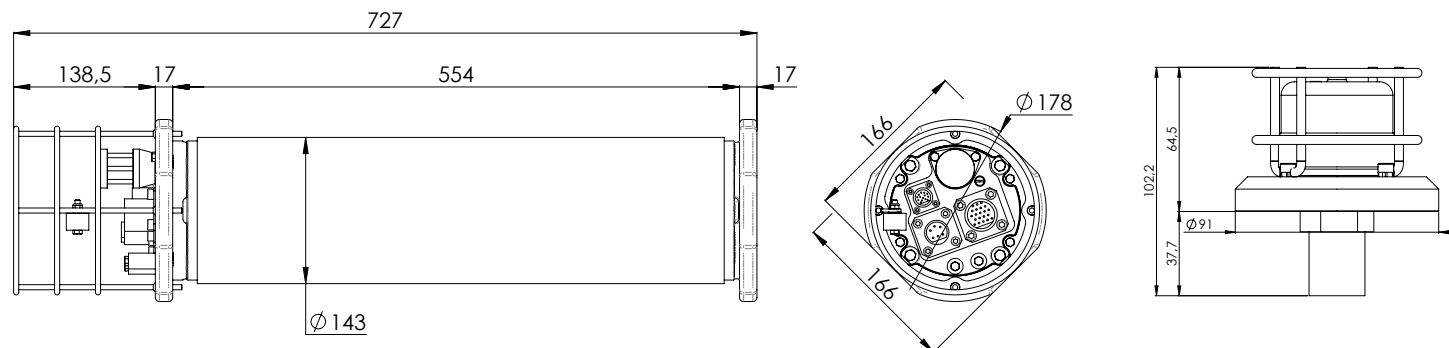
Typical ROV connection scheme
Sharing connections to simplify and secure operations

Seamless integration on vehicles:

· One single Ethernet port required for INS + Ramses
· One single PPS required
· Shared sensors and navigation data between units
  (SV, P, T...)
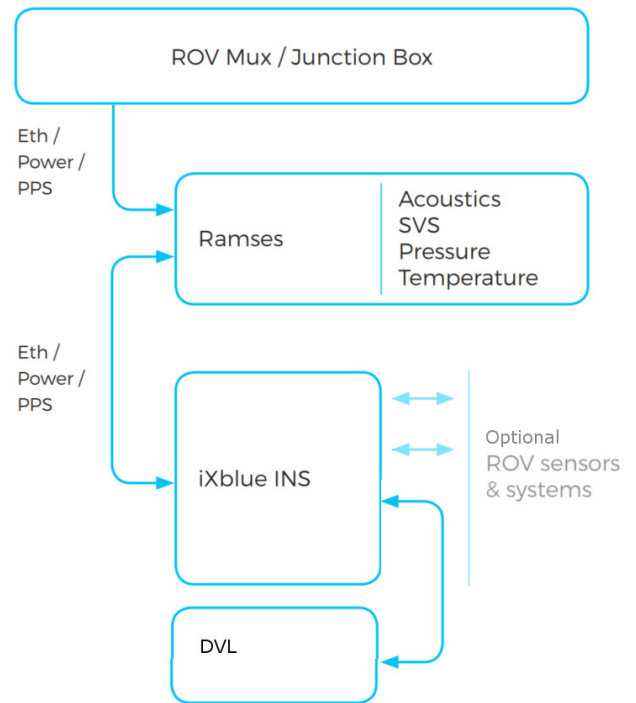

Tight Coupling with iXblue INS
Ultimate ASBL Performance and Reliability

Thanks to its full embedded architecture, Ramses delivers the best possible aiding data to your iXblue INS, with perfect time-stamping and extremely reduced latency.
Unlike standard LBL which requires a minimum of 4 transponders to compute a single position, INS-Ramses Kalman filters get aiding from each and single measured range.

This optimum data fusion brings amazing robustness to the positioning, ultimately making non-drifting subsea navigation possible with only one single transponder deployed.
This is iXblue Acoustic Synthetic Base Line (ASBL).

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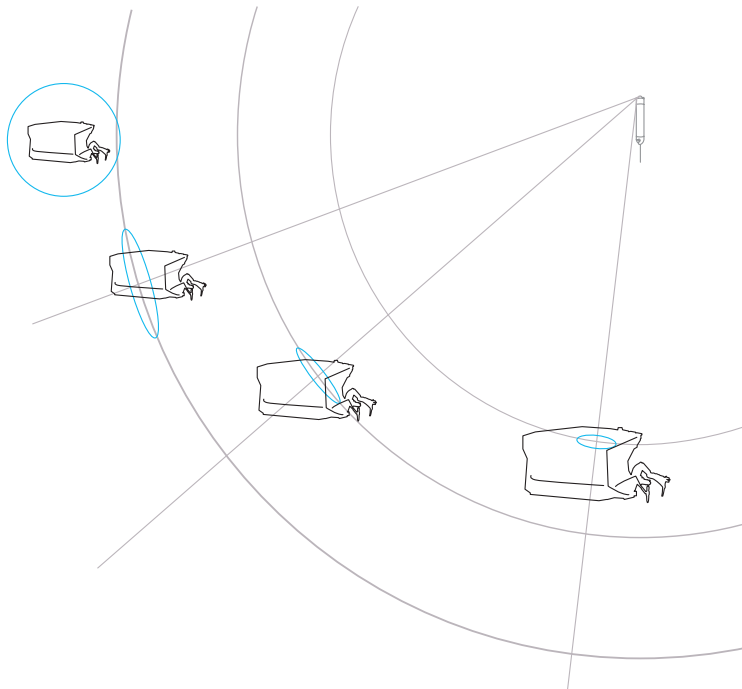
SLAM calibration technique
Redeploy transponders to build a flexible array

Using embedded SLAM algorithms, Ramses can extend and calibrate local arrays in no more than 30 min, from shallow to 6,000 m water depth.

Decimeter precision is quickly obtained where needed, without deploying a full LBL array.

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