

REACH™

Remote Echoscope® Acquisition Computer Hub

Dedicated Splashproof Acquisition Computer Hub Optimised for Operation of the Echoscope PIPE NANO Gen Series®

REACH™ (Remote Echoscope Acquisition Computer Hub) is a rugged, splashproof enclosure designed to enable the deployment and remote operation of Echoscope PIPE NANO Gen Series® sonar systems on Unmanned Surface Vehicles (USVs) and other unmanned platforms.

The system integrates a dedicated sonar acquisition computer, power distribution electronics, and network infrastructure within a compact weatherproof enclosure, providing a complete solution for sonar control, data acquisition, and remote operation in demanding marine environments. REACH™ simplifies system integration by providing a single enclosure that powers, connects and hosts the key components required for Echoscope® sonar operations.

REACH™ houses a dedicated acquisition computer optimised for operation of the Echoscope PIPE NANO Gen Series® sonar. Balancing powerful graphics processing power with minimised power consumption and heat generation, it supports real-time sonar data acquisition, recording and remote control whilst minimising installation complexity aboard the host vessel.

An internal Ethernet switch provides connectivity between the acquisition computer, sonar system and optional NANO IPT rotator, creating a self-contained network environment within the enclosure.



Some of the innovative REACH™ features available are:



Splashproof Enclosure

Can be safely deployed on small unmanned vehicles in the splash zone



Integrated Acquisition Computer for Sonar Operation and Data Recording

Communicates with sonar and rotator, generated live 3D imagery and records data



Single 24VDC Power Input with Internal Power Distribution

Easy integration with a single DC input for all connected devices



Removable Computer for Post-Mission Data Processing and Maintenance

Transition from the field directly to the office and back



Compatible with Echoscope PIPE NANO Gen Series® Sonar Systems

High-definition real-time 3D imagery in an NANO form factor



Support for Optional NANO IPT Dual-Axis Rotator

Enhance versatility by directing the sonar wherever you need clear imagery



Remote Operation via VNC over Ethernet

Simple configuration, reliable operation



Navigation and Attitude Data Input via UDP

Fully georeferenced point cloud data for modelling, mapping and surveying applications

REACH™ is designed around a simple single-input power architecture. A 24 VDC supply is received by the enclosure and distributed internally to:

- **Acquisition Computer**
- **Echoscope PIPE NANO Gen Series® Sonar**
- **Optional NANO IPT Rotator**

This integrated approach reduces installation effort and eliminates the need for multiple external power supplies.

REACH™ is intended for fully remote operation from a shore-based control station or mission control centre. The onboard acquisition computer can be accessed over the network using standard VNC software, allowing operators to control sonar software, configure missions and monitor data acquisition without physical access to the vehicle. The system presents an Ethernet interface to the host platform and can be integrated with a wide range of third-party communications systems, including wireless and long-range networking solutions. To support accurate sonar positioning and data interpretation, REACH™ can also receive navigation and attitude information over Ethernet using UDP protocols.



Example Applications where REACH™ is ideally suited for:



Unmanned Surface Vehicle (USV) Operations

Echoscope PIPE NANO Gen Series® with REACH are ideally suited for Unmanned Vessel operations. The sonar's minimal size and weight make it simple to install and operate on even the smallest of vessels, and REACH's perfect balance of computing power with minimal energy consumption allows for prolonged missions without compromising on real-time imagery, allowing for everything from infrastructure inspection to hazardous identification tasks to be performed remotely and safely.



Hydrographic Surveying and Mapping

Echoscope PIPE® is widely used for Hydrographic Survey, delivering high-definition 3D data meeting IHO S-44 Standard for bathymetric survey data, with 3D mosaics generated in real-time. The high density of the data generated from the Echoscope PIPE® provides complete fidelity of data, and ensures that customers have full redundancy in the data collected. REACH™ further extends the range of platforms that can benefit from the unique technology offered by the Echoscope PIPE® product range.



Asset and Infrastructure Inspection

Echoscope PIPE NANO Gen Series® plays a significant role in the real-time 3D inspection and reacquisition of subsea assets. It is used for the real-time inspection and monitoring of all types of subsea infrastructure, including bridges, ports, dams, and other critical assets. REACH allows these tasks to be performed from small, easily deployed platforms that can go where traditional manned vessels cannot.



Port and Harbor Security

Across the globe, port authorities and law enforcement agencies who have to shoulder the task of securing vital infrastructure from threats from smuggling to sabotage are turning to USVs to avoid the limitations of static surveillance methods. REACH™ helps to simplify the process of putting the unique Echoscope PIPE NANO Gen Series® where it needs to be to deliver crystal-clear imagery and inform real-time decision making when it matters.



Salvage and Recovery

When utilized with an Unmanned Surface Vehicle, the Echoscope PIPE NANO Gen Series® becomes a core tool for the full scope of work on Salvage and Recovery Operations, including: real-time navigation of the work site in poor and zero visibility conditions, pre- and post-ops survey of salvage site, target identification and imaging, and ongoing real-time 3D monitoring for salvage scope and inspection of the worksite.



Research and Development Programmes

Echoscope PIPE® benefits Research and Development by providing high-resolution, real-time 3D volumetric imaging that enables researchers to observe, measure and analyze subsea environments. When paired with REACH™ on an Unmanned Surface Vessel, Echoscope PIPE® can perform rapid surveying and provide data for review, post-processing and reporting. This enables R&D teams to reduce development risk, and make more informed decisions from a single deployment.

Following recovery of the vehicle, the enclosure can be opened to provide direct access to the acquisition computer, which can be quickly removed and connected to standard desktop peripherals, enabling a seamless transition from data acquisition to processing and reporting, including:



Data Review



Post-Processing and Analysis



Report Generation



Data Backup and Archiving



Software Updates and Maintenance

Connectors

1x 13-Pin Male SubConn®: 24V DC in, Ethernet
1x 12-Pin Female SubConn®: To Echoscope PIPE *NANO Gen Series*® and *NANO IPT*

Operating System

Windows 11 Pro

CPU

11th Gen Intel® Core™ i9-11900 @ 2.5 GHz

Memory

64 GB, 3,200 MT/s

Storage

1 TB SSD

Graphics

Nvidia 3050 6GB GDDR6

Software Compatibility

4G USE®
4G USE® DAVID Edition
4G USE® DAVID Flex Edition

Dimensions

243 mm x 388 mm x 308 mm
(9.6" x 15.3" x 12.1")

Weight

6.9 kg
(15.21 lbs)

Power Consumption

REACH™
24 VDC

Echoscope PIPE *NANO Gen Series*®
24 - 48 VDC

NANO IPT
24 - 48 VDC

Operating Temperature

0 – 40°C (32 to 104°F)

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