

# CYGNUS SUBSEA RANGE

ULTRASONIC THICKNESS GAUGES



IDEAL FOR  
USE IN



UNDERWATER  
PIPELINES



MARINE  
STRUCTURES



OFFSHORE  
PLATFORMS



HULL UTM  
INSPECTION





EXPLORE THE  
SUBSEA RANGE

## **CYGNUS INSTRUMENTS WHO WE ARE**

Trusted by engineers and inspectors worldwide since 1983, Cygnus manufactures truly reliable ultrasonic measurement equipment to suit a broad spectrum of user needs across various industries.

Always taking an application-driven approach, Cygnus has designed its range of surface gauges for ease-of-use, accuracy and with practical functionalities.

Cygnus gauges are renowned for their durability. As such, Cygnus service centres are strategically placed across the globe to provide professional and efficient service throughout the 3-year warranty period and beyond.

# THE CYGNUS SUBSEA RANGE

## Cygnus Diver Range

Consists of 2 diver underwater thickness gauges - a wrist-mountable gauge with a large colour display offering A-scan and multi-measuring modes; and our new diver-held underwater gauge. Both units are rated to 300 msw.

## Cygnus ROV Mountable Range

Is designed specifically to be mounted onto an ROV. The range offers three models: the Mini ROV, the ROV Mountable and the ROV UTM with live A-scan.



## ACCURACY

Cygnus-Pioneered Multiple Echo Technique uses three return echoes to give a truly accurate, error-checked metal thickness measurement - accepted by all major Classification Societies. Cygnus' Measurement Stability Indicator (MSI) helps verify stable and reliable measurements in Single-Echo and Echo-Echo modes.

## SIMPLE TO USE

Using a Cygnus instrument to take a thickness measurement is quick and simple. Gauge menus are intuitive and easy to navigate. Auto-Log and min/max Limit & Alert features further enhance the convenience.

## HIGHLY DURABLE

The entire subsea range has been specifically engineered to withstand the harshest operating conditions underwater. All gauges are enclosed in robust housing and fully pressure tested. Supplied with 3 year warranty.





## VERSATILE

A wide selection of options and accessories is available to suit various applications and different operating requirements. This ranges from a variety of ultrasonic probes, purpose-built probe handlers and remote/surface display options.

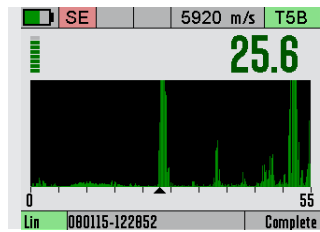
## DATA LOGGING FACILITIES

To assist with recording, reporting and further analysis on a computer using CygLink (Windows-based software).



## A-SCAN

To allow users to verify measurements visually in a real-time graphical display. (Available with Cygnus DIVE)



A-Scan



The Cygnus DIVE is a robust, wrist-mountable ultrasonic underwater thickness gauge - providing an invaluable free hand while performing Ultrasonic Thickness Measurement (UTM) underwater. The large, bright display with Live A-scan is easily viewable by both the diver and his camera crew - even in the poorest visibility. With only two buttons to press, the gauge is very easy to navigate through an intuitive, user-friendly menu.

## CYGNUS DIVE KEY FEATURES



- **Multiple-Echo mode for accurate, through-coat measurements as specified by Classification Societies**
- **Single-Echo and Echo-Echo modes for heavily corroded metals with a thin or no coating**
- Deep-Coat function to ignore coatings up to 20 mm thick
- A-scan display to assist with measurement verification
- Optional Data Logging feature with AutoLog - storing up to 5000 measurements including A-scan data without pressing any button
- MSI (Measurement Stability Indicator) verifies stable, reliable readings
- Rechargeable lithium-ion battery giving up to 10 hours continuous measurement
- Optional remote display HelmetView™, Topside Repeater and CygLink surface display software

## APPLICATIONS

Marine infrastructure, e.g. jetties, piers and pilings, underwater structures, e.g. bridges, tanks, canal locks, subsea pipelines and equipment, ship hull UTM inspections, UWILD or IWS class surveys, offshore rigs and structures



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**LARGE COLOUR  
DISPLAY**  
WITH A-SCAN



**DEPTH  
RATED TO**  
300M/984FT



**HELMETVIEW™**  
OPTION



**TOPSIDE  
REPEATER**  
OPTION

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## SPECIFICATION

Feature	Description
<b>Display</b>	2.8" quarter VGA colour LCD (320 x 240 pixels). Large clear thickness measurement (15mm high numbers), viewable from all angles. A-scan display with automatic X axis. Battery level, signal strength, probe type, velocity. Measurement mode and units indication
<b>Battery</b>	Single 3.6V Li-ion 8.2 W battery. 10 hours continuous measurement Low battery warning 'alert' message
<b>Measuring Modes</b>	Multiple-Echo using 3 echoes to ignore coatings up to 20mm thick. Echo-Echo using 2 echoes to ignore coatings up to 1mm thick. Single-Echo using 1 echo
<b>Deep Coat</b>	In Multiple-Echo mode, allows measurement to be made through thicker coatings of suitable materials of up to 20mm thick
<b>Accuracy</b>	±0.1 mm or 0.1% of thickness measurement, whichever is greatest, when calibrated in accordance with Cygnus Instruments calibration procedure
<b>Probe Options</b>	Single crystal probes and Twin crystal probes
<b>Probe Cables</b>	Double outer jacket in tough PU. Coloured yellow for easy locations underwater. Coiled for ease of use. Fischer S105 series connectors.
<b>Measurement Range in Steel</b>	1 - 250 mm (0.039 - 10 in.) depending on selected probe and configuration, material and temperature
<b>Measurement Resolution</b>	Multiple-Echo with single crystal probes - 0.1 or 0.05 mm Single-Echo and Echo-Echo with twin crystal probes - 0.1 or 0.01 mm
<b>Measurement Units</b>	mm or inches
<b>Probe Zero</b>	Fully automatic probe zeroing for all probes types
<b>V-Path Correction</b>	Automatic V-Path correction for all twin crystal probes
<b>Velocity Range</b>	2000 to 9000 m/s in 1 m/s steps
<b>Pulser</b>	Twin channel 70 V spike pulser
<b>Receiver/Amplifier</b>	10 MHz bandwidth, 120 dB range, automatic TCG. 60 MHz measurement time-base
<b>Data Logging (optional)</b>	One-handed automatic logging of stable measurements. Capacity for up to 5000 points including 640 point A-scan data
<b>Data Output</b>	RS-485 single pair, half duplex for surface connection
<b>Standards</b>	Designed for EN 15317
<b>Compliance</b>	CE, UKCA, RoHS
<b>Warranty</b>	3 years on gauge and 6 months on probe

Specifically designed for divers undertaking ultrasonic thickness measurement (UTM) of underwater structures, the Cygnus Underwater has been built to withstand harsh subsea environments while providing quick and accurate metal thickness measurements through coatings or heavy corrosion. This diver-held gauge is simple to operate using 3 function keys, an intuitive menu and a large LCD display – highly visible, even in low-visibility waters.

## CYGNUS UNDERWATER KEY FEATURES



DEPTH RATED TO 300M

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- **3 measuring modes for levels of corrosion, various materials and through-coat measurements**
- **Depth sensor - live accurate depth indicator for the diver**
- **Live A-Scans aid visual measurement verification**
- Simple-to-Use with 3 function keys and up to 4 screens
- Comprehensive data-logging: linear and grid
- Deep Coat function ignores thick coatings
- RTC (Real Time Clock) for tagging date/time on measurement points
- Auto-set Gain to optimise the probe's gain settings for optimal performance
- Multiple Echo Mode to verify accurate through-coat measurements as specified by Class Societies
- Measurement Stability Indicator (MSI) verifies stable and therefore reliable measurements
- Available in STD, PLUS and PRO variants with upgradeable options, e.g. Topside Repeating and Data Logging

## APPLICATIONS

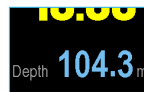
Marine infrastructure, e.g. jetties, piers and pilings, underwater structures, e.g. bridges, tanks, canal locks, subsea pipelines and equipment, ship hull UTM inspections, UWILD or IWS class surveys, offshore rigs and structures



**LARGE COLOUR LCD DISPLAY**



**CYLINK SOFTWARE**



**DEPTH SCREEN VIEW**



**LIVE A-SCAN FOR FURTHER VERIFICATION**

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## SPECIFICATION

Feature	Description
<b>Measuring Mode</b>	Multiple Echo with Single Crystal Probes Single Echo with Twin Crystal Probes Echo-Echo with Twin Crystal Probes
<b>Materials</b>	Sound velocity from 2000 m/s to 9000 m/s [0.0787 in/us to 0.3543 in/us]
<b>Accuracy</b>	±0.1 mm (±0.004") or 0.1% of thickness measurement whichever is the greatest
<b>Resolution</b>	0.1mm, 0.05mm or 0.01mm depending on probe type
<b>Probe Options</b>	Single crystal and twin crystal probes
<b>Measurement Range in Steel</b>	1mm to 250mm (0.040 in. – 10 in.) depending on selected probe and configuration, material and temperature
<b>Connector</b>	SubConn MC
<b>Power Supply</b>	Ni-MH Battery Pack 1.8 Ah (min)
<b>Power Rating</b>	1.5W
<b>Probe Sockets</b>	Lemo
<b>Battery Life</b>	8 hours minimum continuous measurement
<b>Display</b>	2.4" VGA, sunlight readable colour display
<b>Size</b>	80mm x 305mm x 65mm (W x L x D)
<b>Weight</b>	1 kg with battery
<b>Operating Temp.</b>	-10°C to +50°C (14°F to 122°F)
<b>Storage Temp.</b>	-20°C to +60°C (-4°F to 140°F)
<b>Data Logging</b>	5,000 measurements and A-scans per record
<b>Computer Software</b>	CygLink allows remote logging and viewing of A-scan graphs. Survey and report generation to PDF file. Graphic analysis of data and statistical calculations. Data output via RS-485 serial connection to transfer data to a Windows® computer with CygLink
<b>Depth Sensor</b>	Range 0 to 300m (30Bar)
<b>Environmental Rating</b>	Depth rated for 300m continuous immersion in sea water MIL STD 810G Method 501.6 (High Temp +55°C) MIL STD 810G Method 502.6 (Low temp -20°C)
<b>Shock &amp; Impact</b>	MIL STD 810G Method 514.7 (Vibration) MIL STD 810G Method 516.7 (Shock 20g) MIL STD 810G Method 516.7 (Transit Drop 1.22m)
<b>Standards</b>	Designed for BS EN 15317 RoHS Compliant
<b>Warranty</b>	3 years on gauge and 6 months on probe

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The Cygnus Mini ROV Mountable thickness gauge has been specially designed to be mounted onto small observation ROVs with or without a manipulator facility. Built in conjunction with VideoRay, this subsea thickness gauge will allow the operator to carry out an ultrasonic thickness measurement in areas that have previously been unfeasible using larger ROVs or divers. And no need to remove coatings!

## CYGNUS MINI ROV MOUNTABLE KEY FEATURES



- **Multiple-Echo mode for accurate, through-coat measurements as specified by Classification Societies**
- Supplied with CygLink software to display and process measurements on a computer at the surface
- Easy calibration at the surface via CygLink software or Topside Repeater (TSR) unit
- Optional Topside Repeater (TSR) unit allowing readings to be displayed remotely and superimposed onto ROV's camera screen
- Optional purpose-built ROV probe handlers for optimal alignment

## APPLICATIONS

Ideal for Subsea Inspection, Repair and Maintenance (IRM) including: Marine infrastructure, e.g. jetties, piers and pilings, underwater structures, e.g. bridges, tanks, canal locks, subsea infrastructure, e.g. pipelines and wellheads, ship hull UTM inspections - UWILD or IWS class surveys, offshore platforms and support members, underwater equipment, e.g. manifolds, caissons



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DEPTH  
RATED  
TO 500M /  
1,640 FT



CYGLINK  
SOFTWARE



TOPSIDE  
REPEATER  
OPTION



PURPOSE-  
BUILT PROBE  
HANDLERS  
OPTION

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## SPECIFICATION

Feature	Description
<b>Materials</b>	Velocities between 1000 m/s and 9995 m/s (0.0400 and 0.3998 in/microsec)
<b>Measurement Range in Steel</b>	1mm - 250mm (0.040" - 10.000") depending on selected probe and configuration, material and temperature
<b>Accuracy</b>	±0.1mm (±0.004") or 0.1% of thickness measurement, whichever is greatest, when calibrated in accordance with Cygnus Instruments calibration procedure
<b>Resolution</b>	0.1 mm or 0.05 mm (selectable) (0.005" or 0.002")
<b>Probe Options</b>	Single crystal probes
<b>Power</b>	7.5 - 30 V DC @ 150 mA (max)
<b>Display</b>	PC or laptop with VGA (not included)
<b>Size</b>	160mm x 62mm (6.3 x 2.4 in.)
<b>Weight in Air</b>	550g (19.4 oz)
<b>Operating Temp.</b>	-10°C to +50°C (14°F to 122°F)
<b>Approvals</b>	RINA Type approved
<b>Testing</b>	Tested to 500m (1,640ft) depth
<b>Communication</b>	RS-422, Simplex Single Pair or 2400 Baud (RS-232 9600 Baud output available as special order)
<b>Standards</b>	Designed for EN 15317
<b>Compliance</b>	CE, UKCA, RoHS
<b>Warranty</b>	3 years on gauge and 6 months on probe

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Specifically designed for underwater remotely operated vehicles, Cygnus offers a dedicated ROV mountable thickness gauge, ROV MK5 UTC Kit (depth rated to 500 meters (1,640 ft)). This gauge is versatile and designed to measure metal thickness in the harshest subsea operating conditions - without the need to remove coatings.

## CYGNUS ROV MOUNTABLE KEY FEATURES



- **Multiple-Echo mode for accurate, through-coat measurements as specified by Classification Societies**
- Supplied with CygLink software to display and process measurements on a computer at the surface
- Selectable Deep-Coat mode ignoring coatings up to 20mm (3/4") thick
- Fitted with a safety Pressure Relief Valve and Securing Eye
- Easy calibration at the surface via CygLink software or TopSide Repeater (TSR) unit
- Removable end plate for full serviceability
- Wet mateable 'MC' style underwater connectors.
- Optional Topside Repeater (TSR) unit allowing readings to be displayed remotely and superimposed onto ROV's camera screen
- Optional purpose-built ROV probe handlers for optimal alignment

## APPLICATIONS

Ideal for Subsea Inspection, Repair and Maintenance (IRM) including: Marine infrastructure, underwater structures, subsea infrastructure, ship hull UTM inspections - UWILD or IWS class surveys, offshore platforms and support members, underwater equipment



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**DEPTH RATED  
TO 500 METERS  
(1,640 FT)**



**CYGLINK  
SOFTWARE**



**TOPSIDE  
REPEATER  
OPTION**



**WET-MATEABLE  
UNDERWATER  
CONNECTORS**

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## SPECIFICATION

Feature	Description
<b>Materials</b>	Velocities between 2000 m/s and 7000 m/s (0.0800 and 0.2780 in/microsec)
<b>Measurement Range in Steel</b>	1 mm - 250 mm (0.040" - 10.000") depending on selected probe and configuration, material and temperature
<b>Accuracy</b>	±0.1 mm (±0.004") or 0.1% of thickness measurement, whichever is greatest, when calibrated in accordance with Cygnus Instruments calibration procedure
<b>Resolution</b>	0.1 mm or 0.05 mm (selectable) (0.005" or 0.002")
<b>Probe Options</b>	Single crystal probes
<b>Power</b>	7.0 - 30 V DC @ 150 mA (max)
<b>Size</b>	127mm long x 90mm diameter (5 in x 3.5 in)
<b>Weight in Air</b>	900g (2 lb)
<b>Operating Temp.</b>	-10°C to +50°C (14°F to 122°F)
<b>Testing</b>	Depth rated to 500 meters (1,640 ft)
<b>Communication</b>	RS-422, Simplex Single Pair or RS-232 TXD 2400 or 9600 Baud (selectable via DIP switches)
<b>Standards</b>	Designed for EN 15317
<b>Compliance</b>	CE, UKCA, RoHS
<b>Warranty</b>	3 years on gauge and 6 months on probe

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Specifically designed for underwater remotely operated vehicles, Cygnus offers a dedicated ROV mountable thickness gauge (depth rated to 3,000m) with live A-scan and piezo-composite probe. This gauge is versatile and designed to measure metal thickness in the harshest subsea operating conditions - without the need to remove coatings.

## CYGNUS ROV UTM KEY FEATURES



- **A-scan to assist with measurement verification visually**
- **Multiple-Echo and Echo-Echo modes for accurate measurements through coatings (up to 1mm) as specified by Classification Societies**
- **Single-Echo mode for heavily corroded metals with no coating**
- Use the Auto SE/EE/ME measuring mode for best results or set manually
- Supplied with CygLink software to display and process measurements on a computer at the surface
- High-performance SD2C probe fitted with a Hard Rexolite Delay line
- Easy calibration and measurement settings via CygLink software at the surface
- P50 Probe Handler cleverly-designed to self-align with pipes from 50mm diameters to flat surfaces
- Manual or automatic gain control

## APPLICATIONS

Ideal for Subsea Inspection, Repair and Maintenance (IRM) including: Marine infrastructure, underwater structures, subsea infrastructure, ship hull UTM inspections, offshore platforms and support members, underwater equipment



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**DEPTH  
RATED TO**  
3KM/9,843FT



**CYGLINK  
SOFTWARE**

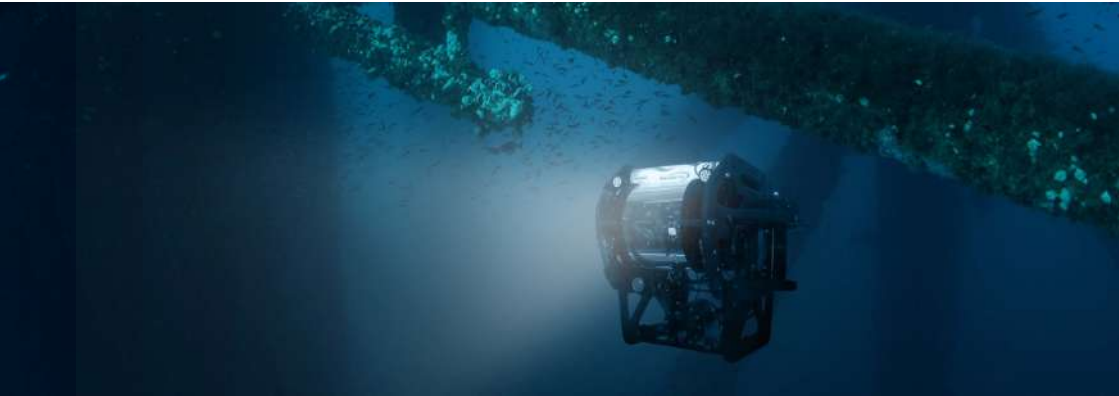


**CLEVER PROBE  
HANDLER**  
FOR EASY  
ALIGNMENT



**LIVE A  
SCAN** FOR  
FURTHER  
VERIFICATION

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## SPECIFICATION

Feature	Description
<b>Materials</b>	Sound velocities between 2000 m/s and 9000 m/s (0.0780 in/us to 0.3543 in/us)
<b>Measuring Modes</b>	Multiple-Echo using 3 echoes to ignore coatings up to 1mm(0.039") thick. Echo-Echo using 2 echoes to ignore coatings up to 1mm(0.039") thick. Single-Echo using 1 echo
<b>Accuracy</b>	±0.1 mm (±0.004") or 0.1% of thickness measurement, whichever is greatest, when calibrated in accordance with Cygnus Instruments calibration procedure
<b>Measurement Range in Steel</b>	Multiple Echo: 4 - 20mm (0.157" to 0.78") Echo Echo: 4 - 30mm (0.157" to 1.18") Single Echo: 4 - 50mm (0.157" to 1.96")
<b>Measurement Resolution</b>	0.1 mm (0.005")
<b>Probe Zero</b>	Automatic and manual selectable
<b>Power</b>	12 - 24 V supply input @ 60mA (average) @ 200mA (maximum)
<b>Size</b>	105mm x 110mm x 35mm (4.1 in x 4.3 in x 1.4 in) (W x H x D)
<b>Weight in Air</b>	Gauge body 3.7kg max (8.2 lb.)
<b>Operating Temp.</b>	-10°C to 50°C (14°F to 122°F)
<b>Environmental Rating</b>	IP68 rated to 3000m (9,843 ft)
<b>Communication</b>	RS-232
<b>Computer Software</b>	CygLink allows remote data logging and viewing of A-scan graphs Survey and report generation to PDF file Graphic analysis of data Designed for Windows 10 and above
<b>Environmental</b>	CE, UKCA, RoHS
<b>Warranty</b>	3 years on gauge and 6 months on probe

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## CYGNUS PROBE HANDLERS



**Cygnus G1  
Probe Handler  
for observation,  
inspection and  
light work-class  
ROVs**



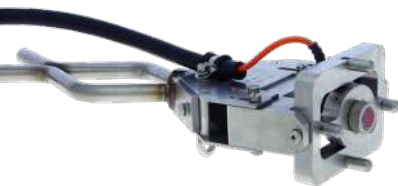
Constructed from acetal, it is both strong and lightweight. It features an adjustable mounting bracket allowing optimum positioning of the UT probe. The UT probe is located in an articulated mount that allows up to 15 degrees of movement in both planes allowing automatic alignment of the probe face to the measurement surface making the ROV pilot's job easier.

**Cygnus S1 Probe Handler for  
Ship Hull Inspection using ROVs**



The Cygnus S1 probe handler is designed for performing UTM surveys on ships' hulls using an observation or light work-class ROV. The two sets of magnets first grip the hull plate which allows the UT probe to tilt and align to the hull surface - ensuring the optimal measurement position. The S1 probe holder is constructed from acetal with stainless steel fixings keeping the overall weight down.

**Cygnus W1 Probe Handler for  
Work-Class ROVs**



Constructed from 316 stainless steel throughout, the W1 probe handler can be held by a manipulator arm and is supplied with either T bar or Fish Tail handles. Its double jointed coupling provides 15 degrees of movement in both planes guided by four pins - giving the optimal alignment. A shock absorbing spring reduces any impact. Any misalignment will be taken up by the coupling resulting in less movement of the manipulator arm position.



## CYLINK SOFTWARE

CygLink is a Windows® based application used to transfer and manage data logger records, A-scans, templates, measurement comments and material velocity tables. The program can generate PDF reports and export to Excel, allowing for after-the-event analysis of logged measurements. It also displays thickness measurements and A scans at the surface.



In addition, measurements can be logged and gauge settings can be adjusted (including velocity of sound) with this simple to use application. When CygLink is used to data log measurements, they can be recorded in a Linear List or a Two-Dimensional Grid.

**CYLINK IS SUPPLIED ON A USB STICK OR DOWNLOAD FROM THE "SUPPORT" LIST ON OUR WEBSITE**



**EACH RECORDED MEASUREMENT CAN HAVE UP TO 8 PRE-SET COMMENTS ADDED TO IT**



**A-SCANS CAN BE ANALYSED IN CYLINK**

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## CYGNUS HELMETVIEW™



The Cygnus HelmetView™ is an accessory for the Cygnus DIVE gauge. This is a remote display with a fixing bracket for Kirby Morgan® helmets that have an accessory mounting point.



This is depth rated to 300m/984ft, and designed for use in situations with extremely poor visibility and ease of viewing by the diver.





## TOPSIDE REPEATER (TSR) REMOTE DISPLAY UNIT

The Cygnus Topside Repeater is a remote display unit available as an option for the subsea range. It displays the thickness measurements at the surface in real-time during the survey.

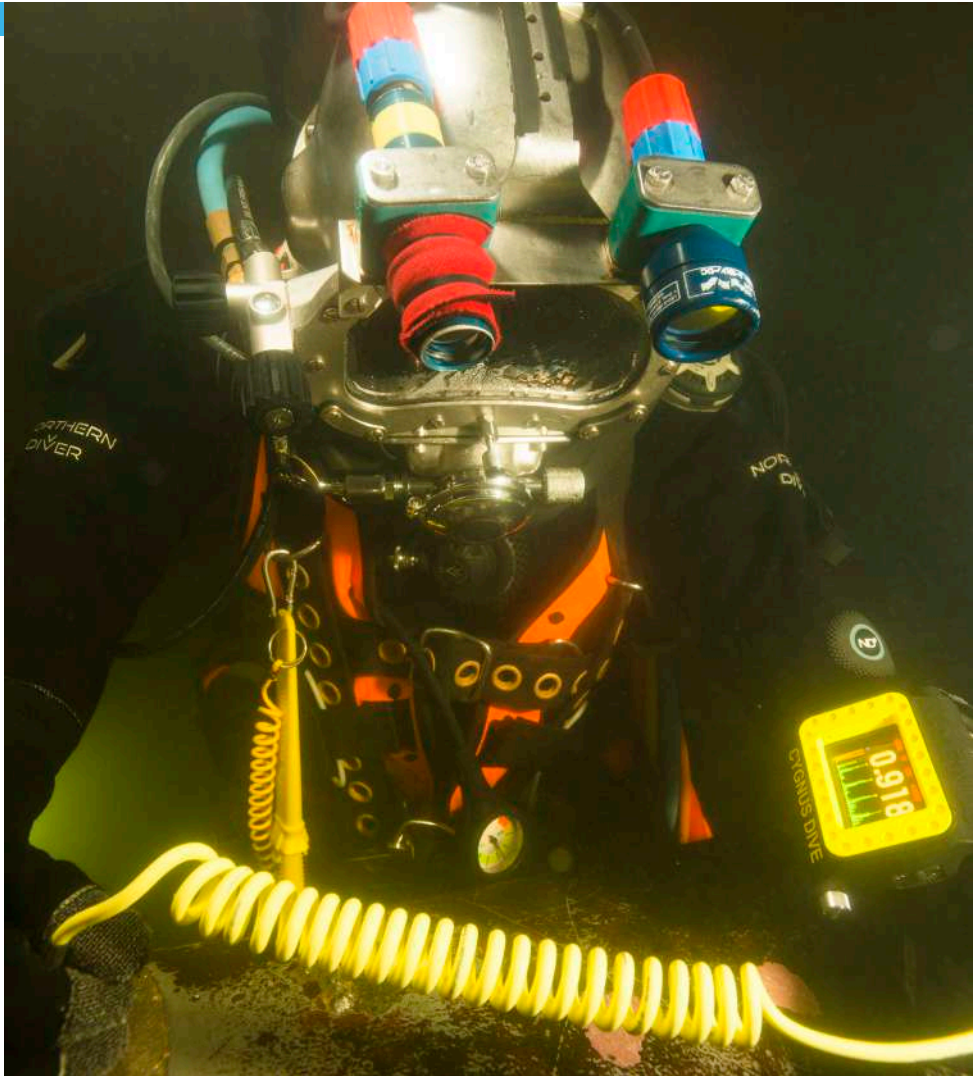


### Topside Repeater with Video Overlay

The Topside Repeater can also overlay the real-time thickness measurements on to a composite video signal, superimposing it on the survey camera's monitor screen. It will also then be recorded if there is a video of the survey, showing exact locations and their thickness measurement for future reference.



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*All information provided is subject to change without prior notice.*



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