



## Deflection Monitoring System (DMS)

### Monitoring for offshore and IMR applications

Ashtead Technology's DMS product range is a diverse family of structural monitoring solutions for offshore construction and IMR applications.

With our field proven standard in-house software and data management systems and precision survey instruments, our DMS system has been used for monitoring structural deflection of structures such as manifolds, templates, PLETs, rigid jumpers and TLP tendons.

Being modular and scalable we can configure robust and reliable systems easily and can provide powerful but easy to use and understand graphic visualisation software, allowing fast learning and minimum potential for error, across the vessel and if required in real time to your desk with our real time NetViewer™ applications.

With remote communications systems providing safety benefits and ability to provide full Internet based support of offshore operations from onshore, our systems have delivered a major step forward in creating a safer, lower cost operating environment, with proven backup support throughout your operations wherever you are. 24 hours a day, every day.

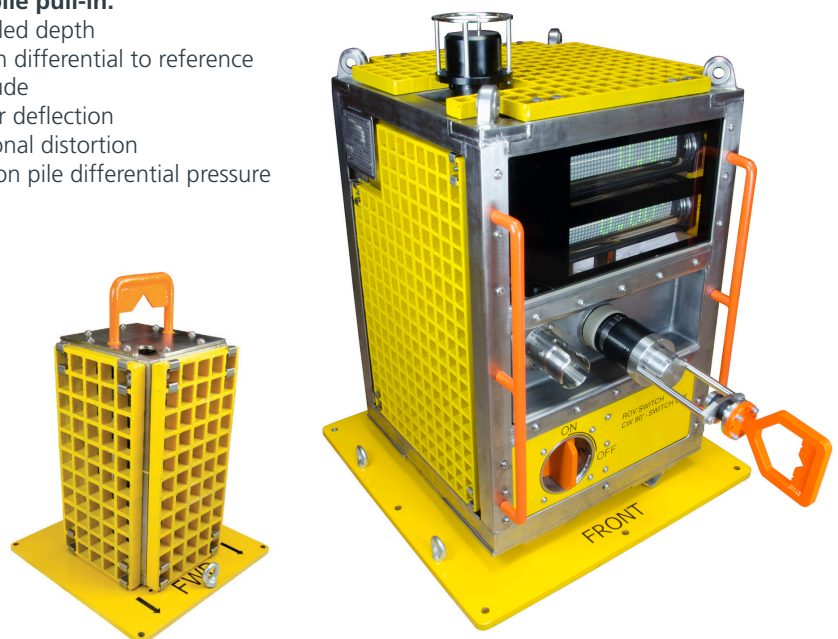
Our DMS systems can be easily configured for dual independent template and manifold structure installation, providing monitoring, computation and visualisation of:

#### Structure land-out:

- Depth
- Attitude
- Heading

#### Suction pile pull-in:

- Installed depth
- Depth differential to reference
- Attitude
- Linear deflection
- Torsional distortion
- Suction pile differential pressure



#### Applications

Subsea manifold, template, plem & plet type structure installations  
Pile foundation installations  
Structure foundation stability monitoring  
Spool load-out and installation monitoring  
Subsea modification metrology

#### Features

Fully integrated monitoring system using proven technologies  
Configurable platform, allowing easy adaptation for specific applications  
Robust and reliable systems with proven track record  
Fully recoverable system  
Compatible with all field positioning acoustic systems  
Easily re-deployed for multiple structure installations  
Intuitive graphic visualisation displays  
Full on-board data logging at subsea and surface  
Real time remote surveyor capability  
Remote management and diagnostic capabilities

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## Specifications



Measurements	Heading, pitch and roll Structure depths Linear and torsional deflection Pile differential pressures Battery voltage, current monitor Spare channels for auxiliary sensors
Sensors	Octans 4th generation 3000 solid state fibre optic gyro Paroscientific Digiquartz high accuracy depth gauges Keller PD-39X differential pressure gauges
Battery	2 x Alkaline 120 A-Hr capacity independent battery packs Remote battery condition monitoring 300 hours minimum continuous autonomy Remote power and sleep control allowing extended autonomy Ultra-low power consumption in sleep mode
Display	Twin Intelligent LED display with integral RF data telemetry
On / off switch	Robust ROV operated with ROV power over-ride
Docking mechanism	Docking plate with precision tram-line alignment reference
Docking mechanism features	Quick release lockdown straps providing fast deployment and recovery
Built-in features - subsea system	Acoustic data link (cNode, cNode Mini S, 6G and Benthos compatible) RF data link ROV wet-mate connection for power and signal RF, acoustic and ROV remote data access, power control and remote diagnostic monitoring Inbuilt flight recorder data logging with csv format file and USB browser data retrieval for easy import to Excel, etc Battery condition monitoring using subsea display or telemetry
System redundancy	Dual independent system capability with fully segregated data systems, eliminating common cause modes of failure
Surface software features	Powerful intuitive graphics package running on Microsoft Windows platform Multi-screen graphics allowing optimised layout of information Easy to read and understand visualisation tools: <ul style="list-style-type: none"> <li>• Information read-out</li> <li>• Analogue gauge mimics</li> <li>• Graphic visualisation mimics</li> <li>• Configurable status, warning and alarm functions</li> <li>• Trend graphs</li> </ul> Automated data logging in csv format Single click screen capture Data networking for additional client workstations Data hand-off via ethernet and serial link Automated dimensional control survey data service based on RF link, eliminating working at height
Remote support capabilities	Remote Expert™ real time remote subsea to desk support via Internet NetViewer™ remote survey desk access via Internet allowing client viewed access in real time

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