



## Wireless Acoustic Load Shackle System



*Load cell shackle/positioning beacon arrangement*



*3510 PAM Portable with 3190 dunker*

### Key Features

- 25-200 tonne subsea shackle load cells
- Sigma digital bi-directional spread spectrum signalling
- Robust digital telemetry
- Up to 2,000m water depth
- Monitor 4 load points using 3510 PAM
- Monitor strain and position up to 10 shackles with Easytrak Nexus (option)

### Applications

- Monitoring load distributions on spreader bars
- Cable strain monitoring
- Safety applications
- Mooring systems
- Ballasting operations

## Overview

The subsea Acoustic Load Shackle is designed for operations where load monitoring is required, either for short term operations lowering an item to the seabed, or for longer periods monitoring dynamic loads. It is completely wireless, using acoustic signals to transmit data from under the sea to a surface display module, where up to four shackles can be monitored sequentially.

The Acoustic Load Shackle system consists of a Crosby lifting shackle with a bespoke load cell machined to replace the standard pin, an Applied Acoustics' positioning beacon and a standard Applied Acoustics' 3510 PAM Portable surface display.

The secure and reliable wireless digital acoustic technology reduces the risk of interference from a 'noisy' environment in which the load cell is required to operate subsea. Its unique ID code ensures there is minimal risk of interference from other positioning or release work in the vicinity.



# Wireless Load Shackle, Technical Specification

## ACOUSTIC BEACON MODEL TYPES – PHYSICAL SPECIFICATION

Housing material: Hard anodised aluminium, with clear protection sleeve and stainless steel cage

	Beam Pattern	SPL	Survival Depth	Diameter	Length	Weight in air
<b>1015</b>	±45°	194dB	2000m	74mm	410mm	3.08kg/1.46kg
<b>1015H</b> High Power	±30°	196dB	2000m	74mm	410mm	3.08kg/1.46kg
<b>1019</b>	±90°	188dB	1500m	74mm	395mm	2.88kg/1.38kg
<b>1022</b>	±20°	202dB	4000m	95mm	418mm	5.03kg/2.75kg

## BEACON ELECTRICAL SPECIFICATION

### Battery

Battery type Rechargeable. NiMH as standard

Listening life 30 days

Operational life, AAE Spread Spectrum Dependent on pulse rate and operational mode  
1015: 75 hours at 1.0pps  
1015H: 50 hours at 1.0pps  
1019: 75 hours at 1.0pps

### Configuration

Turnaround time 15/30/60/100ms dependent on channel selection

Transmit pulse width 1.5/3.0/10ms dependent on channel selection

### External Inputs

Connector type MCBH8M 8-way connector

Responder key + 5 to 25 Volts

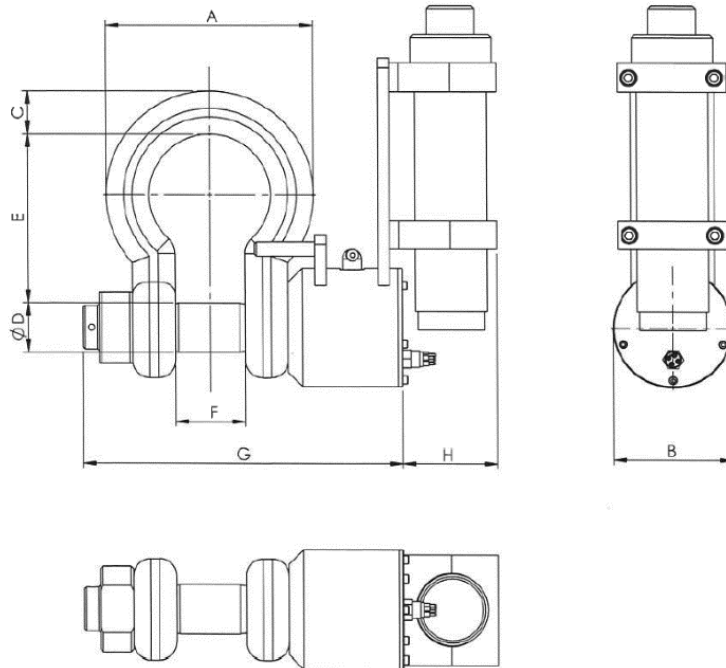
External power 22 to 35 Vdc@80mA

Charge Onboard fast charger for 3 hour charge, typical. Activated and monitored via 1082 Smart Switch or 1083 Multi-Charger

# Wireless Load Shackle, Technical Specification continued...

## SHACKLE PHYSICAL SPECIFICATION

Shackle Details	Dimensions in mm								Proof Test SWL	Accuracy
	A	B	C	D	E	F	G	H		
25 Tonne	225	106	44.5	50	162	73	300	100	150%	1%
55 Tonne	327	145	66.5	70	246	105	385			
120 Tonnes	416	200	89	95	347	150	493			
200 Tonnes	530	260	120	125	450	180	600			



## SHACKLE DETAILS

Max. operating depth	2,000m
Battery	18.8v Li-Ion 8 cell 5.4Ah
Self discharge	<5% per month @ 20°C, <10% @ 30°C, <20% @ 40°C
Life	72,000 samples or 2 months.
Material	17-4PH H1150+11560 stainless steel
Calibration	Supplied with calibration, proof load & test certificates to BS EN 10002/2 1992

## BEACON and SHACKLE COMPATIBILITY

3510 PAM Portable and 3190 MF dunker  
Easytrak Nexus USBL

## OPTIONS

Increased depth rating  
Stainless transponder housing

In partnership with



Due to continual product improvement, specification information may be subject to change without notice.  
1000 Series, Load Cell Shackle/Sept 2015  
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