

AAE DEEPSQUID (DEEPTOW) SPARKER SYSTEM

A complete deeptow sparker system comprising optional winch and towcable.

- *50 - 250 Joule Sparker*
- *High amplitude short duration pulse with minimal reverberation*
- *Easy power selection*
- *Alarmingly easy cable requirements - operates on a co-axial towcable.*
- *Single towfish includes multiplexer, energy source; receive circuitry; hydrophone; pressure sensor and (optional) responder.*

With operations becoming ever deeper, a need exists for obtaining high resolution, high penetration sub-bottom profiler data, which cannot be addressed with existing tools. The AAE *DEEPSQUID* Sparker System has been designed to meet this need.



The sparker itself operates with a broad spectrum high energy pulse from a highly stable towfish built of stainless steel and plastics for durability. As the DEEPSQUID towfish is towed near the seabed, both high resolution and high penetration can be achieved.

The towcable has multiplexed on it the following:-

DC power to the towfish

Control signals down

Key pulse to trigger the towfish electronics

Receive signals

Serial link for high resolution depth sensor information for heave and depth

Control / status signals from the subsurface multiplexer.

The DEEPSQUID's (relatively) modest tow cable voltage ensures that slip ring failure is minimised as well as ensuring cable longevity. The DEEPSQUID SYSTEM does not use high energy pulsed voltages 'down' the tow cable unlike other deep tow sparker systems. By housing the energy source in the towfish itself, cable losses are eliminated resulting in high pulse quality which is not dependent on cable length.

Control signals allow output energy selection simply at the change of a switch on the surface console. Status signals are sent to the surface so the operator can check system operation. Receive signals are amplified and driven 'up' the tow cable from the sub surface multiplexer for easy processing.

Depth sensor information is sent to the surface with sufficient resolution to allow for motion sensing as well as depth indication.

The towfish consists of the following parts:-

The fish itself; Built from corrosion resistant stainless steel and plastics, the DEEPSQUID towfish has been designed to be tough yet easily repairable in the event of damage from high impact. The towfish is heavy enough to tow well whilst remaining easy to handle.

Inside the towfish are two electronics housings, each rated to 1000 metres water depth (Deeper housings optional). One housing contains the control and multiplexing electronics, whilst the other contains the high voltage energy source. The energy source consists of much proprietary circuitry from our CSP energy sources coupled with all new control electronics. Also contained therein is the pressure sensor and a water turn-on switch to ensure that the unit cannot be operated accidentally on the deck of a vessel. Indeed safety has been a fundamental issue throughout the design phase of the DEEPSQUID SYSTEM.

An optional transponder / responder may also be fitted to the DEEPSQUID. The transponder takes its power from the vehicle supply and is one of our large range of standard beacons which are all compatible with Simrad HPR, Simrad HiPAP, Sonardyne USBL, ORE Trackpoint II and Nautronix RS9000. Other AAE units of choice may be fitted if preferred.

The energy setting of the subsurface 'CSP' is selectable by a switch on the front panel of the control console, as are other parameters. The control console also acts as power supply for the subsea electronics as well as multiplexer and general interface unit. Outputs include receive signal and depth information in various formats. The unit can also be used as a stand alone receiver / multiplexer. However data output (including heave) is compatible with the OMS360 and other processors for storage, heave compensation and advanced filtering.

The optional DEEPSQUID winch is a proven and durable electric winch using a 3 phase motor. Please consult us for further information.



SPECIFICATIONS

TOWFISH

Towfish Size (m) : 1.65 long x 0.75 wide x 0.35 high
Weight in air : 150 kg
Tow speed : 1 – 4 knots recommended

TOW CABLE

Cable Voltage : 350 vdc
Cable type : Co-axial 11.4 mm or 0.68" for deeper work
Max Cable length : 2000 – 5000 metres dependent on type

WINCH

(Optional)
Standard Winch : 3 phase electric 415 volts.
Winch capacity (as shown) : 3000 metres of 11.4 mm co-ax
Winch Speed : 46 metres / 30 metres minute
Level wind : Recommended but optional
Slip Rings : 2 conductor

ENERGY SOURCE

Location : Inside towfish body
Energy Settings : 50 – 250 J/shot
Charge Rate : 500 J/sec standard. (1000J/sec optional)
Voltage Output : Variable to 4000 volts (6000 volts optional)
HV switch : Rugged Thyristor
Sparker tips : 15 or 30 tips typically
Pulse Length : Subject to ongoing design
Source Level : Subject to ongoing design

RECEIVE SECTION

Receive Hydrophone : 8 element
Bandwidth : 50 Hz – 10 kHz
Options : Available

DEPTH SENSOR

Depth Sensor : 1000 metres span
Resolution : 63 mm

SURFACE CONSOLE

Size	: 4U Rack mount
Weight	: 25 kg with Prorack case
Mains Supply	: 115 or 230 VAC 45 – 65 Hz
Output voltage	: 350 VDC to cable
Power select	: 4 settings
Max Cable Length for mux	: 5000 metres
Controls	: GAIN; TVG DELAY; TVG INITIAL; TVG RAMP; HPF
Inputs	: Key Pulse from recorder; Towcable I/O
Outputs	: Key Pulse; Signal Out to recorder; Raw Signal Out; Depth Analogue, Depth RS-232, Heave Analogue

SAFETY CIRCUITRY

- Isolated immersion turn on circuit disables unit when on deck
- Micro system monitoring inside bottle
- Safety cut-outs
- Capacitor dump relay
- Capacitor bleed resistor
- Temperature overload
- Short Circuit load detect
- Open Circuit detect

Applied Acoustic Engineering has earned a dominant global position as a supplier of Sub bottom profiling equipment. AAE's sub bottom profiling catalogue includes the CSP range of energy sources, boomer plates hydrophones sparkers and receivers. Please contact us for further details.

Although correct at time of printing, these specifications are subject to change without notice.

Provisional 1/00