

A.U.D.I

Acoustic Underwater Development Instrument for SONAR

DATA SHEET



***i*nnovative Technology Projects Ltd.**

KEY FEATURES

The Acoustic Underwater Development Instrument (A.U.D.I) is a portable, real time SONAR development instrument. It has been designed and manufactured as a flexible system for use by universities, colleges and research & development groups.

The A.U.D.I provides access to a wide range of transducer drive signals which can be pre-set (CAL), or variable (VAR).

The system features a highly rugged metal design to allow for both lab bench and field work.

The A.U.D.I is supplied with IEC power cable and USB cable as standard.

Further optional extras for the A.U.D.I include:

- Dual frequency transducer with BNC connector cable
- Passive target motor/gearbox
- Passive target propellers (3, 4 & 5 bladed)
- Active targets (2 metal squares, 1 metal grille, 1 plastic square & 1 plastic sphere)
- BNC – BNC connectors
- Wideband headphones
- A wideband hydrophone

The SONAR Signal Analyzer (SSA) software delivers a full range of virtual instruments including: Oscilloscope, Spectrum Analyzer, Multimeter and Transient Recorder (data logger). The Windows compatible software can be user configured to suit the needs of the project.

The A.U.D.I is supplied in a handy flight case to aid its portable nature. It can be safely stored, transported and set-up in a number of environments as the user requires.



Figure 1 - A.U.D.I connected to a laptop via USB cable

SYSTEM DESCRIPTION

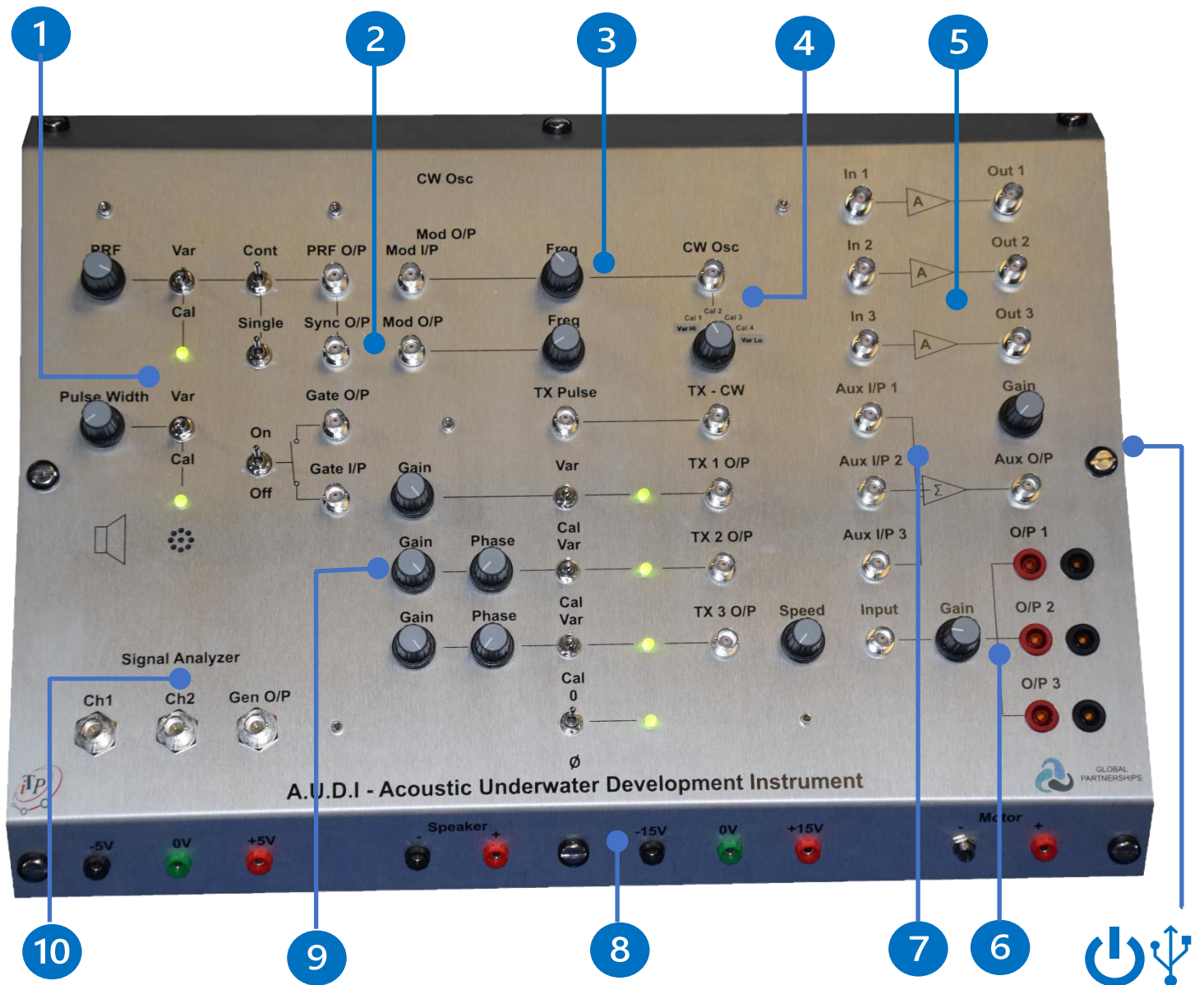


Figure 2 - The A.U.D.I

Image Reference	Component Description
1	Fixed or Variable PRF and Pulse Width
2	Pulse Generation
3	Variable Frequency Controls
4	CW Oscillator Control and Output
5	3 Fixed Gain Receiver Amplifiers
6	1 Input (BNC Male) – 3 Variable Gain Output (4mm Banana)
7	3 Aux Input – 1 Aux Output Variable Gain Amplifier
8	Fixed $\pm 5v$ & $\pm 15v$ DC Outputs, \pm Speaker Output and $\pm 12v$ Motor Drive Output
9	3 Fixed or variable Gain and Phase Transmit Outputs
10	Sonar Signal Analyzer – 2 Channel Input and AWG Output
	IEC power cable socket & Type B USB v2.0 port for PC connectivity

PRODUCT SPECIFICATIONS

A.U.D.I Console	<p>Integrated portable console</p> <p>Supply: 110 / 220 / 240 Volts, 50/60 Hz ~ @ 2 amps</p> <p>Outputs: 0-12 Volts D.C. variable / ± 5 Volts D.C. fixed / ± 15 Volts D.C. fixed</p> <p>Connections: One Type B USB v2.0 connection</p>
Pulse Generation	<p>PRF: 714Hz – CAL/VAR</p> <p>Continuous or single ping transmission</p> <p>PW: 100 μsecs – CAL / VAR</p> <p>CW Oscillator: ~10kHz – 700kHz</p> <p>TX CW: VAR Lo: ~25kHz – 115kHz</p> <p>TX CW: VAR Hi: ~80kHz – 340kHz</p> <p>Switched gate output</p> <p>TX1: Variable gain amplifier Output</p> <p>TX2 & TX3: Variable gain amplifier with fixed or variable phase control ref. TX1</p>
Auxiliary Console Features	<p>Fixed Amplifiers: In – Out 1, 2 & 3 fixed gain general purpose amplifiers</p> <p>Variable Amplifier: Aux I/P 1, 2 & 3 – Aux O/P variable gain amplifier</p> <p>High Voltage Ports: Input – O/P 1, 2 & 3 60 Volts Parallel Outputs</p> <p>\pm Speaker Output</p>
Sonar Signal Analyzer	<p>Sample Rate: 8, 12, 14, 16 bits Resolution ~ 500 Ms/sec</p> <p>2 Channel operation & math functions</p> <p>Storage oscilloscope: 100 nsec – 600 sec/div</p> <p>Averaging: 1 - 256</p> <p>Phase measurement</p> <p>Spectrum analyzer: .001Hz – 50MHz</p> <p>AM/FM/FSK modulation ~ Sweep & Burst</p> <p>Transient recorder: > 30,000 points ~ 750 days</p> <p>Voltmeters: 6 programmable</p> <p>Arbitrary Waveform Generator: 1μHz – 30MHz</p>

OPTIONAL ACCESSORIES

Transducer(s)	<p>Resonant Frequency: 200 kHz</p> <p>Beam Width: ~ 10° to 20° @ -3 dBs</p> <p>Conical beam shape</p> <p>Epoxy resin encapsulation</p> <p>Variable depth</p> <p>Coaxial connector type: BNC Connector</p> <p>Reversible operation</p> <p>Orientation: vertical or horizontal</p> <p>Mounting: Delrin tank mount</p>
Targets – Active	<p>Stainless steel flat plate 20cm Sq.</p> <p>Stainless steel flat plate 10cm Sq.</p> <p>Stainless steel grill plate 10cm Sq.</p> <p>Acrylic flat plate 20cm Sq.</p> <p>Plastic Sphere</p>
Targets – Passive	<p>Three bladed propellor</p> <p>Four bladed propellor</p> <p>Five bladed propellor</p> <p>Variable speed motor & gearbox</p>



PHYSICAL CHARACTERISTICS

A.U.D.I	Console Dimensions		A.U.D.I and Carry Case Dimensions	
	LxWxH: 515x275x280mm (20x11x11in)		LxWxH: 640x330x380mm (25x13x15in)	
	Weight: 8.60Kg (19lb)		Weight: 15.40Kg (34lb)	

ENVIRONMENTAL & SAFETY

Temperature	Operating: +5°C to +45°C (41°F to 113°F)
	Non-operating (empty tank): -5°C to 55°C (23°F to 131°F)
Relative Humidity	Operating: 5% to 90%, non-condensing
	Non-operating: 5% to 90%, non-condensing
Regulatory	Built to ISO 9001:2015 standard
Console Cooling Clearance	50mm (2in) from any console surface

PC REQUIREMENTS

No supporting IT equipment is supplied with the A.U.D.I

Computers that are intended to support and run the A.U.D.I must meet the below requirements.

	Minimum Requirements	Recommended Requirements
Operating System	Windows 10 – 64bit	Windows 11 – 64bit
Processor	Intel Core i3	Intel Core i5
Processor Speed	2GHz	2.4GHz
Memory	4GB	8GB
Hard Disk Size	80GB HDD	128GB or more (Solid State Drive)
Free Disk Space	20GB	40GB or more
Graphics Card	Dual Monitor Capable	Dual Monitor Capable
Monitors	Two Monitors	Two Monitors
Monitor Resolution	1024 x 768	1920 x 1080
Mouse	USB Mouse	USB Mouse
Keyboard	USB Keyboard	USB Keyboard
3x USB Type A Ports	Required for the A.U.D.I, Mouse & Keyboard	Required for the A.U.D.I, Mouse & Keyboard
Headphone Port	Required for Headphone Use	Required for Headphone Use
Microphone Port	Required for Microphone Use	Required for Microphone Use
Sound Card	Required for Demonstrations	Required for Demonstrations
Internet Connection	Recommended	Recommended
Microsoft Office	Microsoft PowerPoint	Microsoft Office 365 or Microsoft Office 2019

