MODEL 862-000-200
ANALOG ALTIMETER
USER'S MANUAL

330KHZ, 1000M DEPTH RATED
0.2 TO 100FT OPERATING RANGE
ANALOG OUTPUT

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IMAGENEX MODEL 862
ANALOG ALTIMETER

APPLICATIONS:

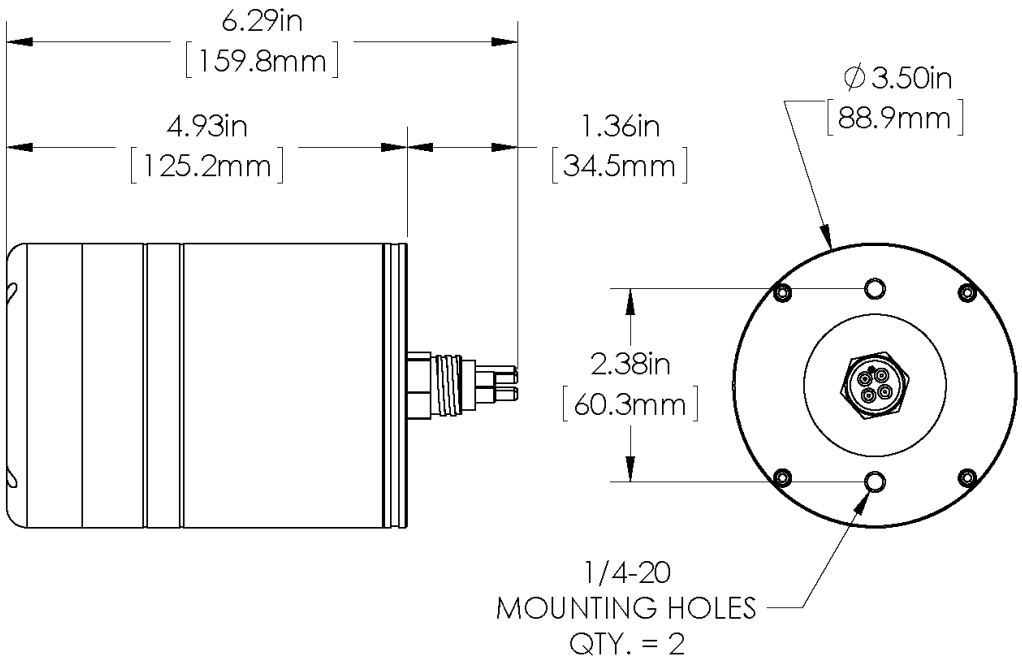
- Measure altitude of structures & objects
- Measure range to other structures & objects
- Monitor sedimentation or scouring
- ROV, AUV, & UUV

FEATURES:

- Standard analog output
- Self contained
- Low power
- Compact size

The Imagenex Model 862 is a completely self-contained altimeter with analog output. It is mounted in a pressure proof housing with an underwater connector for use at depth. The 862 Altimeter measures the range to the bottom or other large objects. It requires only power and an analog interface to an external device.

HARDWARE SPECIFICATIONS:	
FREQUENCY	330 kHz
RANGE	0.6 m – 30 m (2’ – 100’)
TRANSDUCER	Conical beam
TRANSDUCER BEAM WIDTH	10°
TRANSMIT PULSE LENGTH	100 microseconds
RANGE RESOLUTION	20 mm
MIN. DETECTABLE RANGE	0.6 m (2’)
MAX. OPERATING DEPTH	1000 m (3000 m and 6000 m available)
OUTPUT	0.2 – 10V (0.1 – 5V optional) proportional to range
CONNECTOR	Four conductor wet mateable (Subconn MCBH4M-AS)
POWER SUPPLY	22 – 32 VDC at 100 mA max.
DIMENSIONS	89 mm (3.5”) diameter x 119 mm (4.7”) length Overall length: 155 mm (6.1”)
WEIGHT: In Air **In Water**	1000 m unit: 1 kg (2.2 lbs) 1000 m unit: 0.4 kg (0.8 lbs)
MATERIALS	6061-T6 Aluminum & PVC
FINISH	Anodized



ORDERING INFORMATION:		
1000 m UNIT	Standard	862-000-200
3000 m UNIT	Standard	862-000-201
6000 m UNIT	Standard	862-000-202
0.1V – 5V OUTPUT	Option	-012

1. SPECIFICATIONS

1.1 SYSTEM SPECIFICATIONS

1.1 IMAGENEX MODEL 862-000-200 ANALOG ALTIMETER

Operating Frequency:	330 kHz
Transducer Beam Angle:	10 degree total included angle to 3db points
Transmit Pulse Length:	100 microseconds
Output:	0 – 10VDC equals 0 to 100 feet
Range Resolution:	2cm
Overrange Output: No Return Output:	0VDC 0VDC
Power Supply:	20-36 VDC at 120 mA maximum
Connector:	Impulse MCBH-4-MP (mates with MCIL-4-FS) 4 conductors, 2 for power, 2 for signal,
Materials:	aluminum 6061-T6, 300 series stainless steel, pvc, acetal homopolymer, epoxy
Finish:	anodize
Maximum Operating Depth:	1000M (3,300 ft)
Dimensions:	89mm (3.5in) dia. x 120mm (4.75in) high
Weight:	in air 1.1kg (2.4lb)

2. SYSTEM DESCRIPTION

The Imagenex Model 862-000-200 Analog Altimeter is a self contained module which includes a transducer, a transmitter, a receiver, and a microcontroller. It operates by transmitting a short acoustic pulse, and then detecting the echo from the bottom or other large object. It measures the time from the transmitted pulse until the echo is received and outputs this time to the serial port.

The module is packaged to operate underwater at depths to 1000 M (3,300 feet). Typical applications for this product include a remotely operated vehicle (ROV) altimeter, an autonomous underwater vehicle (AUV) altimeter and any other application where ranges must be measured underwater.

3. INSTALLATION INSTRUCTIONS

3.1 MOUNTING DIMENSION DRAWING 345-006

3.2 INSTALLATION

The altimeter is normally mounted vertically, with the transducer face pointing vertically down at the bottom. The transducer face must have a clear unobstructed view. The altimeter can be mounted by means of the tapped holes on the connector end cap or it can be clamped around its diameter.

The anodized housing should be protected by plastic or rubber isolation to prevent damage. Due consideration should be given to materials used to clamp the housing, and to electrical isolation from dissimilar metals, to avoid galvanic corrosion of the housing. The altimeter should be protected from physical damage by collision with the bottom or other objects.

The electrical connector should be protected from physical damage and the cable should not be bent sharply near the connector.

Underwater Connector Guidelines:

Lubricate with silicone grease before assembly
Mate with minimum twisting and flexing
Align index pin and socket carefully
Do not damage or bend pins in unmated condition

On a typical ROV installation, the IMAGENEX supplied cable connector is spliced to a customer supplied cable harness on the vehicle. The splice should be suitable for underwater operation. Suitable splices include cast epoxy splices, cast polyurethane splices, moulded rubber splices (so called hot splices) and tape splices. This will pass into the vehicle pressure hull or a junction box. The four conductors will be split into two conductors for power, connected to a suitable power supply in the vehicle's power distribution system and two conductors for the altimeter serial output.

4. MAINTENANCE

The altimeter should be rinsed with fresh water after each immersion in salt water or dirty fresh water. This will prevent accumulation of salt or other contamination, and help prevent corrosion of the aluminum and stainless steel parts. The altimeter should be inspected periodically for signs of galvanic corrosion.

The transducer face should be carefully cleaned with a detergent solution to remove any oil, grease or other deposits which may reduce the acoustic performance of the unit.

Model 862-000-200 ANALOG ALTIMETER DISASSEMBLY AND ASSEMBLY

The altimeter is a complex precision package. We recommend that only personnel familiar with miniature underwater electronic/mechanical devices attempt to service or repair this device.

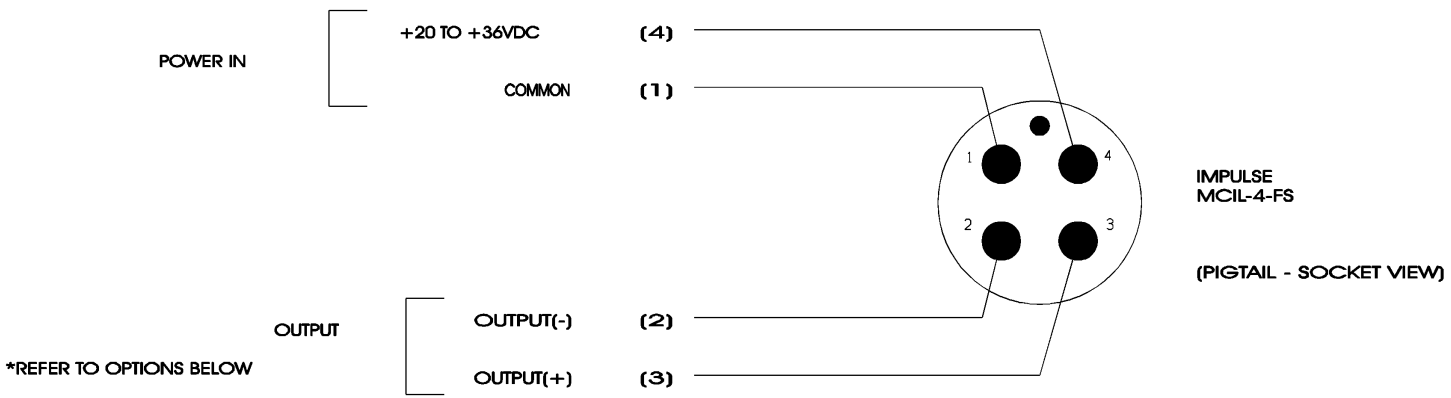
Refer to the assembly drawing to understand the general construction of the Underwater Unit.

The connector end cap can be removed by removing the four hex socket cap screws on the connector end cap and carefully withdrawing the end cap.

Extreme care must be taken when reassembling the Underwater Unit. The O-ring groove and sealing face should be carefully cleaned and inspected. After cleaning, the groove and face should be coated with a thin uniform coat of silicone grease. A new o-ring should be used if possible. The o-ring should be carefully cleaned and inspected for defects, and then lubricated with a thin uniform coat of silicone grease. A small scratch in the o-ring groove or sealing face, a small piece of dirt, or a defect in the o-ring, can cause leakage and consequent flooding of the unit.

5. ASSEMBLY DRAWINGS, PARTS LISTS AND WIRING DIAGRAMS

PARTS LIST	355-009	MODEL 862-000-200 ANALOG ALTIMETER
DWG. NO.	355-009	MECHANICAL ASSEMBLY DRAWING MODEL 862-000-200 ANALOG ALTIMETER
DWG. NO.	862-200-183	862 ALTIMETER PIGTAIL WIRING (MCIL-4-FS, 20-36VDC)



*OPTIONS:

ANALOG OUTPUT

OUTPUT(-) = COM (0VDC)
OUTPUT(+) = +VOUT (0-5 or 0-10VDC)

IMAGENEX Technology Corp.		
Title: 862 ALTIMETER PIGTAIL WIRING (20-36VDC)		
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Date: April 11, 2005	Sheet 1 of 1	