Tritech International Limited

Tritech
PA200 / PA500
Precision Altimeter

Operators Manual

Supplied by

TECHNICAL SUPPORT

Contact your local agent or

Tritech International Ltd

Telephone : ++ 44 1224 744 111
Fax : ++ 44 1224 741 771

An out of hours emergency number is available by ringing the above telephone number

If you have cause to use our Technical Support service, please ensure that you have the following details at hand **prior** to calling :

- System Serial Number (if applicable)
- Software Revision Number
- Fault Description
- Any remedial action implemented

Due to the expansion of equipment capabilities and the fact that new sub-modules are continually being introduced, this manual cannot detail every aspect of the operation.

WARRANTY

Tritech International Limited herein after referred to as T.I.

T.I. Warrants that at the time of shipment all products shall be free from defects in material and workmanship and suitable for the purpose specified in the product literature.
1. The system warranty commences at the date of customer acceptance and runs for a period of 180 days. The Customer Acceptance Test must be performed either at Tritech International or at one of their approved distributors unless otherwise specified in writing. The warranty does not apply unless the recommended maintenance instructions have been followed and does not apply to defects resulting from normal wear and tear, incorrect operation, fire, water or lightning damage or damage caused by variations in a ships voltage, or from any other circumstances which arise after delivery and beyond the control of T.I.
2. Warranty service is performed at the discretion of T.I. either by repair or replacement of the equipment in question.
3. The warranty does not cover personnel transportation and per diem allowances related to repair or replacement.
4. The warranty is subject to the following conditions:-
a) The system must have been sold by T.I. or one of their authorised representatives.
b) The system must have been installed and commissioned in accordance with approved technical standards and specifications and for the purpose for which the system was designed.
c) Any claim must be notified in writing to T.I. without delay upon discovery of a defect.
d) Defective parts have to be forwarded to T.I. adequately packaged and by suitable means of transport, freight paid and with a report stating the defect. The replacement parts or equipment covered by the warranty will be returned to the customer, carriage paid by T.I.
5. The warranty shall become invalid if the customer repairs or modifies the equipment and components without written authority from T.I.
6. The warranty is not transferable, except as or applies to Purchaser first then to customer.
7. All further claims on any grounds whatsoever, are excluded.

Trademarks
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IBM and AT are registered trademarks of International Business Machines Corporation.

INTRODUCTION

The PA200 & PA500 Precision Miniature Altimeters can operate under their own control sending out data to a display unit or ROV control system or under the control of a surface computer.

Communications to and from the subsea elements are conducted over an RS-485 or RS232 multiplexed half duplex bi-directional data link at 9600 Baud, suitable for installation on most remotely-operated underwater systems.
It is also possible to obtain a 0-10VDC (or 0-5vDC) analogue signal from the altimeter.

The altimeters are available in a range of frequencies, and beam angles. Standard Transducer Options are as follows:-

PA200/20-S	200kHz 20° Conical Beam SS 316
PA500/6-S	500kHz 6° Conical Beam SS 316

ALTIMETER DESCRIPTION

STANDARD 4000M DEPTH UNIT

The PA200 / PA500 is a sonar ranging device which mounted vertically gives depth above the sea bed or in any other attitude provides a subsea distance measuring device. The altimeter can be configured to operate on its own or under control from an external unit and has a 6 pin connector allowing both analogue output and serial communications to be available simultaneously.

The altimeter incorporates a fixed crystal transducer which is matched to the range and resolution required. The altimeter data is transmitted via an underwater connector to a processor or data display unit, in digital or analogue signal form.

OPTIONAL 6800M DEPTH UNIT

The PA200/500-S6K8 is designed for use at greater depths than the normal PA200/500-S Altimeters. The altimeter uses a Brantner 4 pin connector and can be configured for analogue only or serial output only.

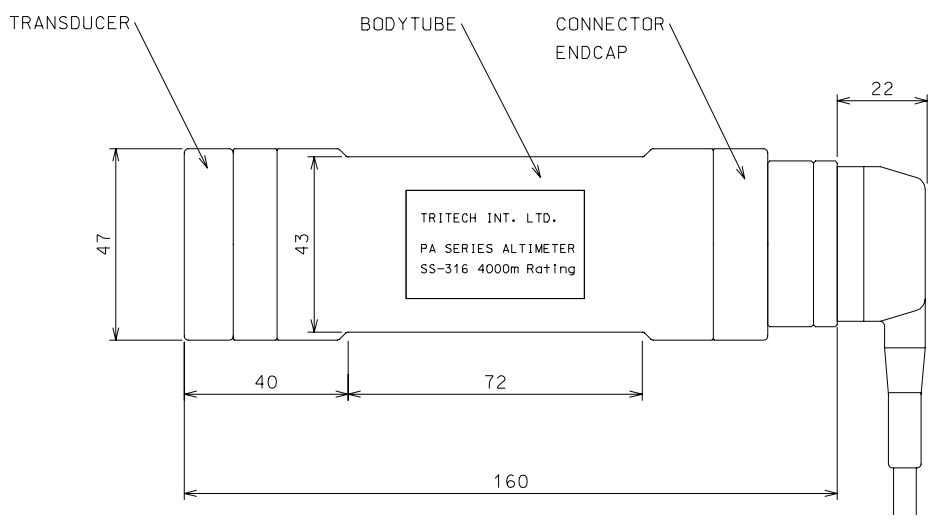
INTERNAL SWITCH SETTINGS

The PA altimeters have a number of internal switches. These may be used to set the altimeters to different configurations.

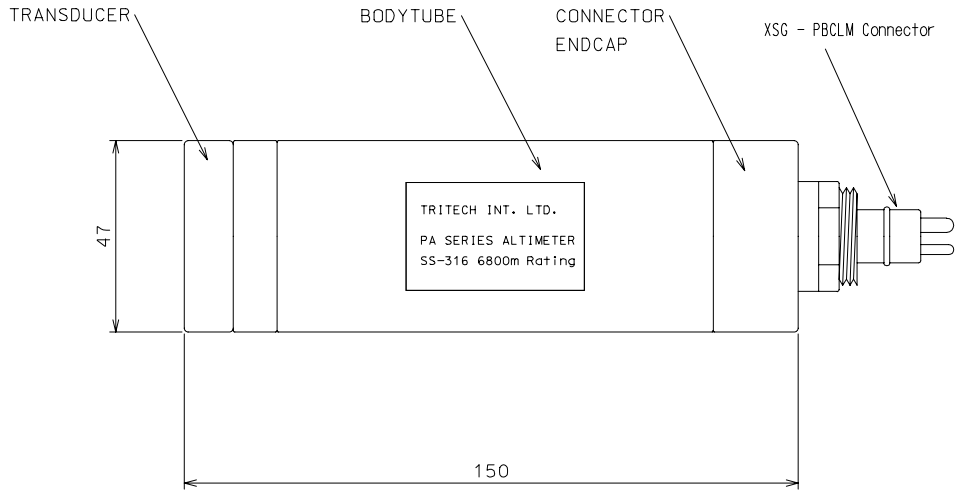
NOTE : IF YOU DO NOT KNOW WHAT YOU ARE DOING THEN DON'T TOUCH THE SWITCHES AS YOU MAY WELL CAUSE DAMAGE TO THE UNIT.

A list of the various switch configurations is available from Technical Support at Tritech.

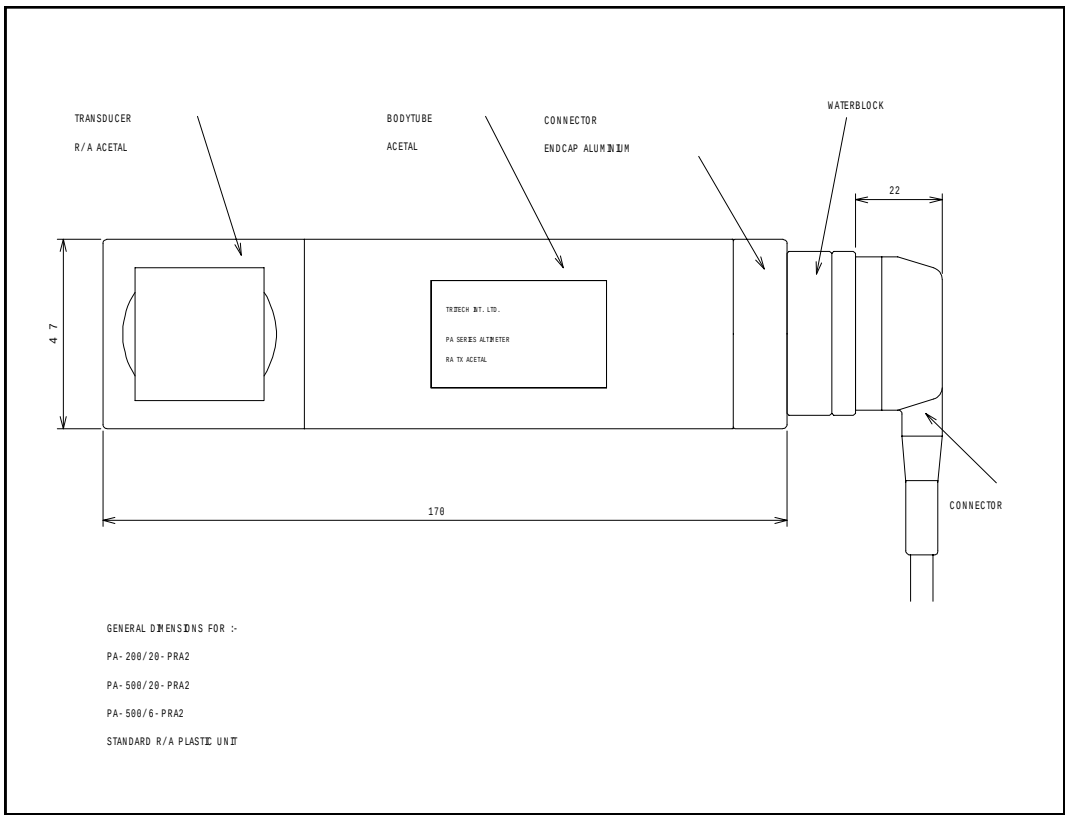
GENERAL ASSEMBLY



GENERAL DIMENSIONS FOR :-
PA-200/20-S
PA-500/20-S
PA-500/6-S
STANDARD 4000M RATED SS-316 UNIT



GENERAL DIMENSIONS FOR :-
PA-200/20-S6K8
PA-500/20-S6K8
PA-500/6-S6K8
STANDARD 6800M RATED SS-316 UNIT


TRANSDUCER
R/A ACETAL
BODYTUBE
ACETAL
CONNECTOR
ENDCAP ALUMINIUM
WATERBLOCK
22
47
TRITECH INT. LTD.
PA SERIES ALTIMETER
RA TX ACETAL
170
CONNECTOR
GENERAL DIMENSIONS FOR :-
PA-200/20-PRA2
PA-500/20-PRA2
PA-500/6-PRA2
STANDARD R/A PLASTIC UNIT

Altimeter Configuration Record

Model	PA500/6-S
Serial no.	2125.
Config type	S/C
Reference	PO

CONFIGURATION DETAILS Enter Tick ☑ for configuration.

Frequency	
200 kHz 20deg	☐
500 kHz 6deg	☑
Other	☐

Configuration	
Straight S/S	☑
6k8m S/S	☐
Plastic R/A (700m)	☐

Power	
24v (21v-28v)	☑
12v (9v-20v)**	☐

** requires 10.5v to start

Use	
Interrogate	☐
Free run ASCII & Analog	☑
TTL Triggered	☐
No detect = full range	☐
No detect = zero	☑

Comms	
RS-485	☐
RS-232	☑
Analogue O/P 0-5v DC	☑
Analogue O/P 0-10v DC	☐

Range (metres)	
0-100m	☐
0-50m	☑
0-30m	☐
0-10m	☐

Analogue Scaling	
50 metres	☑

Head RS485 termination	N/A	Software version	ECHOv800
SCU-3 Node / subnode	N/A		
Speed of sound (m/sec)	1473		
Data (baud, start, data, stop)	9600,1,8,1	Output Definition	'xx.xxxm'
Other data configuration			
Special notes			

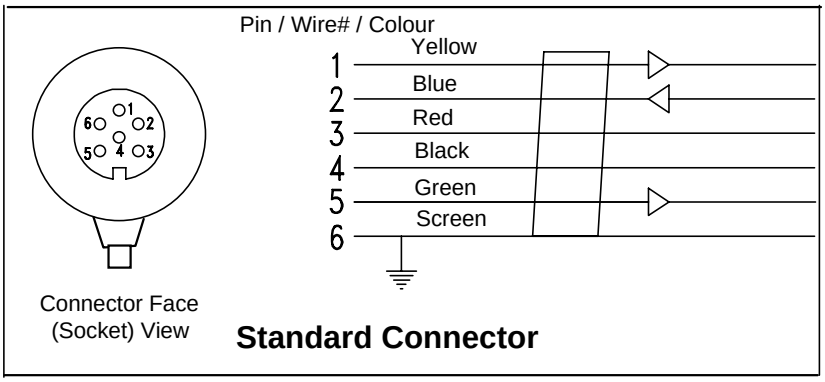
Item	**Rev.**	**Serial No**	**Item**	**Rev.**	**Serial No**	**Mod.**
Transducer Moulding	A	2459.	CPU PCB	F	2218.	A
Transducer Endcap	C	2394.	SONPCB	F	2219.	A
Body Tube	C	1969.	RS485 PCB	F	2217.N/A	A
Connector Endcap	C	2113.	RS232 PCB	F	2216.	A
Water Block	A	987.	4-20mA PCB	F	2220.N/A	A
			INP PCB	F	2215.	A

Pre-shipment check	
Date	05/12/01

Notes:

WIRING CONFIGURATION

Standard Connector



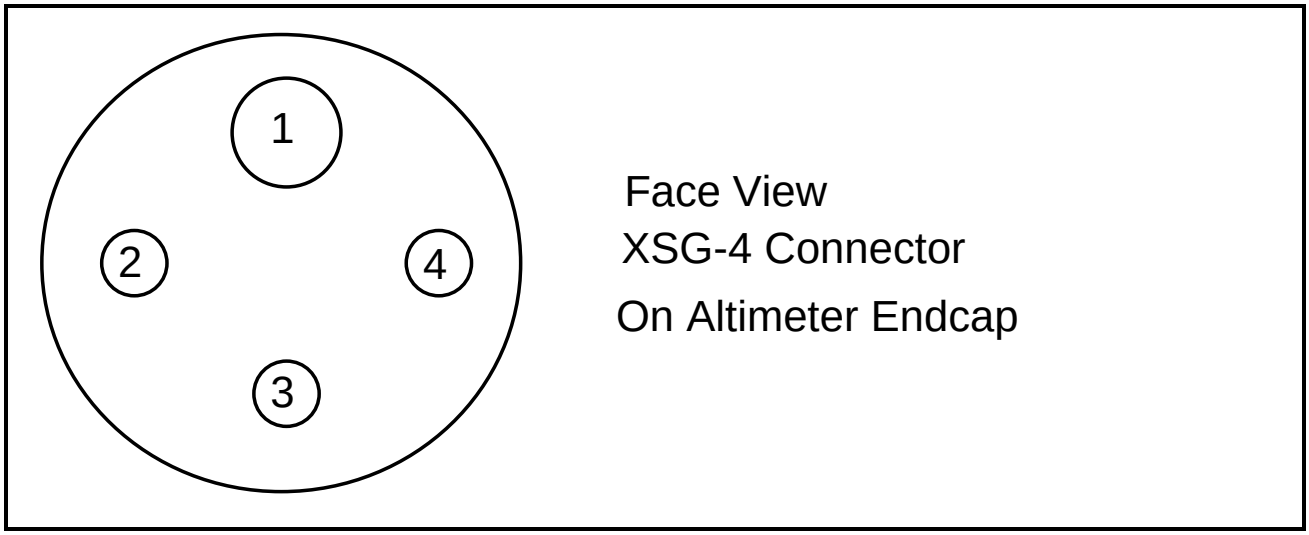
RS232 Tx or RS485A or CL+
RS232 Rx or RS485B or CL- or TTL trg
+V supply
0V / Analog ground
Analog O/P
Chassis Ground

Refer also to configuration sheet

Tritech 6-Pin Underwater Connector

NOTE :
The numbers shown relate to the schematic diagram above, (not a DIN style format).
Ignore the moulded numbers by the pins in the altimeter head.

Optional Connector



Brantner Seacon XSG-4

Connector Pin Signals:

Pin 1	0V
Pin 2	Analogue Signal Output / RS232 Tx / RS485A
Pin 3	Analogue Signal Return (Common with 0V) / RS232 Rx / RS485B
Pin 4	+Ve Supply

ALTIMETER INSTALLATION

Caution : Before applying power to the altimeter, ensure that power and signal lines are correctly connected according to the diagram in the configuration information. Incorrect connections may damage the unit.

Mounting

The altimeter should be securely mounted by insulated clamps in a position that gives an unimpeded path for the sounder beam, and as far from frame structures as possible. If being used as a depth sounder, it should be mounted as vertically as possible.

Operation

If supplied with the Analogue Output and Automatic Run on Power Up options, the altimeter will start ranging as soon as power is applied. The Analogue (and / or Serial Data) output will then reflect the range of the nearest echo. Otherwise the unit will need an interrogate signal as described in the configuration information.

ALTIMETER MAINTENANCE

The PA200 and PA500 Precision Altimeter consists of Transducer and Connector Endcaps that connect to a Body tube using a screw thread, with O-ring seals. Inside are contained four PCB's. The standard unit has a 6-way underwater connector fastened 4 socket cap screws, the connector is sealed using an O-ring. The optional 4 pin connector is fitted to the endcap using a screw thread and O ring.

Altimeter Spares

When ordering spares please specify the units frequency and beam angle, these are engraved on the transducer endcap, and also recorded on the configuration sheet in the front of the manual along with other details of the unit such as EPROM version and range and output specification.

Removal and Replacement of Underwater Connector-(Standard Unit).

Service Tools

2.5mm Allen key
Clean absorbent wipes
Lubricant A (Silicon grease MS-33)
Lubricant B (Fluoro-silicon grease MS-5341)

Preparation

Rinse the altimeter unit and connector in freshwater, and dry with absorbent wipes

Removal

First undo the four cap screws holding the connector on to the body tube. Grasp the altimeter firmly in one hand, and the connector body in the other. Gently pull the connector from the body tube.

Replacement

To fit the connector to the body tube, make sure the connector face, o-ring, and body tube face, are clean and undamaged. Use a light computer grade cleaning solvent (e.g. Flourinert) to clean components. Do not use powerful solvents like Trichloroethylene.

Lubricate the threaded screw holes with Lub.B, to prevent the threads seizing. Lightly grease the o-ring with Lub. A and refit it into the sealing groove.

Visual align the connector socket to the pins of the sonar tube, and push the connector firmly on. Fit the four cap screws, tighten them evenly and firmly. Visually check that the connector is fitted flush to the tube. DO NOT OVER TIGHTEN.

When mounting the altimeter, take care not to strain the connector or cable, and make sure that the cable is well secured to avoid damage.
If the connector is not being re-fitted, cover the endcap to prevent dirt and moisture entering the unit.

Disassembly and Assembly of the Altimeter

Service tools
Clean absorbent wipes
Lubricant A (Silicon grease MS-33)

Preparation
Rinse the altimeter unit and connector in freshwater, and dry with absorbent wipes

Removal
Next grasp the altimeter connector endcap firmly in one hand, and the body tube in the other. Gently unscrew the body tube away from the connector endcap. The electronics block will then slide out of the housing, attached to the connector endcap. The transducer may be unscrewed from the opposite end of the body tube in the same way.

Replacement
Clean all parts and check they are undamaged. Carefully inspect O-rings for damage and replace if necessary. O-rings, O-ring grooves and mating surfaces should be lightly greased before reassembly. Before replacing, ensure that the earth loop on the electronics block is secure and sprung so that it will contact the inside face of the body tube when it is fitted.