SONARMITE v5.xx

BTX/SPX single beam

PORTABLE BLUETOOTH ECHO SOUNDER

Ohmex is a company formed to manufacture and distribute products designed by Lymtech Ltd. a company established in 1982 w founded on technological innovation and design. The company prides itself on being the first to produce products in the field of instrumentation and software used within the Earth Science sectors. Achievements to date include DGM ,the first digital ground modelling software to run on a standard PC, SONARLITE, the first truly portable echo sounder, TIDALITE the first portable Tide Gauge, EDAS, Integrated tide and weather networked software for use by ports and harbours. SONARMITE the first portable Bluetooth echo sounder based on WinSTRUMENTATION - The integration of Instrumentation, Wireless networks and modern portable computer equipment.

INTRODUCTION

The SonarMite Echo Sounder was the result of nearly two years research and development to further extend the boundaries of shallow water hydrographic surveying equipment. The introduction by Ohmex of the SonarMite, the worlds first truly portable echo sounder system, has been a hard act to follow and it remains the portable instrument of choice in many survey companies around the world. The release of the SonarMite BTX/SPX instrument marks the next stage introducing a series of equipment designed around the WinSTRUMENT concept using the latest portable computers integrated with new measurement technologies.

Throughout the Hydrographic world the term 'Black Box' has become a euphemism for a device that has a minimal user interface and normally requires connection to a PC to be of any use ! In most cases these boxes are a cut down version of a more conventional instrument without all the features of the full system. The SonarMite extends this idea of a rugged design and minimalist interface to produce a 'Blue Box' system where the user interface is provided by integrated software running on a portable computer connected via a Bluetooth link. The use of wireless technology enables the instrument to be waterproof and used in a hostile environment while the more sensitive computer features can be located in a more user friendly environment up to 50m away from the instrument.

Typical SonarMite equipment

The SonarMite BTX/SPX instrument uses the same 'Smart' integrated transducer technology used in previous systems, in addition to highly reliable bottom tracking algorithms using DSP techniques the system also outputs a quality value associated with every depth measurement made. The popular SonarW7 software has been updated to the latest Windows versions. Software for the 'front end' of the SonarMite is available to run on a wide range of devices from Pocket PCs through to the full range of desktop systems running the Windows operating system.

Typical Use of the Equipment

The SonarMite Portable Echo Sounder has been designed to provide a portable instrument that provides the facilities of a 'professional' sounder at the cost and performance of a 'fish finder' device. It is important to recognize what the differences are between these two types of echo sounder. The 'fish finder' or leisure craft devices are primarily concerned with two functions, finding fish in the water column below the boat by sensing returns from their swim bladders and providing a bottom tracking/smoothing algorithm to detect average water depth below the boats hull. Survey sounders are designed to provide a large number of pings with as little processing of the raw data as possible to define the bottom in as fine detail as possible. Of major concern in a survey sounder is a narrow beam width to prevent averaging of the returned signal.

235KHz Active Transducers

The SonarMite uses Active Transducers, these are digital as opposed to analogue components and use microprocessors to synthesize transmitted frequencies and to interpret the return signals. The devices incorporate state of the art DSP and filtering techniques to reduce noise and improve depth tracking. These devices are supplied encapsulated in resin and have no serviceable parts. The connecting cable to the transducer carries only low DC voltage and digital I/O, none of the EMC problems associated with conventional analogue sonar devices apply.

To improve weatherproofing and to avoid connection problems the SonarMite has two connectors that provide all the I/O required by the device. One of the connectors also includes a return pin to enable the system to switch on by cable connection rather than using a switch. Cables to the device can be connected simultaneously (e.g. Transducer on port 1 and Serial Data Cable on Port 2).

Equipment Supplied

The **SonarMite BTX** is supplied as standard with the following list of equipment …

- ❑ SonarMite main processor unit c/w Bluetooth Antenna
- ❑ Universal EU/US/UK internal battery charger
- ❑ 'Smart' P66 depth transducer c/w 5m cable and embedded processor
- ❑ Serial data lead
- ❑ IP68 rugged plastic Transit case
- ❑ SonarW7 post process/import/export software

SonarMite BTX single beam echo sounder

The following is a short list of accessories for the SonarMite …

- ❑ SonarMite Windows Mobile PDA software
- ❑ SonarMite W7 software for Tablet/Portable PC
- ❑ USB serial data lead
- ❑ Aluminium shoe to connect transducer to detail pole
- ❑ Hydrolite frame for small boat mounting

The **SonarMite SPX** is a budget version of the SonarMite supplied as standard without Bluetooth, internal batteries, charger or IP68 Transit case, the following is a list of equipment supplied …

- ❑ SonarMite main processor unit c/w 1.5m 12v battery leads
- ❑ 'Smart' P66 depth transducer c/w 5m cable and embedded processor
- ❑ D9 Serial data lead
- ❑ SonarW7 post process/import/export software

SonarMite SPX single beam echo sounder

The following is a short list of accessories for the SonarMite …

- ❑ SonarMite Windows Mobile PDA software
- ❑ SonarMite W7 software for Tablet/Portable PC
- ❑ USB serial data lead
- ❑ Aluminium shoe to connect transducer to detail pole
- ❑ Hydrolite frame for small boat mounting

SonarMite BTx/SPx OEM versions

The OEM (Original Equipment Manufacturers) versions of the SonarMite are compact budget versions of the portable survey equipment used mainly for permanent installations in a boat or third party equipment such as the HyDrone RCV. Power is provided by an external 12/24vDC battery or source, the internal power circuit is protected against reverse polarity connection.

SonarMite BTX OEM single beam echo sounder

The **SonarMite OEM variants are** supplied as per the standard versions but <u>without</u> the following items of equipment …

❑ Internal rechargeable batteries – external power

❑ Universal EU/US/UK battery charger – not required

❑ IP68 rugged plastic Transit case – not required

The SonarMite BTX/SPX is a compact, portable, low power system for use in shallow water hydrographic surveys, it's small size and low power requirements make the system easy to deploy and transport to remote or inaccessible sites. The SonarMite BTX/SPX is a single beam echo sounder providing a wider range of solutions for surveyors working in shallow water hydrographic surveying. The SonarMite is available in two versions …

- SPX - a single transducer serial data port system with external power
- BTX - a single transducer with Bluetooth, serial port & internal batteries

All models make use of a range of interchangeable smart transducers. In its simplest form the SonarMite SPX and BTX are 235KHz single beam systems in the same format as the previous SonarMite BT/SP and SonarM8 systems. As with the previous SonarMite versions every measured depth is accompanied by a QA value which can be used for post analysis of the survey data.

INSTALLATION & USE

This chapter describes how the SonarMite Portable Echo Sounder would normally be installed and used. The typical way in which the device can be used for hydrographic surveying applications, is as a 'Dumb' sounder connected via a serial cable/Bluetooth Link to a PC or PDA running data logging and display software. Another option is to use both data streams with the serial output data for real time processing and the parallel Bluetooth output for graphic depth display.

Switching the System On

To turn the system on the user ensures the system is fully charged then connect the transducer to the 'Txr' connector on the front panel, the LED alongside the Bluetooth antenna will then turn on.

Data Collection Techniques

When not used as a 'Dumb' echo sounder in conjunction with a data logging package the SonarMite can be used in conjunction with the following data types to create full XYZ hydrographic data using the SonarW7 software package….

- ❑ Total Station XYZ data plus Time

- ❑ XYZ data from RTKGPS plus Time

- ❑ XY data from DGPS plus Tide plus Time

- ❑ Range and Bearing from hand held laser plus Tide plus Time

- ❑ Simple event marking past known position markers

The basis on which all data correlation is achieved is internal time base, so particularly when using the SonarMite with GPS data the clocks should be synchronised to GPS time (UTC).
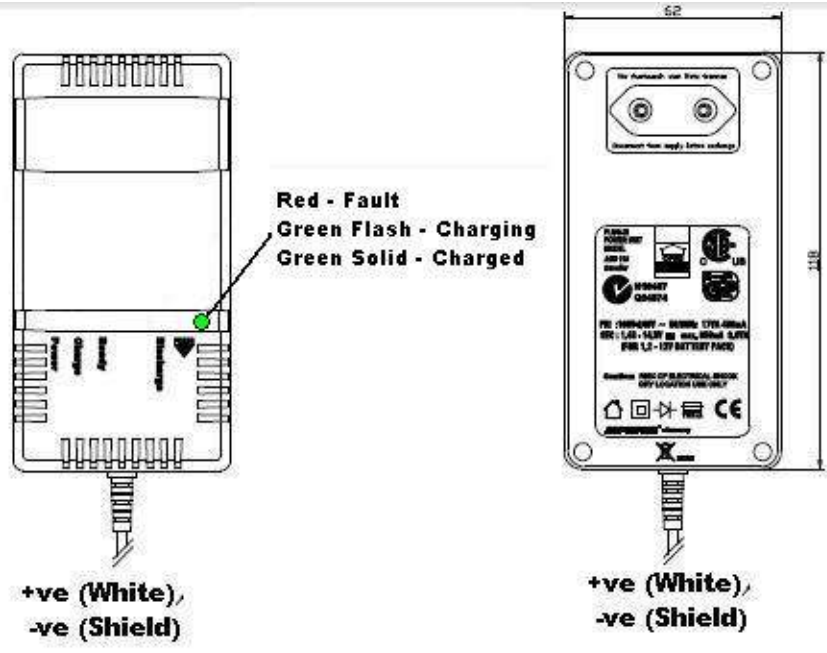
Sound Velocity Settings

The SonarMite default Speed of Sound in Water(SoS) setting is 1500m/second, facilities to vary this have been provided in the calibration or in post processing. In practice this velocity value can vary due to several factors …

- ❑ Water Temperature
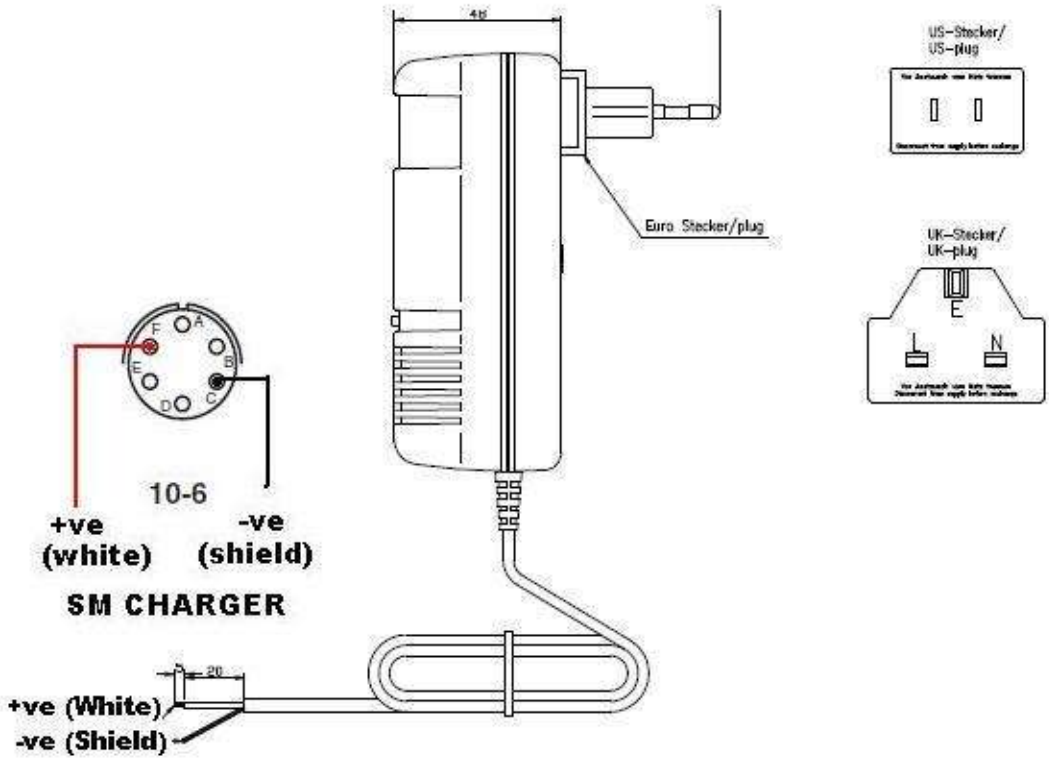
- ❑ Water Salinity

- ❑ Water Turbidity

All of the above factors vary the density of the water in some way and effect the 'time of flight' of a pulse of ultrasound in water and hence the depth calculated from this time by the SonarMite. The user can either measure the speed of sound in water by taking velocity profiles using a dedicated velocity measuring device or can use the SonarMite static over a known depth to a flat, firm base and then compare the measured value with the known depth. The difference in Sound Velocity between warm fresh water and cold salt water is about +/-30m/Second which represents a change of depth of +/-2%, this must be viewed in context with typical depths of the survey, if a typical depth is 10m then the error could be about 20cm. **The Sound Velocity setting is the largest source of measurement error when care is not taken in setting it correctly.**

Internal Battery Charging

The SonarMite BTX is fitted with an internal sealed Nickel Metal Hydride battery which provides 2.8Ahr @ 10vDC and a mains powered battery charger capable of bulk and float charging to give the most efficient battery cycle. The user should avoid running the SonarMite until the batteries are completely flat as there will be a high risk of both data loss and permanent damage to the batteries. The charger will illuminate FLASHING GREEN when bulk charging and CONSTANT GREEN when charged, the charger illustrated may change if a local mains variant is required.

Red - Fault
Green Flash - Charging
Green Solid - Charged

+ve (White),
-ve (Shield)

+ve (White),
-ve (Shield)

SM NiMh CHARGER

US-Stecker/
US-plug

Euro Stecker/plug

UK-Stecker/
UK-plug

10-6

+ve   -ve
(white)   (shield)

SM CHARGER

+ve (White),
-ve (Shield)

WARNING – Only the correct NiMh battery charger should be used with the SonarMite

Operating Instructions
Charger for 3-10-cells-NiMH or NiCd rechargeable battery pack

Dear Customer,

With this battery charger you can charge 3-10-cells-NiMH/NiCd rechargeable battery packs.
These operating instructions will help you to use the features of your charger in an optimum way. Please read the operating instructions carefully before use. Please retain these operating instructions.

Safety Measures and Precautions

- Read the operating instructions carefully before use
- Charge only NiMH or NiCd rechargeable batteries; do NOT charge primary cells, Lithium or Lead Acid batteries - Risk of Explosion and chemical danger.
- Check the battery manufacturer's instructions. Do not charge batteries with too high charge current.
- Connect the charger to a suitable mains supply only. Connect the batteries with correct polarity to the charger.
- Disconnect charger from the mains and battery pack if it is not used for a longer time.
- Do not charge hot batteries. Batteries must be at ambient temperature before charging.
- Stop the charging process if the battery gets too hot during charging (>50-60°C).
- Do not charge the batteries twice. Charging is only allowed after prior discharge.
- Do not expose the battery charger to rain, damp or hot conditions. Charger is for indoor use only.
- Do not leave the charger unattended during operation
- Do not plug in the charger if there are signs of damage to the housing, cables, connectors or mains plug.
- Do not open equipment or carry out repairs. Authorized personnel may only carry out repairs.
- Do not cover equipment or obstruct ventilation, otherwise it may over-heat. Do not expose to direct sunlight.
- Do not charge more than one battery pack simultaneously.
- Charge only cells of the same type and capacity as a battery pack.
- Keep batteries, battery charger and cables away from combustible materials.
- Never place the charger inside the engine compartment. Keep leads away from moving parts.
- Rechargeable batteries must not to be disposed of in domestic waste. Return used batteries to your dealer or to an authorised battery collecting point.

Operation

This charger can charge NiMH/NiCd-batteries from 3 to 10 cells. Charger detects the number of cells automatically.
To charge a battery pack put the power plug into a convenient mains socket. After connecting the charger with the battery pack charging starts automatically, after detecting number of cells automatically, the charger starts charging the battery. For charging indicators please see charging table below. The charging process is done according to the -dV-technology. After charge and the charger goes in trickle charge mode automatically. To stop charging, disconnect the charger from the mains supply at any time before removing the battery from the charger.

Technical Data

Input voltage	100-240 V+-10%, 50/60 Hz
Battery Types	3-10 cells NiMH/NiCd battery packs
Charge method	-dV
Max. charge current	800mA +-10%
Case protection	IP20
Charging Indicators	no battery: LED off
	charging: LED blinking green
	charge end: LED lights green
	Error: LED blinking red
Dimensions L x W x H in mm	118 x 62 x 47 (without mains plug)

Contents supplied

1 x Charger
1 x Operating Instructions

Disclaimer

Information in these operating instructions can be changed without prior notice.
ANSMANN AG cannot accept liability for direct, indirect, accidental or other claims or consequential damages originated by using this charger and information given in these operating instructions.

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Reverse Voltage Protection

The SonarMite SPx is protected from reverse connection or direct short circuit by an internal diode and 1 Amp thermal fuse. If the fuse is tripped then the system will need to be disconnected for 1 minute for the fuse to cool down and reset itself.

Weatherproofing

The SonarMite has been designed to conform to the IP65 waterproofing standard, this benchmark describes equipment which can withstand a light spray of water from a hose for a short period of time, it does not imply the device is suitable for immersion in any depth of water or exposed to prolonged harsh weather conditions. The weatherproofing also assumes the connectors or cover caps are fully screwed on to their rubber sealing rings. The weatherproofing does not apply to certain components which are by definition not designed for outdoor use such as the mains battery charger and D9 serial cable connectors.

DEPTH TRANSDUCER

The SonarMite system uses a 'boat' shaped P66 transducer in a 'knock off' fitting for fixing to the transom of a light boat or more commonly in a temporary mounting using a survey detail pole. The transducer includes a unique processor and is not the same device as the commercially available transducer from Airmar.

❑ Hydrodynamic shape provides vertical sound beam orientation on hull deadrise angles up to 30°

❑ Reversible wedge allows mounting to transom angles from 2° to 22°

❑ Integral release bracket protects against impact damage, mounts with 3 screws, and provides 12 mm of vertical adjustment

❑ Chemical and impact resistant plastic housing

❑ Designed to meet CE requirements

❑ Shielded piezoceramic element for noise free echo sounder display

❑ Standard minimum cable length: 5.0 m (16 feet)

Transom Mounting Transducer

Transducer Mounting

When mounting the transducers the following points should be taken into consideration …

❑ How near to the Metacentre of the boat is the transducer

❑ Is any turbulence generated around or in front of the transducer when moving

❑ Is the turbulence from the propellers in the field of view of the transducer

The only important consideration in mounting is that the transducer is always in the water and that the transducer does not represent an obstacle when the boat is used at higher speeds (i.e getting to the survey location). If at all possible mounting the transducer directly below the positioning antenna reduces the calculation of X/Y offset to zero.

Example Transducer Mountings



Typical rubber boat mounting

Avoid Stressing Transducers

The Active Transducers include piezoelectric elements which are embedded within a resin compound. If the user has to fabricate a custom mounting for the transducer (a very common requirement given the vast permutations of boats in which surveys are performed) avoid using a fixing technique that causes physical stress in the transducer body as this will change the resonant properties of the device and effect its depth measuring accuracy.

BLUETOOTH INTERFACE

The SonarMite deck box provides a fully compliant wireless Bluetooth™ Class 1 Master and Slave function via a simple UART or RS232 interface. The Bluetooth Wireless will provide connectivity to any device supporting either a UART or RS232 interface. The SonarMite Bluetooth Serial is compatible with all other device supporting Bluetooth™ SPP (Serial Port Protocol).

BlueTooth ID/Password code

In some instances the local Bluetooth interface may request a password/ID to set up pairing with the device, for BTX/SPX version devices <u>the pin number is always set to '1234' (*numeric* - one two three four).</u>
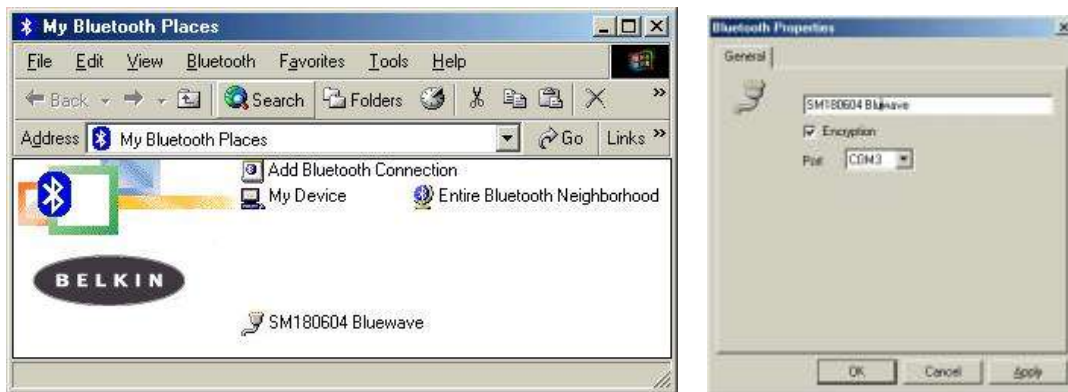
Typical PC Bluetooth software

Bluetooth™ Serial Port Profile

Bluetooth Serial provides either a Bluetooth™ slave or master connection fully supporting the (SPP) Serial Port Profile …

Features

- ❑ Fully Bluetooth™ Class 1 v1.1 SPP compatible
- ❑ Wireless range of over 100m (330ft)
- ❑ Integrates with RS232 or UART systems.
- ❑ Small footprint
- ❑ Platform independent
- ❑ Various low power sleep modes
- ❑ SMA Antenna connection for direct antenna connection or coax

The SonarMite Bluetooth Serial Terminal encapsulates all of the Bluetooth™ protocols on a single chip, providing a simple serial interface to the host, therefore removing any need for software drivers or experience in developing wireless technology

Bluetooth - actual range of the device.

The device uses Bluetooth class 1. The range will depend on the other Bluetooth™ device that it is connected to. It will also depend on the physical environment ie) obstructive walls and the type of walls the signal will need to go through and on the antenna that is fitted. Assuming it is connected to a class 1 device then the maximum range should be between 50 and 150 meters.

Connecting to another Bluetooth™ PC/PDA

The Bluetooth Serial Terminal will connect to any Bluetooth™ enabled device supporting SPP. This can be in MASTER mode, where the terminal initiates the connection, or SLAVE mode, where the remote device initiates the connection. The method of connection will vary depending on the remote device. However, generally the other device will perform a four stage process.

- ❑ The remote device will "discover" other Bluetooth devices. The Bluetooth device will appear as "SMnnnnnn" (where nnnnnn is serial number).

- ❑ The remote device will need to "Pair" with the SonarMite Bluetooth. The pin number is then entered.

- ❑ The remote device will connect to the serial port service of the SonarMite Bluetooth Serial Terminal.

- ❑ A virtual "Outgoing" communications Comm port will then generally be created and the application can then talk over this port to any connection to the SonarMite Bluetooth Serial Terminal.

- ❑ **WHEN CONNECTED THE RED LED WILL ILLUMINATE AND FLASH CONTINUOUSLY**

SERIAL INTERFACE

In addition to Bluetooth on the BTX all SonarMites have a serial interface which can connect to a computer using RS232 protocol. The default settings are …

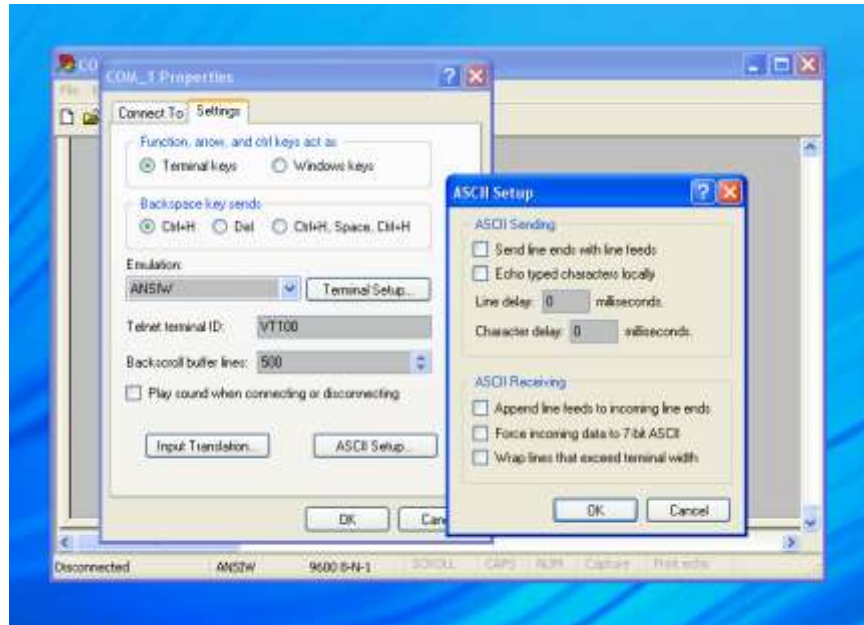# 4800 Baud Rate 8 Bit 1 Stop Bit No Parity

Example Serial Cable

Example USB adaptor cable

Using the slower baud rate of 4800 allows the serial cable to be extended so that the computer can be up to 20m away from the echo sounder.
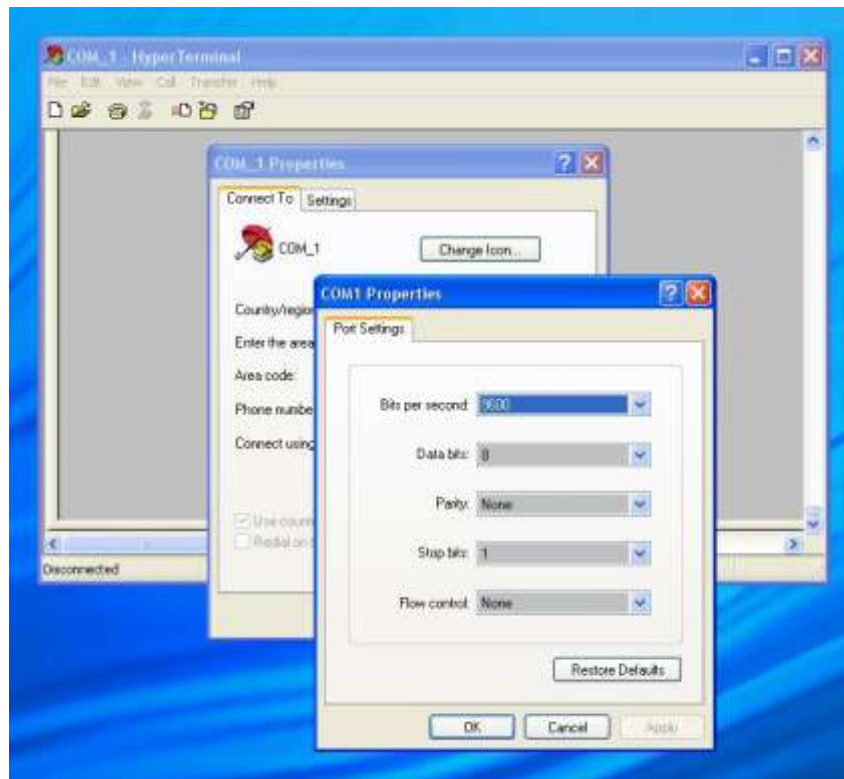
Typical Windows HyperTerminal settings

❑

❑

❑
Hyperterminal ASCII settings

❑

❑

❑

Hyperterminal Connection settings

CONNECTIONS

The only accessible connectors on the SonarMite are those on the front of the machine referred to as the 'Transducer or TXR' and 'Computer or PC' connections. **There are no user connections or serviceable parts within the SonarMite body itself.**

'PC' or Computer connection

This 6 way female connector is used to connect to either a PC serial connection or for an incoming message in the 'polled' mode connection.

SONARMITE MILSPEC

SERIAL DATA LEAD CONNECTIONS

'Transducer' connection
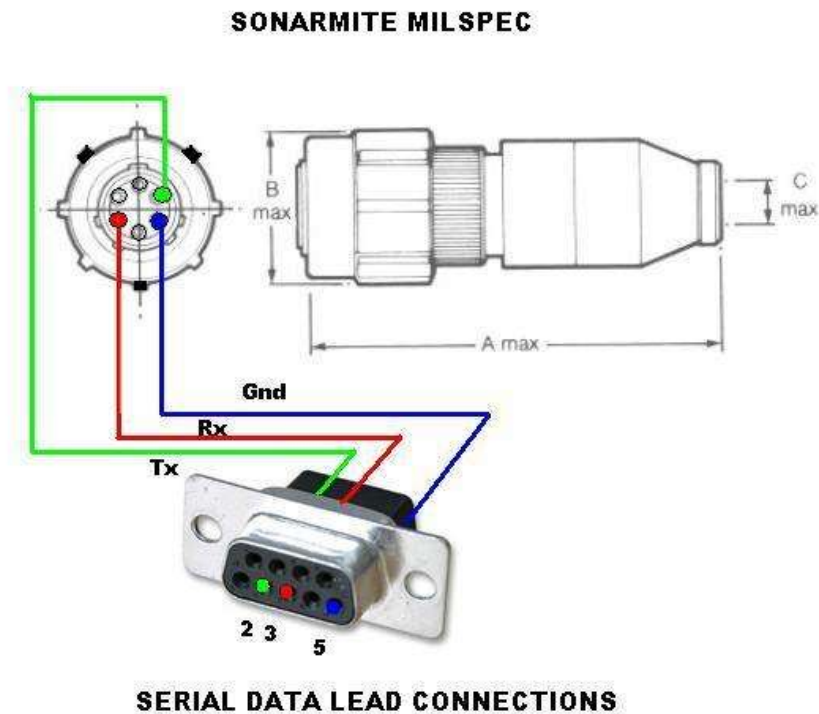
BTX TRANSDUCER CONNECTIONS
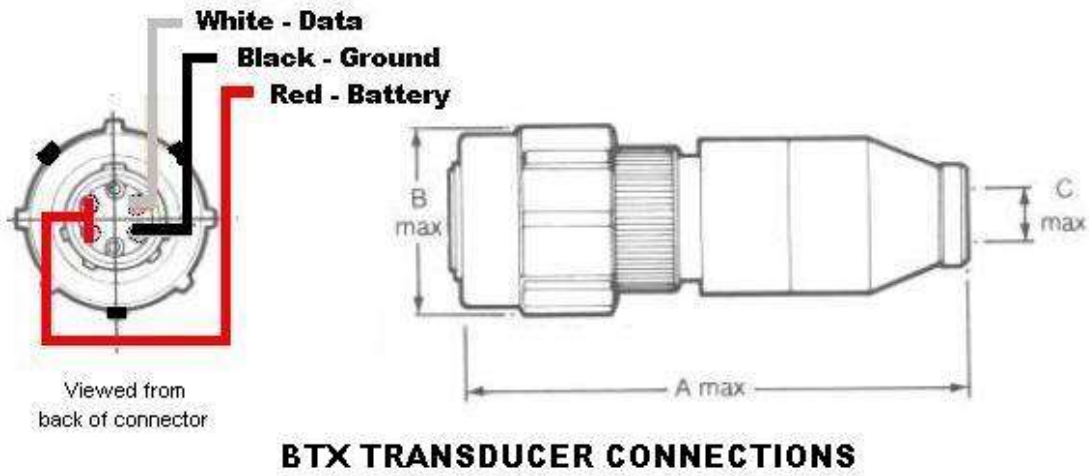
This 6 way male connector is used to connect to the SonarMite transducer, the same connection is also used for the battery charger connector.

Transducer and Computer connections

LED Status Feedback

The front of the SonarMite panel has two LED indicators, one for current status information, the other for Bluetooth connection on/off.

solid blue		**Bluetooth Connected**
solid red		**Low Power**
flash red		**Txr fault**
flash orange		**Txr data bad**
flash green		**Txr data good**

Front Panel status LEDs

Connector Caution

The MIL spec connectors have a locking ring and also a retaining clip. Trying to remove the connector by unscrewing the retaining clip will twist the internal cable and could cause a serious fault.

To disconnect turn the Locking nut

Do not force/unscrew the retaining clip

APPENDIX

SonarMite Settings

The SonarMite when connected via Bluetooth to a serial communications program such as Hyperterminal has a basic set of simple single character commands used to set the basic parameters of the instrument.

Flash Memory

The instrument contains an area of configuration data held within its semi-permanent FLASH memory area. On running the instrument this data is copied into the current working RAM area of the processor. Pressing any of the configuration command characters will only change the current active states enabling the user to sample output unil the 'Save' command is used to store the current settings and make them the new defaults when the system is rebooted.

BTX/SPX version Commands

☺ (^H)elp

Pressing ^H (Contol H) will display the following help information as an aid memoir to the available commands…

^Help,Format,Version,Id,Save,[Reset,Load,U/Dsos]

Commands shown in parenthesis [ ] are only available in the **SYS>** format.

Memory Operations

☺ (^R)eset

Pressing ^R (Contol R) will reset the SonarMite to its default values, these values are saved in Flash memory and set in current working RAM memory (only available in the SYS> output mode).

☺ (^L)oad

Pressing ^L (Contol L) will reload the Flash memory into the current working memory. (only available in the SYS> output mode).

☺ (^S)ave

Pressing ^S (Contol S) will save the current working memory area to Flash memory to become the system settings on reboot.

General Operations

☺ (?) Query format

Pressing ? will reply with current output formats as below …

```
Old SonarMite
Simple ASCII
DBT NMEA
DPT NMEA
Odom SBT
DESO 25
Polled
System
New SonarMite
```

☺ (^F)ormat

Pressing ^F (Contol F) will toggle the output formats as below …

Format 0 Old SonarMite format with null HPR (e.g. 1 1.88 0 0 0.0 12.7 128 20)

```
1 0.48 0 0 0 8.9 115 0
1 0.48 0 0 0 8.9 115 0
1 0.48 0 0 0 17.8 116 0
1 0.48 0 0 0 8.9 115 0
1 0.48 0 0 0 8.9 115 0
```
Example Standard Sonarmite Output

Output Parameters

Output message is eight numeric ASCII parameters, floating format, space delimited as ...

id depth roll pitch heave battery qa flags<cr><lf>

where ...

id = The id number of the instrument (0..7)
depth = current measured depth (m)
roll = current roll lateral atitude (+/-deg)
pitch = current pitch axial atitude (+/-deg)
heave = current heave depth correction (m)
battery = current battery condition (v)
qa = current depth relative qa value (0=null, 70=poor, 128=best)
flags = binary toggle flags 1=^X, 2=^Y, 4=^A, 16=^Z, 32=^G

Please note that if no transducer is seen or the qa is below 5 (out of water) then the output will appear as a string of 8 nulls at 1 second timeouts, in normal operation the eight numbers are reported at 0.5 second intervals.

Format 1 Simple ASCII mode (e.g. 1.92)

0.48
0.48
0.48
0.48
0.48
0.48
0.48

Example Simple ASCII Output

Format 2 DBT NMEA mode (e.g. $SMDBT,5.94,f,1.81,M,,*67)

$SMDBT,1.6,f,0.48,M,,*5C
$SMDBT,1.6,f,0.48,M,,*5C
$SMDBT,1.6,f,0.48,M,,*5C
$SMDBT,1.6,f,0.48,M,,*5C
$SMDBT,1.6,f,0.48,M,,*5C
$SMDBT,1.6,f,0.48,M,,*5C

Example NMEA DBT Output

Format 3 DPT NMEA mode (e.g. $SMDPT,1.81,0.0*66)

$SMDPT,0.48,0.0*62
$SMDPT,0.48,0.0*62
$SMDPT,0.48,0.0*62
$SMDPT,0.48,0.0*62
$SMDPT,0.48,0.0*62
$SMDPT,0.48,0.0*62

Example NMEA DPT Output

Format 4 Odom SBT mode (e.g. et   47)

"DBT" One Frequency Active		
Character #	Character	Description
1	<sp>/F	Space/Fix Mark
2,3	et/ET	Centimeter/Foot Units indicator
4	<sp>, E, O	Normally Space, "E" indicates High Frequency error "O" indicates Lo Frequency error (missed return)
5	H, L	Frequency Indicator "H" = High, "L" = Low
6	<sp>	Always Space
7,8,9,10,11	DDDDD	Depth Digits
12	CR	Carriage Return

Example: <sp>ETOL<sp>DDDDDCR

Example Odom Output

Format 5 Deso 25 mode (e.g. DA 0.48 m)

DESO25 One Frequency Active		
Character #	Character	Description
1	D	Always D
2	A,B	"A" for High Frequency, "B" For Low Frequency
3-10	DDDDDDDD	Depth Data
11	<sp>, f	Space or "f" indicating feet units
12	m, t	"m" indicates meters, "t" indicates feet
13	CR	Carriage Return
14	LF	Line Feed

Example Deso Output

Format 6 Polled mode (e.g. any text line in here 0.48 116)

any text line in here 0.48 116
Auto0163,1001.850,999.890,102.771,23.01.2009,15:49:32.9 0.48 115
$GPGGA,155147.9000,1000.2431,N,1001.7700,E,1,05,1.0,102.7566,M,0.0,M,0.0,0001*99
0.48 115
 0.48 115
 0.48 116

Example Polled Output

Format 7 mode used for system settings

SYS> 54 0.48 109 109   0 116 1500 0.2 0
SYS> 15 0.48 109 109   0 116 1500 8.9 0
SYS> 13 0.48 109 109   0 115 1500 8.9 0
SYS> 14 0.48 109 109   0 116 1500 8.9 0
SYS> 14 0.48 109 109   0 116 1500 8.9 0
SYS> 14 0.48 109 109   0 116 1500 8.9 0

Example System Output

Format 8 New SonarMite format (e.g. 1 1.88 12.7 128 20)

1 0.48 8.9 115 0
1 0.48 8.9 115 0
1 0.48 8.9 115 0
1 0.48 8.9 115 0
1 0.48 8.9 115 0
1 0.48 8.9 115 0
1 0.48 8.9 115 0

Example New SonarMite Output

☺ (^V)ersion

Display the current firmware version number

nSonarMite v3.01(c)2009 LYMTECH

☺ **(^I)d**

Toggle the ID number of the instrument. This function is intended for use in multiple transducer systems running in polled mode.

☺ **(^U)p**

Increase the sound velocity setting for dense cold water (only available in the SYS> output mode).

> **This is a dangerous function and will change calibration values if saved**

☺ **(^D)own**

Decrease the sound velocity setting for lighter fresh/warm water (only available in the SYS> output mode).

> **This is a dangerous function and will change calibration values if saved**

☺ **(^C)lear**

Reset output to format 0. (used by external programs).

☺ **(^B)**

Set output to new format 8. (used by external programs).