MINERVA

SURFACE CONTROL UNIT
MODEL NO - 2152

OPERATING AND INSTALLATION MANUAL

Part Number: 2152

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MAINTENANCE AND WARRANTY POLICY

Sonavision Limited warrants that its products are free from defects at the time of delivery and subject to the conditions listed below, undertakes to repair, or at its option replace, any product found to be defective in material or workmanship within one year after delivery, whichever is less, to the original purchaser by Sonavision Limited or its authorised representative.

CONDITIONS

1 Sonavision Limited must be immediately notified of any suspected defect and if advised by Sonavision Limited, the equipment subject to defect shall be returned to Sonavision Limited, freight prepaid.

2 This warranty does not cover defects which are caused as a result of improper usage, repair, maintenance, alteration or installation unless such activities have been undertaken by Sonavision Limited or its authorised representative.

3 On completion of any warranty work, Sonavision Limited will return the equipment, freight prepaid.

4 Sonavision Limited retains the sole right to accept or reject any warranty claim.

GENERAL WARNINGS

1 Lethal voltages are exposed within the surface control unit when the top cover is removed.

2 The surface control unit should always be disconnected from the mains supply before removing or operating any of the access panels.

3 The surface unit should be earthed at all times via the mains earth or the chassis stud at the rear of the control unit.

4 The surface unit contain electrostatically sensitive devices (ESSD).

5 The unit has got LAN.Don't use LAN network for browsing purpose or Updating operating system. It is meant for back up purpose only.

RELATED INFORMATION

Description	Part Number

1 INTRODUCTION

This unit (Minerva surface control unit)is designed to allow dedicated and reliable control Over all sonars within the standard Sonavision range. It utilises state of the art Embedded components for maximum reliability low power consumption and ease of use. The Minerva surface unit comes equipped with an embedded XP version of SonaVision`s Surface Control software.

This unit housed in a 2U high 19 inch rack mounted housing .In simple terms the unit is combination of an industrial standard PC and ability inbuilt to control sonar. This unit Utilises a handheld controller for easy and quick operation of sonar during real time operation. The unit also includes a CD/DVD RW drive , 4 off USB and 10/100 RJ45 network enabled to backup sonar data.

This manual tells mainly about installation, operation, testing and maintenance. Please see appendix for pin outs, controls and communication protocols.

2 SYSTEM INSTALLATION

2.1 Introduction

The 2152 Minerva unit has been designed to mount directly into an existing 19 inch racking system. A clean AC power source is recommended for reliable operation and to prevent damage to the equipment. The unit requires a super VGA monitor capable of displaying 256 colours at a minimum resolution of 800x600. There is a hand controller fixed to front panel provides provides some important functions for operating sonar. Total 4 off USB2.0 ports provided to allow customers to decide whether the front or rear connectors are utilised for keyboard ,mouse or USB flash drives etc. If necessary the newt work connection (RJ45) also available on back of the panel.

The unit has a standard Sonavision ITT 6 pin connector on the rear for connection to the ROV umbilical. This connector also supplies 24vdc for testing sonars directly.

9 pin female D connector which is besides to ITT 6 pin is a data connector which is used for just telemetry if necessary.(Note: this is not compatible with old surface control units Data connector)

The 24v output is not designed to supply the sonar while attached to a vehicle. It is for test purposes only.

SonaVision recommend the maximum cable length does not exceed 1v drop across cable when when sonar is directly powered from surface unit.

There are 3 additional serial ports (COM1/COM3/COM4) located on back panel just give extra option for special applications.

Important information :

Network connection need to be used for backup sonar data into another PC only. Don't use for internet purpose.

Failure to adhere to the above statement could result corruption/virus to the software.

2.2 Unpacking

The unpacking procedure is as follows:

Remove unit from its transit box.

Check that the contents of each case conforms to the packing note.

Notify the manufacturer of discrepancies and/or transit damage.

Retain the transit case for future shipment.

2.3 Installation

To install the Minerva unit proceed as follows:

a) Remove Minerva from the packing case.

b) If mounting unit in 19 inch rack ensure there is space to accommodate its 2U height.

c) Ensure that the peripherals (eg monitor, mouse and keyboard etc) have sufficient cable lengths to connect with the unit.

d) Ensure hand controller is secured into PS/2 located on back panel.

e) Connect all peripherals including the power lead, choose which USB port(s) (front or rear) to connect mouse/keyboard (if desired).

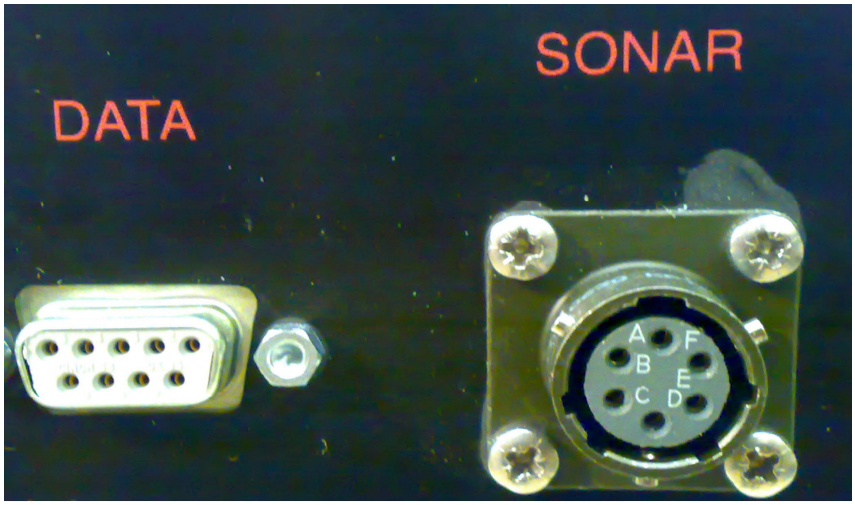
f) Switch ON input power supply to the system using rocker switch located on bottom left of back panel.

g) To start the Minerva, push the button located on front panel left hand top corner and ensure startup sequence is displayed on screen.

3 OPERATION

3.1 Getting Started

The system will boot in the same way as a standard desktop PC. After passing through the initial boot up sequence, Windows XP Embedded will start, followed by Sonavision control software.



Connection to the sonar is made via a 6 pin ITT cannon connector(SONAR) or 9 pin D type situated on the rear of the unit.

SONAR connector provides both power and data lines.

DATA connector provides only data lines.

Please see Appendix for pin out details.

3.2 Communication protocols and Baudrates

Minerva can be set for 3 following type of communication protocols.

1) RS232

This mode is only used for short cable(50 feet) communications only. It is always suggestible to use minimum length cable as possible to get reliable communications.

2) RS485/2 wire and

This is default mode and is mostly used. It is capable of running communications over long cables (approximately 1000metres) on a single twisted pair cables.

3) RS485/4 wire

RS485/4 wire mode is also supports long length of cables but occupies 2 twisted pair.

If Minerva is supplied with SONAR then communications protocols and baud rate will be set at factory. Otherwise Minerva will be set to default settings (485/2 wire and 9600 down/57600 up).

If you have the sonar, which is not supplied with Minerva, then make sure the existing sonar communication settings are same as Minerva settings.

If not matching you need to change Jumper and baud rate settings.

Please see appendix for more details also refer the sonar software manual for changing baud rates.

3.3 Initial testing

Initially it is recommended to test sonar on bench with Minerva before installation onto a vehicle.

Sonavision sonar software will start automatically after complete boot up of Minerva.
If the Sonavision sonar control software fails to start automatically double click on the Sonavision icon on desktop to start the application manually.

After starting sonar application the message “subsea comms has failed” will appear on bottom left of screen.

But you should see the green TX LED on front panel flashing.
It means Minerva is transmitting data but not receiving from sonar because sonar is not connected yet. So it is time to connect SONAR and test it.

It is recommended that connection is made between Minerva and SONAR using a test cable. This will have been included if the Minerva unit was supplied as part of a sonar package. If this not the case a test

cable can be purchased from Sonavision to suit the preferred sonar model.

Connect the sonar using test cable. Make sure communication protocols and baud rates are set properly to match sonar. Switch ON sonar power switch.

If testing a SV4000, SV3000 or SV6000 the sonar head will be seen to keep rotating until it finds headstrobe. Titan, Mercury or SV2000 sonars will stop after finding headstrobe and waits for response from top end.

When the sonar head finds its headstrobe the communications will commence between the surface and subsea units.

Oberve both green LEDs (TX and RX) on the front of the Minerva will flash to indicate data is transmitting on both sides.

Tx LED indicates data from Minerva to Sonar and RX LED indicates data coming from sonar.

The message at the bottom of the screen will read “subsea comms ok” and a PPI trace will be visible on the VDU.

Make sure the head is rotating in synchronous with cursor on screen.

3.4 Remote Controller

Remote controller is part of Minerva hooked to front panel and is flexible move. This has got combined functionality of some keyboard functions and mouse. These keyboard functions are mapped to some important sonar software functions, which are used mostly during operation. So using remote controller it is quick and easy to manipulate the sonar during real time. The functions are screen printed on remote controller to understand easily.

When sonar is running , try all buttons on remote one by one and see they are working.

For example change range,speed and verify sonar head also responding accordingly.

Once happy with communications also make sure **Head type and Head frequency** settings in software are matching to sonar to get proper response.

Keep the sonar in maximum range and maximum gain.
Rub the sonar transducer with hand and make sure you will see noise on screen.

Save the sensor settings using menu to avoid doing the settings again.

Record interconnections for mainatining same when you connect sonar via ROV umbilical.

Note:

Please refer to the Sonavision sonar control software manual for detailed information.

3.5 Connection to ROV umbilical

Data is transferred between the Minerva and sonar via either 6 way “SONAR” connector or 9 pin “DATA” connector.

You can use either for only data lines. If SONAR connector used it will also provides power(24V DC) to sonar.

In case vehicles has got capability to provide power to sonar then it is only necessary to run twisted pair cable for data(assuming rs485/2 wire) only.

Most of sonars use 485/2-wire mode. RS 485/2-wire format (standard on all Sonavision sonars) requires one spare shielded twisted pair on the ROV umbilical directly from the vehicle to the ROV surface console. A two wire shielded connection is then required between the ROV console and Minerva surface unit.

Care must be taken to ensure that the RS 485 communication lines are completely isolated from earth. Sonavision also advise that the shield is only earthed at either the subsea or surface end only. This is to prevent ground loops.

After installation of sonar into vehicle test for communications again.

Note:

If you use multiplexer make sure data cable polarities (data +, data -) are correct on both ends for correct communications. Test the continuity also on both ends from Minerva to multiplexer and multiplexer to sonar connector.

3.6 Storing Data

The Minerva has got storage devices as follows:

a) CD RW or DVD RW

This can be clearly seen on the front of the unit.

Minerva comes with INCD software installed. New CDRW disks must be formatted using INCD before they can be successfully written. Normally this is done automatically when a blank disk is inserted into the drive. If not do manually using INCD software.

Once CD was formatted ,then Information can be directly saved onto the CDRW disk from within the SonaVision software as a bitmap (for screen grabs) or data file. This can then be easily transported onshore or to an email computer to be beamed back to base.

b) Use network to store data into another PC

Plug RJ45 network cable into network socket which is located on back of the panel.
Configure network to show into your network. Backup or save the data into another PC.

Note:
Use the nework connection only for storing data into another PC. Hence C drive has got only limited space (100Mb) left, don't store the data in C drive.

c) 4 off USB2.0

Minerva has got 2 off USB2.0 on front and 2 off USB2.0 on back panel. You can use flash drive to store the data to store data directly or take backup of existing data.

4 MAINTENANCE

The 2151 remote unit requires little maintenance.

It may be occasionally required that the remote be wiped with a damp cloth to remove dust that if left to build up can hinder switch operation.

If trackerball operation becomes erratic it may be necessary to remove and clean the ball and cavity. This is done by inserting the supplied tool into the two locating holes on the trackerball and turning in an anti-clockwise direction. This will release the retaining ring allowing the removal of the ball. Use methylated spirits to clean the ball and cavity with a clean cotton cloth. (For more information see 2151 remote manual).

The Minerva requires little maintenance but the occasional wipe with a damp cloth will ensure the unit is kept clean.

Keep checking the space left in C drive which should be around

100Mb. The reason is some times it might be full because of accidental storage of sonar data.

Make sure exhaust (located on back panel and right side panel)not blocked.

5 TROUBLE SHOOTING

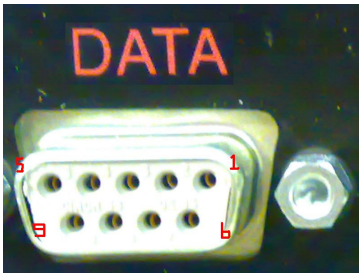
No	Problem Description	Sequence Trouble shooting	Remarks
1	Unit not switching ON	1)Verify input power(240V AC) is applied. 2) Verify fuse(3.15A) inside IEC	If you can hear fan noise it reveals input power applied.
2	Unit not booting	Switch OFF input power and ON again after 10 sec delay. Press the PC ON button on front panel. Can you hear PC makes “beep” sound while booting . If so verify Monitor connection. If no booting sound, then it might be internal connection or hard ware problem. Report to Sonavision.	Verify back panel LED1 for monitoring power and HDD activity.
3	PC booting struck while booting. Does not show desktop.	If it is showing blue screen, you may need bios re flashing, so report to Sonavision. .	For time being you can restart Minerva again until you don’t get blue screen.
		If it is not showing desktop, then hard disk might be corrupted. Report to Sonavision.	
4	Sonavision sonar control software does not start after booting Minerva.	Double click Sonavision icon which is on desktop to start manually.	

		In case if you reinstalled sonar software then you may need to verify **sonavision.ini** file.	Please see appendix for example and also go through sonar software manual if necessary
5	Not communicating with sonar.	Please verify one by one	
		Make sure Sonar control software running	
		Make sure both comports on control panel selected to COM2	Please see appendix for control panel.
		Make sure baud rates in software set to suit the sonar.	Please see appendix for baud rate changing
		Make sure communication protocols are matching both on Minerva and sonar.(Default will be Rs485/2 wire for Minerva).	Please see appendix for jumper settings.
		Make sure TX LED flashing.	If all are ok. Save settings using menu.
		Close sonar software and Restart. Verify for TX led flashing. Switch OFF sonar power and switch ON again. Make sure sonar head rotating initially when power is ON.	
		If problem still there verify interconnections between Minerva and sonar. (make sure data polarities are ok)	Please see Appendix for pin outs. Test the sonar with test cable supplied and make sure umbilical cable is ok.
		If problem is still there contact Sonavision.	
6	Could not backup/save data into new CDRW	Make sure you are using CDRW	
		Make sure it is formatted with INCD software before use.	Normally it will prompt you insert new CDRW

		Insert normal cd which has got data and make sure it is reading.	If not reading contact Sonavision.

APPENDIX A PIN OUT DETAILS

SONAR	RS 232 (Sonar end)	RS 485 2 wire	RS 485 4 wire
A	COM	DATA +	RX +
B	RXD	DATA -	RX -
C	+24V	+24V	+24V
D	TXD		TX -
E			TX +
F	0V	OV	0V



DATA	SONAR
1	B
2	A
3	D
4	E

DATA connector details are same as SONAR mentioned above.

Minerva End

Ps/2	Description	Remote internal(14w)
1	KB Data	4
2	M Data	6
3	0V	8
4	+5V	5,9
5	KB Clock	3
6	Mouse Clock	7

Appendix B

CONTROLS

Input Power switch

Located on Back of panel
Has got internal fuse 3.15 (T)
See ON indication to switch ON.

This switch provides power to Minerva.
(But it does not switch ON unit.)

PC ON/OFF switch

It is a push button located on front panel.

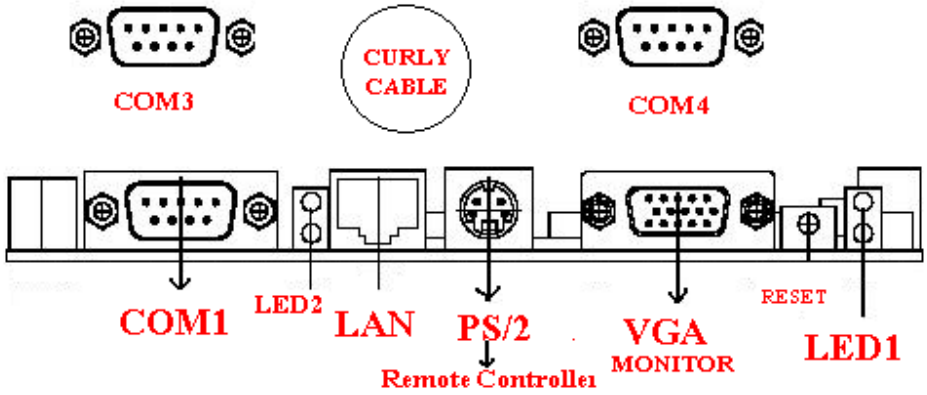
This button is used to switch ON unit.

Indication LED's:

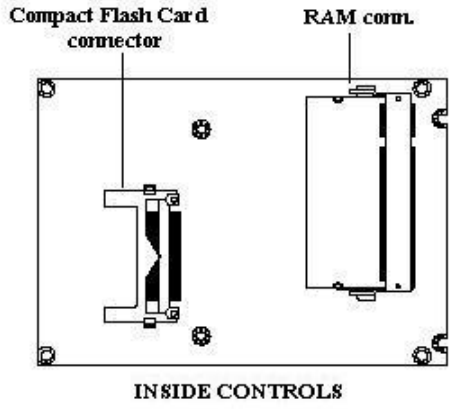
TX - LED indicates down link from Minerva to Sonar.

RX - LED indicates UP link from sonar to Minerva

BACK PANEL



LED1 indicates power and HDD activity.
LED2 indicates LAN activity
COM1,COM3,COM4 are spare serial ports provided for extra functionality.(for special purpose)
COM2 is used internally for SONAR communications.
PS/2 should always connect to remote controller.



INSIDE CONTROLS

INSIDE CONTROLS

Compact flash card connector located solder side of PC board.
It can be seen only after removing PC board inside unit.
It holds compact flash card, which is loaded with all software.

These inside controls are explained just for information.

They are not accessible easily and **not** supposed to be handled by customers.

Remote Controller

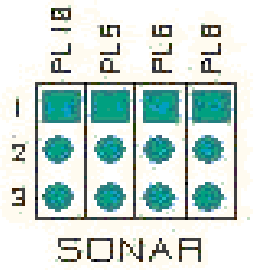
Remote controller will be hooked to front panel connected to PS/2 using curly cable.
It should be always be connected to PS/2 .
Remote controller has got function keys mapped to sonar control software controls.

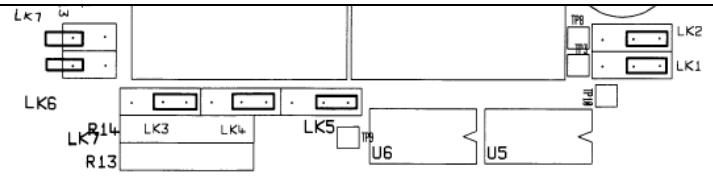
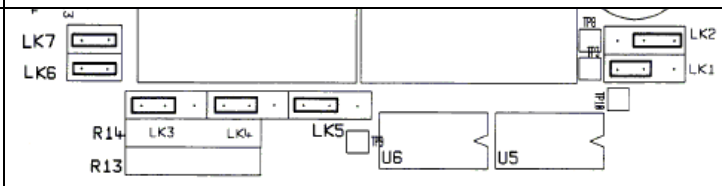
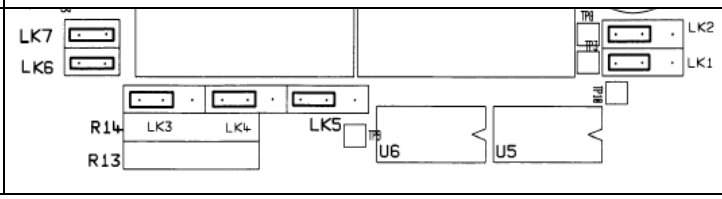
When you switch on Power to Minerva you should see REMOTE CONTROLLER LED is ON.(Note LED will be ON until you completely switch off Minerva Power)

For testing remote controller use either Remtest.exe program located on desktop or use sonar control software when it is running.

Appendix C

Hardware/Software Settings

<table>
<tr><td rowspan="5"><u>Telemtry PCB Jumper settings</u>
 

Note:
Default – 485/2 wire</td><td>Jumper No</td><td>RS232</td><td>RS485
2 wire
(Default)</td><td>RS485
4 wire</td></tr>
<tr><td>PL5</td><td>1-2</td><td>2-3</td><td>2-3</td></tr>
<tr><td>PL6</td><td>1-2</td><td>2-3</td><td>2-3</td></tr>
<tr><td>PL8</td><td>1-2</td><td>2-3</td><td>2-3</td></tr>
<tr><td>PL10</td><td>1-2</td><td>2-3</td><td>2-3</td></tr>
<tr><td colspan="5">JUMPER SETTINGS AT SONAR END ON PSU PCB (Please see corresponding sonar manual for more details)
Note: These jumper settings applicable for sonars like Mercury, Titan, Mini Titan and SV2k(mk2)</td></tr>
<tr><td>RS232</td><td colspan="4"> 
</td></tr>
<tr><td>RS485-2WIRE</td><td colspan="4"> 
</td></tr>
<tr><td>RS485-4 WIRE</td><td colspan="4"> 
</td></tr>
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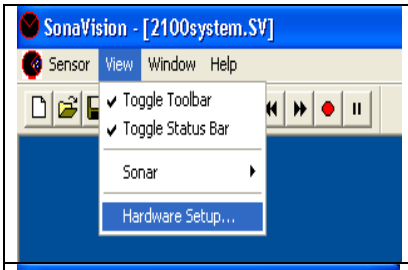
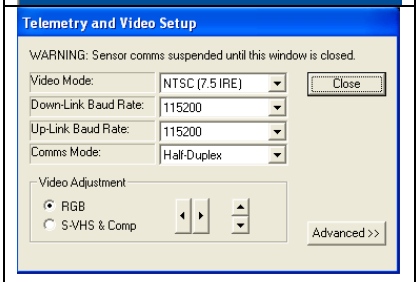




<u>Changing Baud rate Using sonar control software</u>

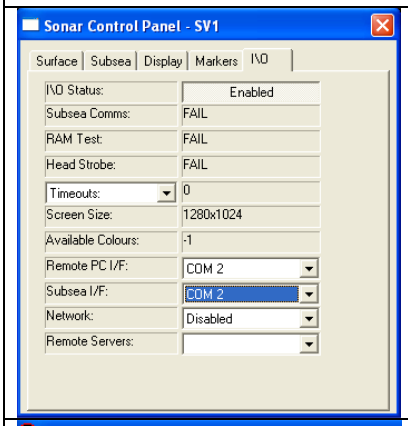
Before changing this settings make sure about the baud rate of sonar and communication potocol.
Normally it will be mentioned on sonar .

Go through the following steps:

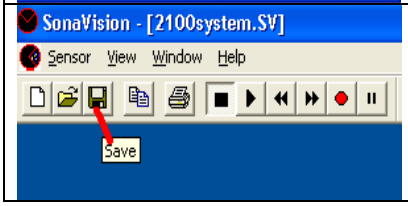
1) Make sure sonar software started.
2)Go to menu-→view→Hardware Setup
3) Change the down and up baud rates as per sonar baud rate.
(Note: DownLink is from Minerva to sonar and UpLink is from sonar to Minerva)

4)Choose half duplex for RS485/2 wire and full duplex for RS485/4 wire

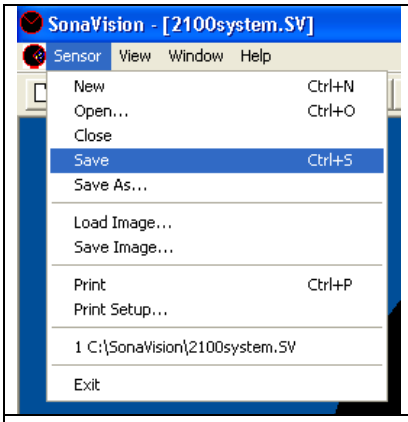
5)No need to worry about Video mode.
Press the button “Close” to apply changes.



<u>Control panel:</u>
To pen control panel
1)Using menu--→view-→control panel **or**
2)Right click mouse on software and select control panel



<u>Saving sensor</u>
If you change some settings and want to keep the settings then you need to save settings.
There are two ways of saving
1)using menu→sensor-→ save/save as **or**

<table>
<tr>
<td> 
</td>
<td>2)Click on floppy symbol

save as some file name(reasonable).It will be saved as with *.sv extension and stored in sonavision.ini file.So next time it remembers when you start sonar software.</td>
</tr>
<tr>
<td>[System]
Type=2100
VideoMode=0
DownBaud=0
UpBaud=1
MultiDropPort=2
VerticalShift=0
HorizontalShift=0
LineFilter=0
CommsMode=0
BWFilter=0
ColourBar=0
OutputControl=0
VideoEncoder=0
[Sonar]
SingleButton=0
DisableControlPanel=0
[Recent File List]
File1=C:\Documents and Settings\Administrator\My Documents\SV1.SV</td>
<td><u>Sonavision.ini file (for example)</u>

This file is located in c:\windows\ directory.

Normally it is not supposed to be edited .
It will set initially at factory. But can be used for checking.

Make sure
Type of system is 2100.

All other settings can be changed/saved using software menu.</td>
</tr>
</table>

Appendix D

SPECIFICATION

Temperature		
	Operating:	0℃ to +40℃
	Storage:	-20℃ to +50℃
Power Supply Voltage:		90V – 264V ac 120 – 370V dc
Weight		5.5kg (Including Remote controller)
Size:		482.6 (L) x 250 (D) x 88.9 (H)mm (excluding remote tail)
Housing Material:		main housing powder on zinc coated steel, front/rear hard anodised aluminium.
Connectors:		**Rear:** 1x VGA 3 x 9 pin D type Serial ports. IEC power inlet 1x PS/2 1x 6 way metal shell connector 1x D type data connector 1x 10/100Mbps-32bit RJ45 Ethernet 2 x USB 2.0 **Front**: 2 x USB 2.0
Controls:		**Rear:** IEC power input (3.15A fused) Main Input power on/off switch **Front:** Push button to switch ON the system Sonar power on/off switch LEDs showing Receiving/Tranmitting activity of sonar CD/DVD RW drive. Remote controller.