

**VALEPORT LIMITED**  
**Model 600MkIII CTD Probe**  
**Installation & 8008 CDU**  
**Operation Manual**

Document Ref: 0600800B.DOC

This confidential document was prepared by the staff of Valeport Limited, the Company, and is the property of the Company, which also owns the copyright therein. All rights conferred by the law of the copyright and by virtue of international copyright conventions are reserved to the Company. This document must not be copied, reprinted or reproduced in any material form, either wholly or in part, and the contents of this document, and any method or technique available therefrom, must not be disclosed to any other person whatsoever without the prior written consent of the Company.

Valeport Limited,  
Unit 7, Townstal Industrial Estate,  
DARTMOUTH,  
Devon, TQ6 9LX,  
UK

Tel: +44 (0)1803 834031  
Fax: +44 (0)1803 834320

As part of our policy of continuous development, we reserve the right to alter, without prior notice, all specifications, designs, prices and conditions of supply for all our equipment.

Copyright ©1995

CONTENTS	PAGE NO.
1. INTRODUCTION.....	3
1.1 General Description .....	3
2. SYSTEM DESCRIPTION.....	4
2.1. Instrument .....	4
2.2. Cables .....	5
2.3. Surface units.....	5
2.4. Equipment supplied.....	5
2.5. Customer Supply .....	5
3. INSTALLATION.....	6
3.1. Mechanical Installation .....	6
3.2. Electrical Connections.....	6
3.3. Batteries .....	7
3.3.1. 600 SR.....	7
3.3.2. 8008 CDU.....	7
4. OPERATION USING 8008 CDU.....	8
4.1. Operating Procedure .....	8
4.2. Points to Note About CDU Logging.....	11
4.3. Data Replay [600 SR Only] .....	12
4.4. External Connections.....	12
5. MAINTENANCE.....	13
5.1. Battery replacement - 600 SR .....	13
5.2. Battery replacement - 8008 CDU .....	13
5.4. General .....	14
5.5. O-Ring Sizes .....	15
5.6. Lithium Battery .....	15
6. CALIBRATION .....	16
7. TROUBLESHOOTING .....	17
APPENDIX    1    SPECIFICATION .....	18
2    FIGURES.....	19
1    Model 600 MkIII Interconnections .....	19
2    Model 600 MkIII Sensor Layout .....	20
3    Model 600 MkIII Sampling Pattern.....	21
3    CABLE WIRING SCHEMES .....	22
3m 'Y' Lead .....	22
Deck Lead .....	23
Current Loop Adaptor / 8008 Surface Unit.....	24
4    CALIBRATION DATA .....	25
5    GUARANTEE CERTIFICATE and EQUIPMENT SUPPLIED CHECKLIST .....	27

## 1 INTRODUCTION

This document covers the installation and operation of the Model 600 MkIII CTD Probe (Direct Reading and Self Recording versions), when used with the 8008 Control Display Unit.

It also covers general maintenance procedures, and the calibration data of the unit. Operation of the Probes with Visual Basic and Windows PC software is covered in the supplementary software manuals.

### 1.1 General Description

The Model 600 MkIII measures Conductivity, Temperature and Pressure parameters and from these measurements Salinity, Density and Speed of Sound are calculated. The system is modular and instruments can be upgraded if desired, and external instruments for parameters such as turbidity or fluorescence can be interfaced and logged or monitored in real time.

The Model 600 MkIII is available in two versions: the 600SR is both self recording and direct reading and the 600DR is direct reading only. Both units can be used directly with a PC or with the optional Model 8008 Control Display Unit. This unit has 3 data communication methods built in which offer considerable flexibility for configuration and use with a wide number of cable types and lengths.

Sampling mode, rate and averaging periods are set up using customers PC, and the set up is retained until overwritten. Calibration for all sensors is held within the instrument and data is provided in engineering units.

Power may be taken from its internal batteries [600SR only], from the 8008 CDU or from a surface battery or power supply.

Self recording units have 128 kbyte memory as standard [1Mbyte optional]. The 128 kbyte memory can store over 20,000 records.

Other products in the Model 300 range are the Model 108 MkIII direct reading and Model 308 self recording and direct reading current meters [with CTD and other parameters], the Model 315 logger and the Model 710 and 720 shore based and seabed mounted Tide Gauges.

## 2 SYSTEM DESCRIPTION

A general overview of the system and the different hardware options which are available are shown in Figure 1(Appendix 2), and general specifications are given in Appendix 1.

### 2.1 CTD underwater unit

The CTD instrument contains all of the measurement sensors and electronics. The data acquisition micro-controller enables 15 bit [14 bit + sign] resolution. This equates to a 1:20,000 resolution for the CTD parameters. The CTD operates on a basic 16 Hz sampling rate and the samples are sequential, so the maximum rate is one CTD scan every 3/16 seconds (Figure 5).

Current consumption is as follows	24mA	sampling mode
	6mA	listening mode (awaiting interruption)

Three different sampling modes are available, selectable from within the software:

In TIME sampling mode, the instrument is switched on continually, with one set of readings being taken and logged at the sample period set. The fastest rate at which samples can be logged is 1 Hz.

In BURST sampling mode, a number of samples can be taken and averaged. The fastest rate at which samples can be logged is 1 Hz.

In DEPTH sampling mode, the instrument is switched on continually, with the pressure parameter being scanned at 16 Hz. When the set pressure increment has been passed, a sample set of pressure, temperature and conductivity is logged to memory.

The self recording units log raw data. In real time mode, the calibration constants are used to calculate the actual conductivity, temperature and pressure readings within the instrument, and this data is read by the PC which then calculated the derived parameters of Salinity, Density Anomaly and Speed of Sound. When logged data is extracted, the raw data is transferred to the PC and then a translate program is used to convert the data to engineering units and calculate the derived parameters. This is done automatically by the Windows software, and via the additional 600\_TRAN.EXE program with Visual Basic software.

The sensors fitted are a Valeport inductive coil conductivity sensor, thermistor or platinum resistance thermometer and strain gauge pressure transducer. The type and range of transducer actually fitted is defined in the calibration sheet [Appendix 5].

## 2.2 Cables

For direct reading applications, a variety of different cables can be fitted, using the appropriate interface unit at the surface for RS485 or Digital Current Loop operation. Direct RS232 communications can be achieved over short cable lengths [e.g. 50 metres].

## 2.3 Surface units

The RS485 adaptor enables half duplex operation over long cable lengths, with separate power being supplied on a separate pair of conductors. The DCL adaptor enables data on power communications over a single pair of conductors. With RS485 operation, the instrument has a link removed and an IC fitted, which disables down link RS232 communications. This means that for an instrument which has been set up for RS485 (see calibration sheet to determine set up for instrument supplied) the RS485 adaptor is always needed for data extraction of logged data from the instrument.

The 8008 CDU has the three communications methods built in, with selection defined by the cable connections.

## 2.4 Equipment supplied

The equipment supplied is defined in the equipment checklist, Appendix 5.

## 2.5 Customer Supply

The customer will need to supply the computer for data capture of 308 recorded data. If using Windows software, an IBM compatible computer fitted with 386SX processor or above, Windows version 3.1 or above, and at least 4Mbyte RAM (preferably 8Mbyte) will be required. If using visual basic software, an IBM compatible computer fitted with 286 processor or above, DOS version 3.3 or above and at least 640kbyte RAM will be required. In both cases it is also necessary to have a single 3.5" floppy disk drive and an RS232C serial port, and a mouse will enable more convenient control of the software.

## 3 INSTALLATION

### 3.1 Mechanical Installation

The instruments are provided with a protective suspension cage for users to attach to a suspension or mooring line. If the Valeport polyurethane covered multi-core cable is being used, then this has a maximum working load of 100kgf, and if a sinker weight is being used, it is important that this load is not exceeded. Use of a separate suspension cable is recommended.

### 3.2 Electrical Connections

See also Figure 1 (Appendix 2) for equipment interconnections, and Appendix 3 for cable wiring details.

#### a) Direct RS232

Over short lengths of cable and for setting up recording scenario and replay of data the instrument RS232 communications can be used. With the Model 600SR the 3m data/power lead can be used for setting up.

If external power is being used it must be in the range of 11.5 to 14VDC and the consumption is approximately 50 - 60mA. The red lead should be connected to the +ve terminal and the black lead should be connected to the -ve terminal of the power supply or external battery.

The data lead should be plugged into a serial port on the PC (9-way D type connector).

NOTE: Some older PCs have 25 way serial ports, in which case it will be necessary to use a 9 to 25 way adaptor.

The software sets up the serial port of the PC to 4800 baud, 8 data, 1 stop, no parity.

#### b) DCL

Connection is via the DCL surface unit [or 8008 CDU] and leads. The unit requires 12-24VDC, and takes approximately 120 mA.

#### c) RS485

Connection is via the RS485 surface unit [or 8008 CDU] and leads. The unit requires 12-24VDC, and takes approximately 150 mA.

---

### **3.3 Batteries**

#### **3.3.1 600SR**

The internal battery containing 7 "C" cells, has a capacity of 7.75 Ah if high grade alkali cells are used. For non RS485 set up instruments, the overall current consumption depends on the sampling set up and mode. Each burst of CTD takes 11mA for 0.4Secs, so as an example, the battery life for Time based sampling on a 5 second sample rate is approximately 140 days.

#### **3.3.2 8008 - CDU**

The 8008 contains 8 "C" cells, giving an operating life time for the batteries in excess of 40 hours continuous use.

## 4 OPERATION USING 8008 CDU

The 8008 CDU is of ABS construction with graphics LCD and back light, membrane keys and integral battery compartment. The unit is sealed to IP67 (10 seconds at 0.3 metres).

The 8008 CDU is designed to allow real time display of data from an underwater unit, and to enable the setting of parameters for Direct Reading and Logging Modes. It is possible to connect the 8008 to a printer for a permanent record of the data, and it has an optional logging facility of its own. However, this does not allow uploading of logged data from the memory of a Model 600SR. A PC is therefore required to strip logged data from a Model 600SR.

### 4.1 Operating Procedure

Connect the CDU to the Probe using the Deck Lead and cable for Direct Reading (600DR or SR) or Both (600SR only) modes, or the 3m 'Y' Lead for Self Recording (600SR only) mode. Then follow the procedure laid out below:

Press ON	Unit switches on with introductory display
Press any key to continue	Unit displays <b>RUN, SETUP, TOGGLE B'LIGHT, SET TIME/DATE, CDU MEMORY</b>
SET TIME/DATE	Probably the most important as all timing references are made from this including the setting of fish time when in 600SR mode. Use <b>INCREASE/DECREASE</b> keys to alter figures and <b>NEXT</b> key to move on to next figure. <b>EXIT</b> will set and escape to previous menu.
TOGGLE B'LIGHT	Switches back light on or off.
CDU MEMORY	Controls the optional logging facility on the 8008 CDU. Pressing this key reveals the CDU LOGGING MENU. Full details of this menu are covered later, but the most important function in this menu is turning the logging facility ON and OFF. This function is completely independent of the fish; i.e it is possible to have the CDU logging but not the fish, or vice versa, or both or neither.
SET UP	Allows set up of sampling regime. Press <b>SETUP</b> key. PLEASE WAIT RESETTING FISH!! is displayed followed by INTERRUPTING FISH - PLEASE WAIT. Display will now show instrument type and serial number and prompts you to acknowledge by pressing O.K. key.

The following is revealed:

- SET SAMPLE MODE                      Sample mode is selected using the **NEXT** key to move through three options and **O.K** to select. On selecting one of the sampling modes a further menu is revealed to set the actual sampling parameters.
- TIME SAMPLE                              The sample frequency is selected in multiples of 1 Second using the **INCREASE** and **DECREASE** keys. The **TOGGLE** key allows you to toggle between altering the seconds or the minutes. On selecting **EXIT** the selected sample time is stored to the fish and you are returned to the main setup menu.
- NOTE** : The maximum sample time is 59:59
- BURST SAMPLE                              Invites you to set the sample frequency.
- SAMPLE FREQUENCY                      The sample frequency is selected in multiples of 1 Second using the **INCREASE** and **DECREASE** keys. The **TOGGLE** key allows you to toggle between altering the seconds or the minutes. On selecting **EXIT** the selected sample time is stored to the fish and you are displayed with a further menu to select the number of data sets you require for each sample period.
- NOTE** : The maximum sample time is 59:59
- NO OF DATA SETS                        The number of data sets per sample period is selected using this option. The **NEXT** key moves along through the units and the **INCREASE** and **DECREASE** keys allow you to change the values. On selecting **EXIT** the selected no of data sets per sample period are stored to the fish and you are returned to the main setup menu.
- NOTE** : There is a maximum number of data sets defined by the sample frequency. The CDU will display a message at the top of the screen saying that an invalid selection has been made and will not allow you to exit until a valid selection has been made.
- DEPTH SAMPLE                              The trip point and depth increment are selected and altered using the following keys. Use the the **NEXT** key to shift the cursor along trip point and depth increment. Using the **INCREASE** and **DECREASE** key's the values may be changed. On selecting **EXIT** the selected trip point and increment will be stored in the fish and you will be returned to the main setup menu.
- NOTE**: A trip point or increment of greater then 2000 dBar is invalid and cannot be set using the CDU.
- NOTE**: In all cases, *sampling will not begin until the fish detects a Conductivity value greater than 0.7 mS/cm*. If carrying out testing of the unit, the loop resistor supplied must be inserted into the conductivity coil to allow sampling to begin. This is done by feeding one end of the wire through the hole in the back of the coil, and out through one of the holes in the side of the coil. Use the clip to complete the loop.
- READ SAMPLE MODE                        The present selected sample mode is displayed on selecting this option. **OK** to exit and return to previous menu.

SET TARE VALUE	Used to take reading at surface of pressure before deployment and subtracts figure from readings when instrument is in use to show correct depth. Upon pressing key the statement "PRESS ANY KEY WHEN TRANSDUCER IS AT SURFACE LEVEL" is revealed. Press any key. The message "TARE VALUE HAS NOW BEEN SET. PRESS ANY KEY TO CONTINUE" is displayed. This returns to the previous menu.
SET FISH TIME	600SR use only. Pressing <b>FISH TIME</b> sets fish to surface unit time already pre-set. Press <b>O.K.</b> key to set. Setting is confirmed and user must <b>O.K.</b> to return to previous menu.
CLR MEM	Clears fish memory. Press <b>O.K.</b> key to set and again to confirm, and return to previous menu.
Press <b>EXIT</b> to leave SETUP menu	
RUN	<b>600DR use:</b> Sets fish into <b>RUN</b> mode. Available parameters are displayed.  When in <b>RUN</b> mode, <b>EXIT</b> key will allow return to main menu.
RUN	<b>600SR use:</b> Allows user to choose operating mode. Choose between <b>DIR</b> , <b>BOTH</b> and <b>LOG</b> using the <b>NEXT</b> button. Press <b>RUN</b> to confirm choice and begin sampling. If the unit is operating in <b>DIR</b> or <b>BOTH</b> mode, real time data will be displayed. If the unit is to be used in <b>LOG</b> mode, no data will be displayed. At this point, disconnect the interface lead and replace with the perspex LED cap. This will flash for 5 seconds, following which the unit will standby until the trip (Conductivity or Pressure) is reached.  <b>NOTE:</b> If <b>LOG</b> mode is required, it can be entered without using the <b>RUN</b> key. After setting up the required sampling regime, simply disconnect the interface lead and replace it with the LED cap. Again, this will flash 5 seconds, and then the unit will enter standby.  Each time the unit is switched on, a new file is created and used, but no data is erased unless the <b>CLR MEM</b> (erase memory) function is performed in the SETUP menu.
DISPLAY	A full display will show:-  <div style="margin-left: 40px;"> <b>TEMP</b> [temperature] in Deg C  <b>PR</b> [pressure] in dBar  <b>SAL</b> [salinity] in PSS78  <b>DENS</b> [density] in Kg/M<sup>3</sup>  <b>COND</b> [conductivity] in mS/cm  <b>SOS</b> [speed of sound] in m/s </div>
LOW BATT	The message LOW BATT will be displayed when there is less than 10 hours of operating life left in the CDU batteries. This message will remain until batteries are replaced.

CDU MEMORY	Pressing this key in the opening menu reveals the CDU LOGGING MENU, which contains: <b>FILE TABLE, LOGGING ON/OFF, MEMORY FREE, EXTRACT CDU DATA, ERASE MEMORY, EXIT.</b>
FILE TABLE	This key reveals a display showing the total number of files stored (maximum 100), the size of each file, the sample mode and setup of the data, and the time/date of the first record in each file. A new file is created each time the unit is set to Run. To move between files, use the NEXT and LAST keys. Press EXIT to return to the previous menu.
LOGGING ON/OFF	As stated previously, this key toggles between logging on and off, for the CDU only.
MEMORY FREE	Displays the total unused memory space in bytes, and the number of files currently stored. Press EXIT to return to previous menu.
ERASE MEMORY	Clears CDU memory. This will not affect the fish memory.
EXTRACT CDU DATA	<p>Use this key to upload data stored in the CDU to a PC. Connect the 8008 CDU to a PC using the interface lead provided. Before pressing UPLOAD, run the data extraction program 600EXT.EXE that is provided on floppy disk. Do this by inserting the disk to the PC's A drive and typing a:\600ext&lt;cr&gt;. Enter the correct Comms port, and then press UPLOAD on the CDU. Immediately afterwards, press any key on the PC keyboard. If an error message is displayed, repeat the process. The data will now be uploaded. This process happens at 19200 baud.</p> <p>Once the data has been uploaded to PC, the 600EXT software will ask if the data is to be translated into calibrated data, as opposed to the binary data that the unit stores. The user must select the number of lines that the data will be stored in, from 100 to 16360. This is because the data will be stored in a format that can be imported in to Spreadsheet packages for analysis, and 16360 is the maximum number of lines in most packages ( Microsoft Excel will only produce graphs if the number of lines is 4090 or less).</p> <p>The data files will be stored in the local directory, and will be named ?DATA.BIN (original binary data) or ?DATA.??? (calibrated data), where ? signifies the file number, and ??? the number of calibrated files for each file. For example, if the user sets the number of lines to be 100, but the file contains 700 records, 7 data files will be created for that original file, i.e. ?DATA.000 to ?DATA.006. These calibrated data files may also be viewed in DATALOG.</p>

Press **ON** key to toggle unit off when finished operations.

## 4.2 POINTS TO NOTE ABOUT CDU LOGGING

1. Only 100 files can be stored, but each file can contain as many records as space will allow.
2. A new file will be created every time the unit is set to Run, and will be given an index 1 more than the last file stored.
3. Setting the CDU to log will not affect the logging facility of the fish itself.
4. It is not possible to Upload data from the fish to the CDU. To upload data from the fish, the user must use the DATALOG Windows software supplied, or the 600.EXE program.
5. When uploading CDU logged data, the 600EXT.EXE program will automatically name the files as above, and will overwrite any existing files of the same name.

### 4.3 Data Replay [600SR only]

A PC is required to recover data stored in the instrument following deployment. Refer to supplementary manuals for Windows software and for Visual Basic software operation.

Note that all data in a file has to be extracted for that file to be read.

### 4.4 External Connections

The 8008 CDU has three external connections

EXT DC IN	3 WAY
DATA INTERFACE	4 WAY
FISH CONNECTION	10 WAY

External DC in requires a 10 to 24v DC input. Valeport cables, part numbers 0300-014 or 0300-013 are used for this purpose.

Data interface provides an RS232 output for printer use. Output is always transmitted and displays surface unit data. Valeport cable, part number 0300-012 is used.

Fish connection, for direct connection or via cable reel to fish. Valeport cable, part number 0300-010-03 is used.

## 5 MAINTENANCE

### 5.1 Battery replacement [600SR only]

The batteries are housed within the instrument at the top end. The procedure to replace the batteries is as follows:

1. Remove the six M5 aluminium bronze screws in the side of the battery housing.
2. Withdraw the battery cover from the meter, revealing the battery assembly
3. The battery cage accepts 7 "C" cells [LR14 or equivalent]. It is advisable to use alkaline cells as these give increased life and leakage protection. The batteries should be inserted -ve [negative] end first against the spring and then clipped into place.

NOTE: The battery pack contains a dummy cell which is fixed in position and should not be removed.

4. Before replacing the battery cover, check the condition of the O-rings, which should be free of cuts or perishing. Also check the condition of the sealing bores of the battery cover which should be free of scratches. Finally smear a light coating of silicon grease on the O-rings and battery cover sealing bores to aid refitting and subsequent removal.
5. Further reassembly is a reversal of the disassembly process.

Should any of the M5 screws be lost it is imperative that they are only replaced with aluminium bronze [Grade DGS 1044] M5 x 10 screws, otherwise there is a risk that galvanic corrosion will occur which could seriously damage the housing.

### 5.2 Battery replacement - 8008 CDU

The batteries are housed within the CDU under the battery cover.

1. Remove the battery cover.
2. Remove the top pcb by undoing the retaining screw to reveal the battery cells.
3. The battery accepts 8 "C" cells [LR14 or equivalent]. It is advisable to use alkaline cells as these give increased life and leakage protection. The batteries should be inserted -ve end against the spring and the top pcb then screwed back into place.
4. Before replacing the battery cover, check the condition of the O-rings, which should be free of cuts or perishing. Also check the condition of the sealing bores of the battery cover which should be free of scratches. Finally smear a light coating of silicon grease on the O-rings and battery cover sealing bores to aid refitting and subsequent removal.

## 5.4 General

The external parts of the meter are manufactured from aluminium bronze and polymers and are therefore corrosion resistant. The aluminium bronze will become dull in appearance with use. The conductivity sensor end should be kept clean from mud and debris as the sensor is measuring the conductivity of the water within the sensor. Washing off with clean water is therefore advised after use. If the sensor is not washed off in fresh water after use, then salt crystals may form and on re-immersion, the concentrated salt content will temporarily effect the readings.

Should problems be encountered with the instrument, then Valeport Limited should be contacted immediately. Valeport will then be pleased to advise on the correct course of action.

Tel : +44(0)1803 834031

Fax: +44(0)1803 834320

## 5.5 O-Ring Sizes

Line connector	1 x 200-021-4470
Bulkhead Connector/Housing	2 x 200-121-4470
End Cap, sensor end	2 x 200-141-4470 plus 2 x 141 anti-extrusion rings
Centre section/housings	4 x 200-143-4470 [2 only on 600DR]

Note that anti-extrusion backing rings are used on the sensor end O-rings, and the O-rings should be placed on the pressure [sea water] side of the anti-extrusion ring.

The Dowty seals used in the sensor end are:

Pressure sensor,	type 010
Temperature sensor,	type 310

## 5.6 Lithium Battery [600SR only]

The memory back-up lithium battery, (Type T327BA9, 3.7V), should be replaced at least every 5 years. If the memory and or clock settings are lost then the battery should be replaced. It is recommended that the instrument be returned to Valeport Limited for replacement of this battery, however if urgent renewal is required then the replacement procedure is as follows:

The battery is housed within the signal conditioning electronics housing.

1. Access to the electronics section of the instrument is achieved by removing the lock ring at the tube end, and removing the 6 countersunk M5 aluminium bronze screws in the rearmost section of the body.
2. The main tube can now be withdrawn from the instrument, revealing the printed circuit boards. The black plastic assembly at the rear of the instrument is supposed to be a loose fit to allow for differences in expansion between the different materials as temperature changes.
3. The battery is on board 0300508 and can be un-soldered in-situ. Do not remove the board.
4. Fit the new battery and solder to the board.
5. Before replacing the rear tube, check the condition of the O-rings, which should be free of cuts or perishing. Also check the condition of the sealing bores of the main tube which should be free of scratches. Finally smear a light coating of silicon grease on the O-rings and rear tube sealing bores to aid refitting and subsequent removal.
6. Further reassembly is a reversal of the disassembly process.

---

## 6 CALIBRATION

The instruments are calibrated at the factory using industry standard methods, and the calibration certificate is in Appendix 5.

## 7 TROUBLESHOOTING

The following table is designed to assist the user with problems commonly experienced while using the instrument.

SYMPTOM	PROBABLE CAUSE	REMEDY
Unable to break in to unit after switch on	Left too long after switch on	Unit must be interrogated within 30 seconds of switch on, or at the end of an averaging period. Either: a: Switch off/on and try again, or b: Wait until end of averaging period.
	Incorrectly fitted cable	Check connections and try again.
LED won't flash in logging mode		Check LED Pro-Cap is correctly fitted.  Check batteries, and replace if necessary.
Spurious Readings:  Conductivity	Salt deposits around sensor	Remember to clean meter in fresh water after each use.

Most faults are due to:

1. Failure to successfully interrupt unit operation. Switch off/on and try again.
2. Incorrectly connected leads.
3. Low battery power (if applicable).

If in any doubt about the performance of the unit, please contact the factory at the address shown on the front page of this manual.

**APPENDIX 1 SPECIFICATION**

APPENDIX 2 FIGURES

FIGURE 1: Model 600 MkIII CTD Probe Interconnection Details

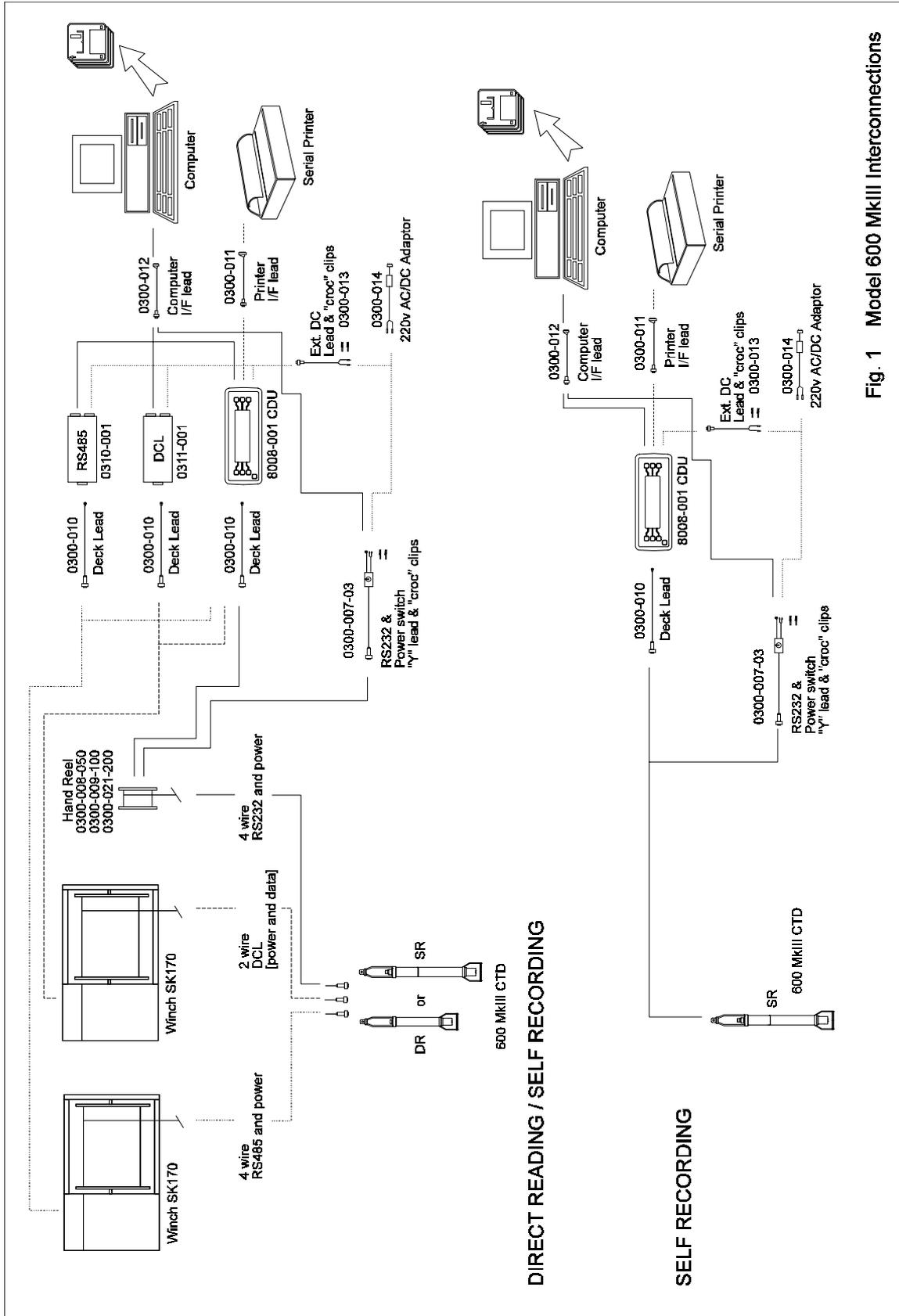


Fig. 1 Model 600 MkIII Interconnections

FIGURE 2: Model 600 MkIII Sensor Layout

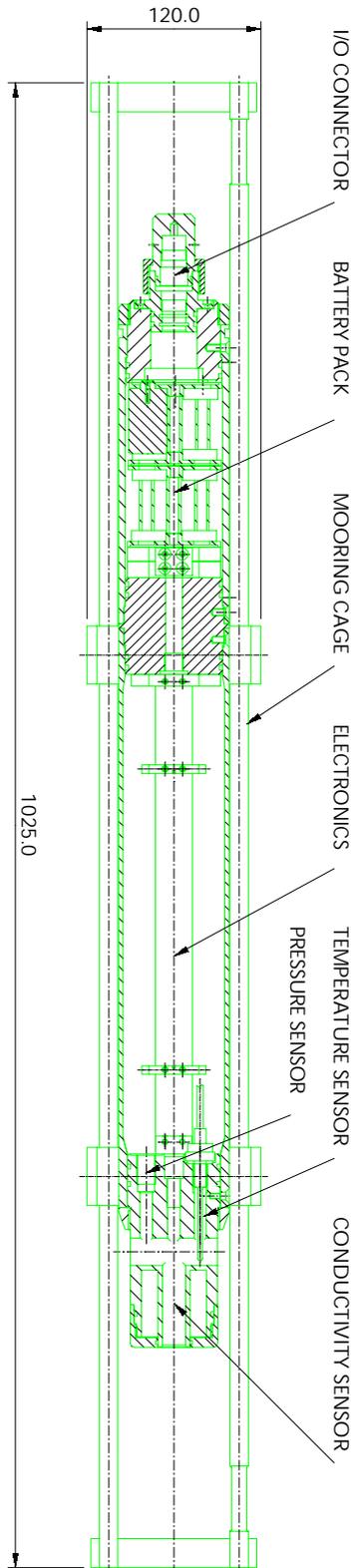
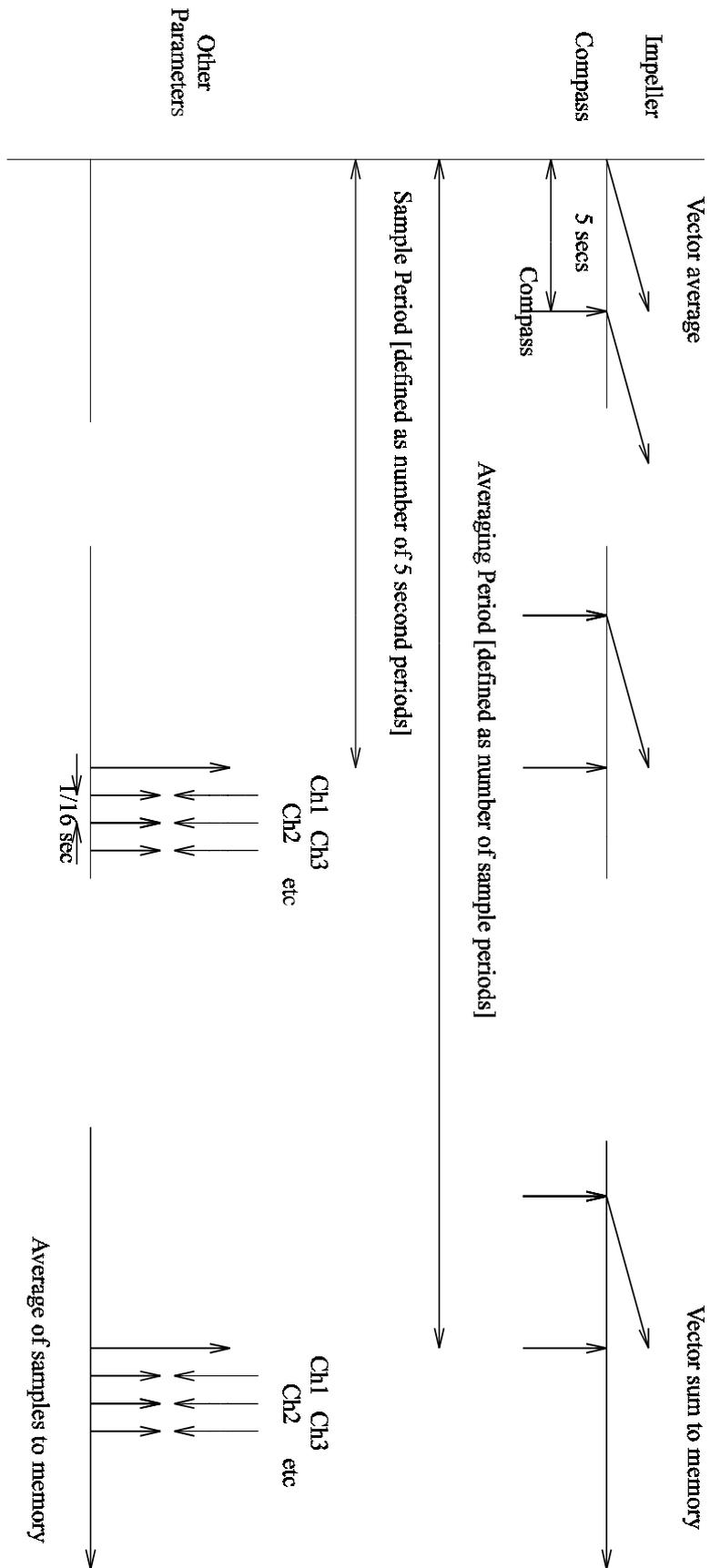


FIGURE 3: Model 108 MkIII and 308 Sampling Pattern



## APPENDIX 3 CABLE WIRING SCHEMES

## "Y"-LEAD CONNECTION DETAILS FOR MODEL 600 MKIII CTD PROBE

MIL SPEC 10 WAY LINE CONNECTOR PIN No.	FUNCTION	9 WAY 'D' TYPE FEMALE	BLACK BANANA PLUG	RED BANANA PLUG	WIRE COLOUR POWER	WIRE COLOUR COMMS
A (RED)	C/LOOP IN & EXT SUPPLY	N/C	N/C	1	RED	
B (WHITE)	RS232 IN TO FISH (RX 232)	3	N/C	N/C		RED
C (GREEN)	GND & BATT -VE	5	1	N/C	BLACK	GREEN
D (BLUE)	RS232 OUT FROM FISH (TX232)	2	N/C	N/C		YELLOW
E N/C	RS485 I/O INVERTED	N/C	N/C	N/C		
F N/C	RS485 I/O NON-INV	N/C	N/C	N/C		
G N/C	FLASHING LED +VE CONN	N/C	N/C	N/C		
H (BROWN)	V_UNIT	N/C	N/C	N/C		
J (ORANGE)	CL_UNIT	N/C	N/C	N/C		
K (YELLOW)	INT BATTERY POSITIVE	N/C	N/C	N/C		
	DTR	PIN 4 LINK TO PIN 6&7	N/C	N/C		
	DSR	PIN 6 LINK TO PIN 4&7	N/C	N/C		
	RTS	PIN 7 LINK TO PIN 4&6	N/C	N/C		

## DECK LEAD CONNECTION DETAILS FOR MODEL 600 MKIII CTD PROBE

MIL SPEC 10 WAY LINE CONNECTOR PIN No.	FUNCTION	MIL SPEC 10 WAY LINE CONNECTOR SKT No.
A (RED)	C/LOOP IN & EXT SUPPLY	A (RED)
B (WHITE)	RS232 IN TO FISH (RX232)	B (WHITE)
C (GREEN)	GND & BATT -VE	C (GREEN)
D (BLUE)	RS232 OUT FROM FISH (TX232)	D (BLUE)
E (BLACK)	RS485 I/O INVERTED	E (BLACK)
F (ORANGE)	RS485 I/O NON-INV	F (ORANGE)
G (YELLOW)	FLASHING LED +VE CONIN	G (YELLOW)
H LINK TO J	V_UNIT	H LINK TO J
J LINK TO H	CL_UNIT	J LINK TO H
K	INT BATTERY POSITIVE	K

## DIGITAL CURRENT LOOP / 8008 SURFACE UNIT CONNECTORS

## DC INPUT

CONNECTOR TYPE	PIN	WIRE
3 WAY PLUG 0833 MNO	A	RED +V in
	B	GREEN 0V in
	C	N/C

## RS232

CONNECTOR TYPE	PIN	WIRE
RS232 OUT 4 WAY SKT	A	N/C
	B	WHITE/RED - RS232 in
	C	GREEN - COMMON
	D	WHITE/BLACK - RS232 out

## DECK LEAD

FISH INPUT 12-10-FNO	PIN	WIRE
	A	PINK - EXT POWER IN +VE
	B	N/C
	C	GREEN - EXT POWER IN GND
	D	N/C
	E	N/C
	F	N/C
	G	N/C
	H	LINK TO J
	I	N/C
	J	LINK TO H
	K	N/C