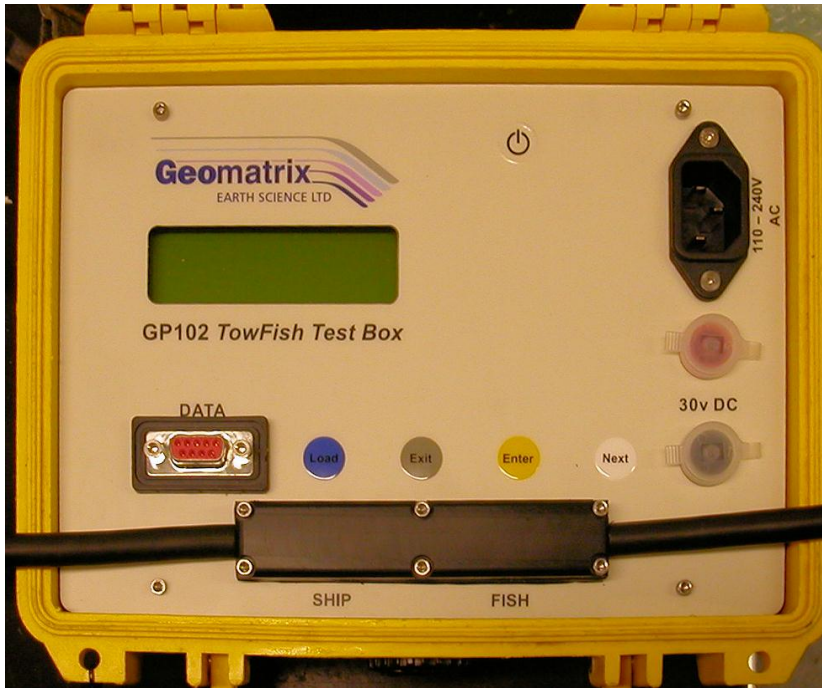
Geomatrix
EARTH SCIENCE LTD



GP102 TowFish Test Box Manual

The Geomatrix TowFish test box is designed to test the operation of Geometrics G8xx Marine Magnetometers (hereafter called Fish) and power supplies prior to deployment.

Serial Specifications:

TowFish Test Box Serial Settings
Currently the Unit works with fixed serial settings of **9600 / 8 / N / 1**

When the Box is initially powered up the Welcome screen will appear for 1 second. This will display the units Model Number, Serial Number, firmware & Hardware Version.

Welcome Screen

```
Geomatrix Earth
 Science GP102
TowFish Test Box
SN:199 FW:3.0 HW:3.1
```

The Main menu then follows. Since the display has only 4 lines only 3 options are visible on the LCD display at any one time. An "*****" Marks the currently selected item.

Main Menu

```
        Menu
*Fish Simulator Mode
 Subcon Monitor Mode
 D9 Monitor Mode
 Fish Command Mode
 Altimeter Test Mode
 Self-Test Mode
```

The functions of the 4 keys on the test box can very, depending on which mode is currently selected, from the Main Menu the keys have the following functions.

[NEXT] toggles through Menu items one line at a time
[EXIT] will take you back to the first Menu item
[ENTER] selects the currently highlighted option
[LOAD] will change the LCD contrast if needed.
(The function of the LOAD key varies the most on different menus).

Fish Simulator mode

from the Main Menu.

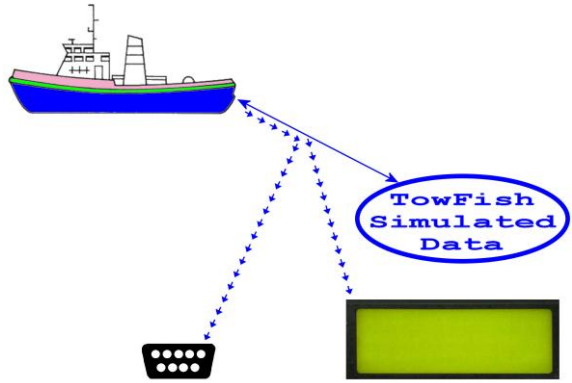
TowFish Simulator 1

```
TowFish Sim. Subcon
<<Data from Ship>>
<<Dummy Fish Data>>
##.##V #.##A
```

TowFish Sim. Subcon

Data is routed via the ship Subcon connector, as would normally be the case with data from a real TowFish.

The LCD shows data sent from the "Ship" as well as Simulated Fish Data.



In this mode the Data from the "Ship" is also echoed to the D9 connector where a PC can monitor it.

The simulated data is of the form:-
"$ _mag_.000,_sig,vvvv,iiii" where vvvv is the power supply voltage without the decimal point & iiii is the Current in ma eg. "$ 48289.000,0988,2929,0345" for 29.29v & 345ma. The Mag & Sig data both display as Triangular waves in Maglogin

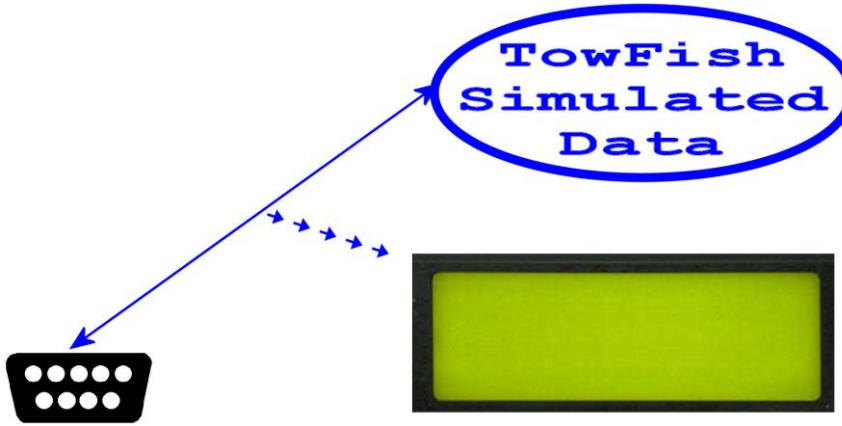
- **[NEXT]** toggles through Menu items one line at a time
- **[EXIT]** will take you back to the Main Menu

[NEXT]
to
TowFish Simulator D9

TowFish Simulator 2

```
TowFish Simulator D9
<<Data from Ship>>
<<Dummy Fish Data>>
##.##V #.##A
```

In this mode Simulated data is routed via the D9 connector. LCD shows both data into the D9 connector & Simulated Fish data.



[LOAD] key functions

- In TowFish Simulator Mode the internal Dummy Load resistors are active. By default "**Low Load**" (about 300mA) will be drawn unless the **[LOAD]** key is pressed which will increase the Load to **"High Load"** (about 1.3A) for about 10 seconds. After about 30 seconds on Low Load or 10 seconds on High Load the Load will timeout, at this time the current shown on the bottom line of the screen will be blanked. Momentarily pressing the **[LOAD]** key will reset the timer to re-enable the Low Load. An extra delay of about 15 seconds is enforced if High Load has been used, to allow the load to cool, in this case **WAIT** will flash where the current is normally shown, if **[LOAD]** is pressed.

Subcon Monitor Mode

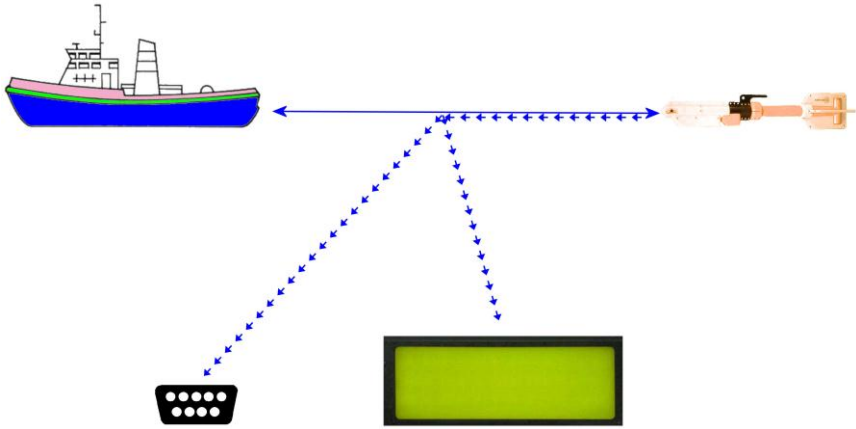
from the Main Menu.

Subcon Monitor Mode 1
Mon Fish>>Ship Data

```
<<FISH Data. . . . .
. . . . . .
. . . . . .String>>
##.##V #.##A Monitor
##.##V #.##A Fsh>Shp
```

Monitor Fish to Ship

In this mode Duplex Data is through connected from the Fish to the Ship and the default function is to echo Fish data to the LCD & D9 connector as shown. Data from the Fish is monitored on the LCD Lines 1,2 & 3 depending on string length, extra characters will not be shown. Line 4 shows Fish Current & Supply Voltage plus a mode message which toggles between "Monitor" & "Fsh>Shp"



- **[NEXT]** toggles through Menu items one line at a time
- **[EXIT]** will take you back to the Main Menu

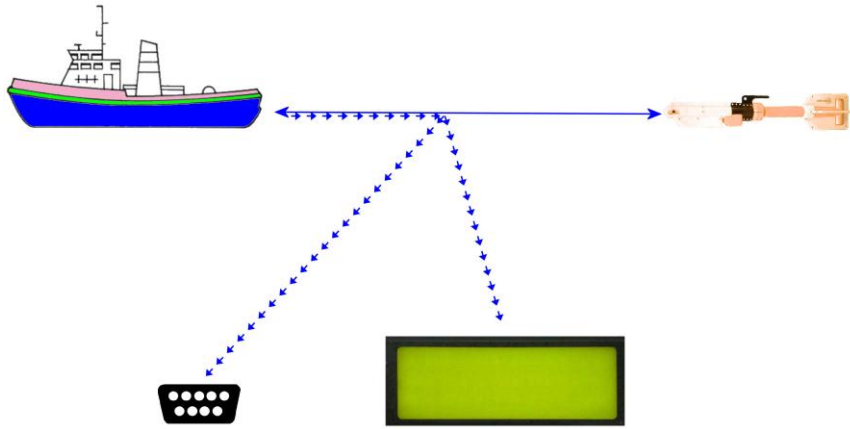
[NEXT]
to
Monitor Ship to Fish

Subcon Monitor Mode 2
Mon Ship>>Fish Data

```
<<SHIP Data. . . . .
. . . . . .
. . . . . .String>>
##.##V #.##A Monitor
##.##V #.##A Shp>Fsh
```

Duplex Data is still through connected from the Ship to the Fish. Data from the Ship is monitored on the LCD Lines 1, 2 & 3 depending on string length, extra characters will not be shown. Monitored data is also available on the D9 connector.

Line 4 shows Fish Current & Supply Voltage plus a mode message which toggles between "Monitor" & "Shp> Fsh



NOTE:
When in Fish Monitor mode, it is possible to turn off the power to the Fish by pressing the **[LOAD]** key. This will turn off power to the Fish for about 5 seconds before the power to the Fish is restored, thus restarting it.

D9 Monitor Mode

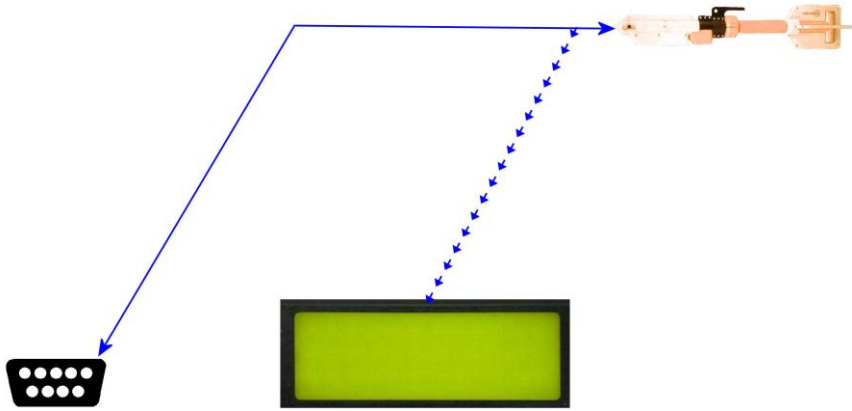
from the Main Menu.

D9 Monitor Mode 1
D9 port<>Fish Data

<<FISH Data. . . . .
. . . . .
. . . . . .String>>
##.##V #.##A Monitor
##.##V #.##A Fsh<>D9

Monitor Fish to D9

Serial data from the D9 connector on the Test Box is connected directly to the Fish Subcon port.
Data from the Fish is monitored on the LCD Lines 1,2 & 3 depending on string length, extra characters will not be shown.
Line 4 shows Fish Current & Supply Voltage plus a mode message which toggles between "Monitor" & "Fsh<>D9"



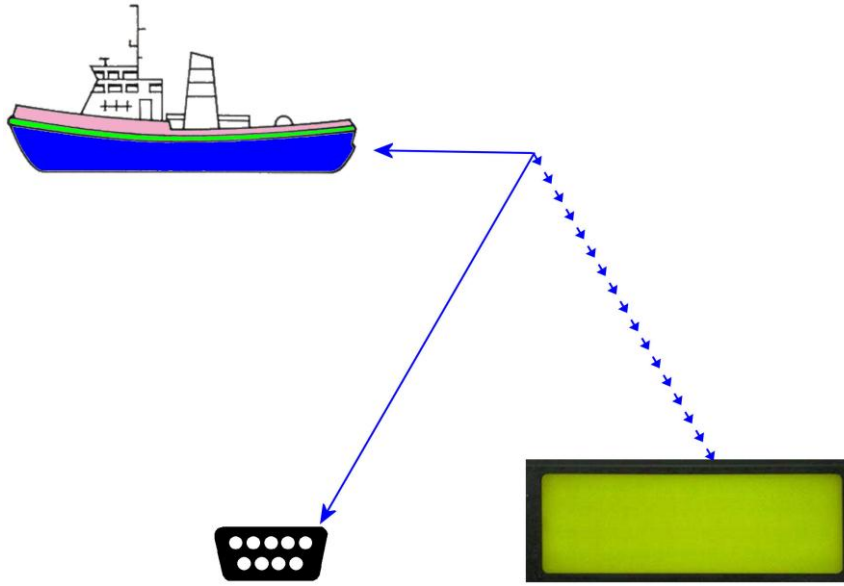
[NEXT]
to
Monitor Ship to D9

D9 Monitor Mode 2
D9 port<>Ship Data

<<SHIP Data. . . . .
. . . . .
. . . . . .String>>
##.##V #.##A Monitor
##.##V #.##A Shp<>D9

Serial data from the D9 connector on the Test Box is connected directly to the Ship Subcon port. Data from the Ship is monitored on the LCD Lines 1,2 & 3 depending on string length, extra characters will not be shown.

Line 4 shows Fish Current & Supply Voltage plus a mode message which toggles between "Monitor" & "Shp<> D9"



Fish Command Mode

from the Main Menu.

Fish Command Mode

```
<$xxx from Fish>
Command for Fish
<Fish Reply>
  ##.##V #.##A Fsh CMD
```

In this mode the Fish is connected via the Fish Subcon connector.
Data from the Fish will appear on line 1, extra characters will not be shown.

[NEXT] toggles the <Command for Fish> commands one at a time on line 2, see table below for command list.

[ENTER] will send the selected command to the Fish, the reply will appear on line 3, if the reply "ERR" shows try sending the command again, as it has not been correctly received by the fish. See table below for the **<Fish Reply>** to each of these commands.

<Command for Fish>	<Fish Reply>
Reset Fish Counter?	RESET
Find Fish Counters?	F0? Normally F01 for one Fish F02 for 2 etc.
Show S/W version?	IV:?? Depends on model of Fish & counter type
Show Analog Channels	IA:?????? One ? for each channel 0 = off / 1=ON Max. 6 for G880; 8 for G882

[EXIT] will take you back to the Main Menu

Altimeter Test Mode

from the Main Menu.

Altimeter Test Mode 1

```
   Tritech Altimeter
ALT String= 50.0m

ALT = 10V
```

Tritech Altimeter

Connect the Tritech Altimeter to the DATA connector using the **"Altimeter test lead"**. Data from the Altimeter will appear on line 2. The Analogue output is shown on Line 4. If the Altimeter transducer is placed into and out of a glass of water the string and analogue voltage should toggle between the limit of the Altimeter, eg. 0m / .1v and 50m / 10v for a 50meter Altimeter.

Altimeter Test Mode 2

```
   G882 Altimeter Test
DA Voltage  = 0.5v
G882 String = 05xx
##.##V #.##A 24.xxV
```

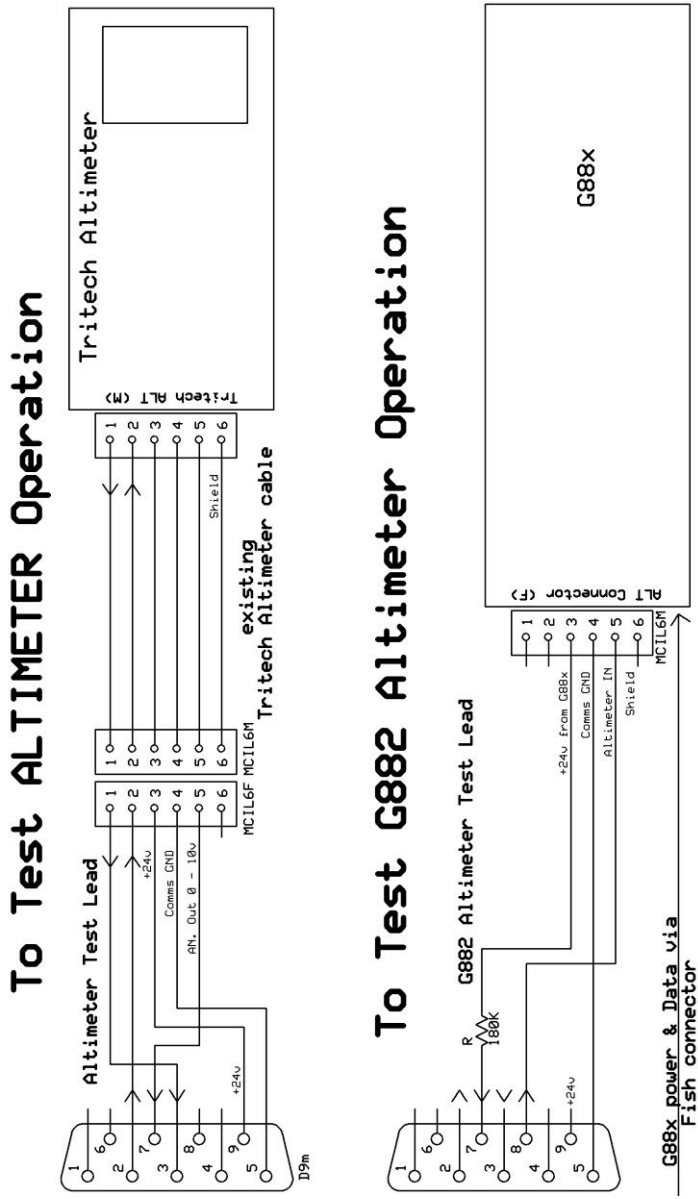
[NEXT]
to

G882 Altimeter Test

In this mode the Fish is connected via the Fish Subconn connector & the **"G882 Altimeter test lead"** from the G882 Altimeter connector to the DATA connector. The DA (Digital – Analogue converter) voltage into the G882 will be displayed on line 2. The Altimeter data from the G882 will be displayed on line 3. Line 4 will display fish voltage & current followed by the voltage from the fish that normally powers the Altimeter, which should be about 24v.

The [LOAD] button will toggle the DA output voltage between 0.5v & 4.5v and this change should be reflected in the changing G882 string.

- **[NEXT]** toggles through Menu Modes one at a time
- **[EXIT]** will take you back to the Main Menu



Altimeter Test Leads

Self-Test Mode

Main Menu 1

```
    Choose Menu Option
 Fish Simulator Mode
 Fish Monitor Mode
*Self-Test Mode
```

from the Main Menu.

In this mode the Fish & Ship Power & Serial lines are tested for continuity as well as the internal Serial Tx & Rx lines & switches.

This MODE is useful for testing serial leads & 8 way subconn extension cables in the field as well as verifying the Test Box operation.

Fit D9 male loopback to the D9 data port & Plug the two Test Box subcon connectors together.

Self test Menu

```
 S|->----->>>>----->-|F
 H| D9=OK   Pwr=OK   |I
 I|-<-----<<<<-----<-|S
 P| Loopback Tests   |H
```

All tests passed.

Self test Menu

```
 S|->----bad----->-|F
 H| D9=OK   Pwr=bad |I
 I|-<----bad-----<-|S
 P| Loopback Tests  |H
```

D9 loopback test is good, rest faulty, suspect Box subcon cables not connected together.

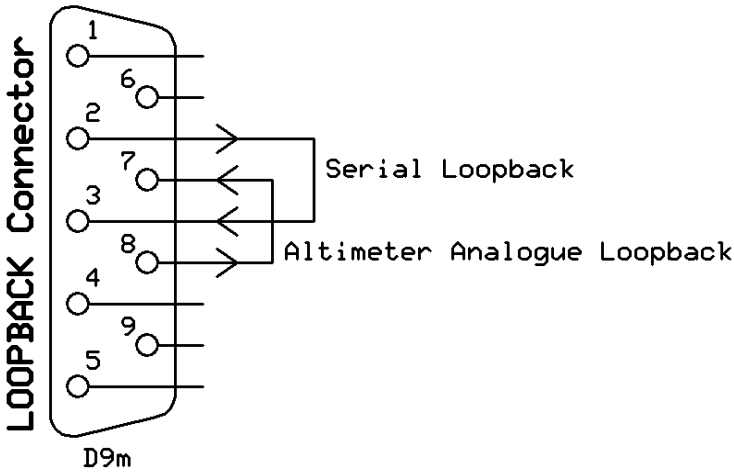
Moving arrows show data going from the Ship to the Fish & visa versa or the word “bad” if no data is received or “BAD” for corrupted data.

If the Subcon power wires are good the “PWR=OK” will display otherwise “PWR=BAD”

If the D9 loopback plug is fitted data is good the “D9=OK” will display or the word “bad” is no data is received or “BAD” for corrupted data.

NOTE:
Since "Self Test mode" requires the subcons to be connected together the TowFish test box should to be powered from mains via the IEC connector. If powered via battery or the DC banana plugs, hardware restrictions mean it can't test the SUBCON power lines and the "Pwr =" message will not be shown.

D9 Loopback connector



Note: The Altimeter Analogue Loopback is not yet implemented in this firmware version.

Power Supply Specifications:

Mains Supply Input: 110v – 240v AC
Internal Power Supply Output: 30v 1.35A DC

Ship Subcon Input: Max. 32v DC via 1.8A polyfuse

Banana Sockets: Input or output via 1.8A polyfuse.

Input Max. 32v DC **(don't use as an Input if another supply is connected as it will be live)**

Output, 30v 1.35A from internal supply

Output Max 32v from Ship supply **(connected load will add to the current shown on display).**

NOTE 1: If the Mains supply is connected, then the supply from the Ship Subconn is not used internally or by the connected Fish.

NOTE 2: The Geomatrix TowFish Test Box will withstand voltages up to 70v on the Ship Subconn Input or via the Banana Sockets.

Any voltages in excess of 32.9v will trigger an exit from any operating mode, disconnecting any connected Fish or internal dummy load and Displaying a flashing message, as shown.

```
WARNING
HIGH Input Voltage ??.?V
Disconnect Supply
```

You should disconnect the supply and have it checked before using it again.

Supplied by

Geomatrix Earth Science
Unit 20 Eden Way
Pages Industrial Park
Leighton Buzzard
Bedfordshire
LU7 4TZ
United Kingdom

Telephone: 01525 383438
Fax: 01525 383200
Email: sales@geomatrix.co.uk