GEOSOUNDER

MANUAL VERSION 1.1B

CT SYSTEMS

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The purpose of this manual is to give information on the use of the GeoSounder.

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WARNING

An experienced and careful navigator would never trust on just one expedient when determining his position, because the accuracy of the position, depends on a multitude of factors.

The GeoSounder is a precision instrument, when there are interferences in the radio signals, the position may not match with the real position.

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Chapter 1: Introduction

1.1 About GeoSounder

GeoSounder is designed to be a simple rugged hydrographical survey solution. Depending on the connected sensors, GeoSounder will function as a dual frequency echo sounder or a Single frequency echo sounder.

Powered with an internal RTK GNSS, and combined with our Viking Survey software it provides the perfect solution for a hydrographic survey.

Sensors

The GeoSounder can operate with the following sensors:

- 200 KHz 9 degrees transducer
- 30 & 200 KHz Dual Frequency transducer

1.2 About This Manual

This manual is intended as a well documented guide for installation, set up and use of the GeoSounder. Using the alphabetical index features and settings can easily be looked up.

We recommend reading this manual fully in order to get acquainted with the workings and of the GeoSounder.

Chapter 2: Specifications

2.1 General

Power specification:

- 9~36 VDC Power input
- Soft on/off button
- Main Fuse – 4A maximal

2.2 GeoSounder Connector Overview

The left hand side of the GeoSounder holds the following connectors:

Ethernet connection | Data output | Transducer | Power in | GNSS Antenna

2.3 GeoSounder LED's

Power on push button - LED indicates power.
GNSS - LED blinks indicates a GNSS link.

2.4 GNSS Interface By The Ethernet Connection

Make sure that the LAN adapter from the computer is in the same IP range as the GeoSounder.

For example: The internal Trimble's web-interface is default at 192.168.0.121 than the IP address of the computer must be for example 192.168.0.100.

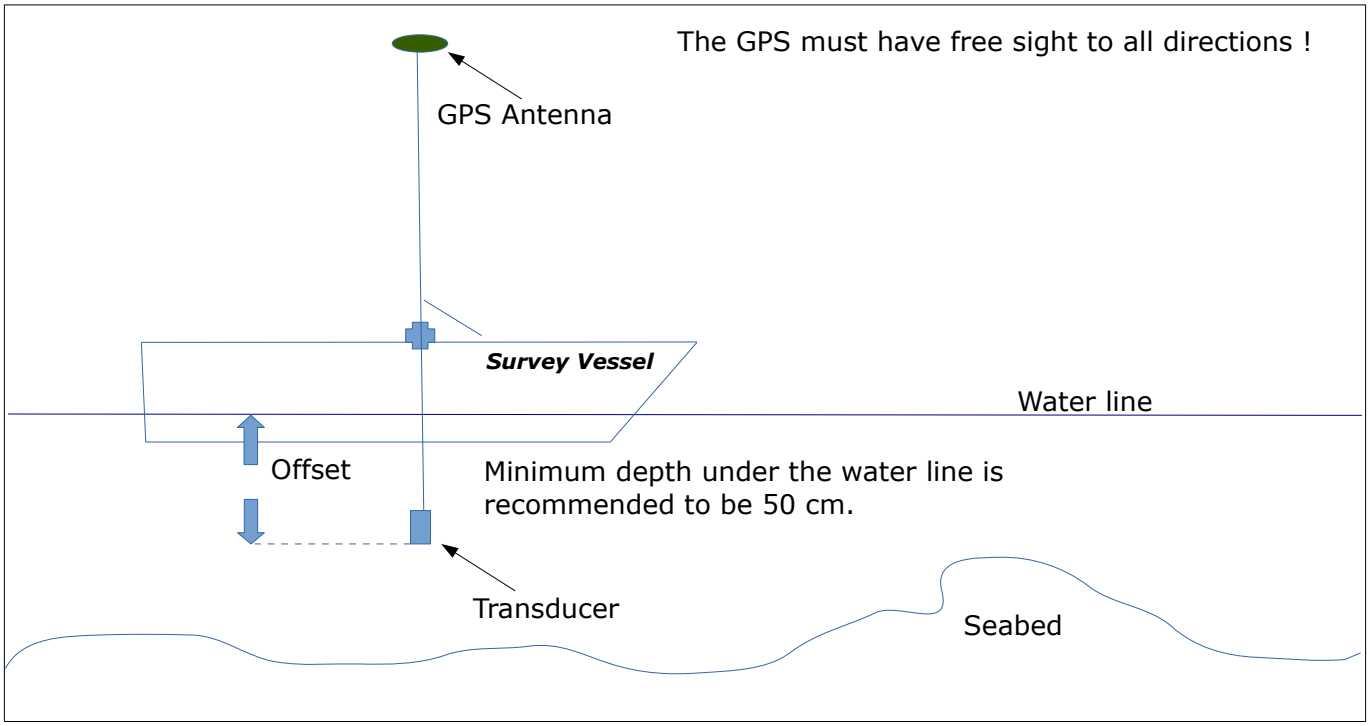
For the Trimble's web-interface please see the Trimble manual:
http://www.trimble.com/OEM_ReceiverHelp/v4.91/en/default.html

Chapter 3: Initial Startup

3.1 Equipment Set-Up (in Picture)

Start with mounting up the GPS antenna and the transducer.

A simple and small instruction, of how to set up the equipment:



3.2 Equipment Set-Up (in Text)

- Connect the GPS antenna to the GeoSounder using the TNC-TNC antenna cable (see chapter "2.2 GeoSounder Connector Overview" for location of this connector on the GeoSounder). The antenna should be mounted high enough to be clear of obstructions such as the wheelhouse of the ship.

  Obstructions can cause interference of the GPS signal or block the GPS signal entirely. If possible mount the GPS antenna directly on top of the transducer to eliminate offsets between the position and the measured depth.

- Mount the transducer in the water, so that only clear water can pass the face of the transducer when surveying. Mounting the transducer in a way that when there will be aeration it will not read zero's.

  The best mounting position of a transducer is, over one side of the boat halfway along the boat with the transducer face at least 50cm below the surface. Connect the transducer into the GeoSounder to the transducer port.

- Connect the power cable to the GeoSounder (see chapter "2.2 GeoSounder Connector Overview" for location of this connector on the GeoSounder), the RED cable connects to the PLUS of the battery (9 – 30 DC volt input) and the BLACK to the MINUS of the battery.

- With the GPS antenna, transducer and power cable connected turn the GeoSounder on by pressing the ON/OFF button (see chapter "2.2 GeoSounder Connector Overview" for location of this connector on the GeoSounder).

  The power LED on the power button will turn on, during start-up both LED's will light up. After the start-up is finished the LED of the GNSS will turn off until there is a prober GNSS connection then the LED of GNSS will start to blink.

- The standard data output has a baud rate of 38400.

- GNSS Interface by the Ethernet connection

  Make sure that the LAN adapter from the computer is in the same IP range as the Geosounder.

  For example: The internal Trimble's web-interface is default at 192.168.0.121 than the IP address of the computer must be something like 192.168.0.100.

  For the Trimble's web-interface, see the Trimble manual:
  http://www.trimble.com/OEM_ReceiverHelp/v4.91/en/default.html

Chapter 4: Output Specifications

4.1 NMEA Data Output

The GeoSounder supports the following NMEA Data Outputs:

GGA

$--GGA,hhmmss.ss,llll.ll,a,yyyyy.yy,b,c,dd,e.e,f.f,M,g.g,M,h.h,iiii*hh<CR><LF>

hhmmss.ss - Universal Time Coordinated (UTC)

llll.ll – Latitude

a - N or S (North or South)

yyyyy.yy – Longitude

b - E or W (East or West)

c - GPS Quality Indicator:

0: Fix not valid

1 : GPS fix

2: Differential GPS fix, OmniSTAR VBS

4: Real-Time Kinematic, fixed integers

5: Real-Time Kinematic, float integers, OmniSTAR XP/HP or Location RTK

dd - Number of satellites in view

e.e - Horizontal Dilution of precision (meters)

f.f - Antenna Altitude above/below mean-sea-level (geoid) (in meters)

g.g - Geoidal separation

h.h - Age of differential GPS data

iiii - Differential reference station ID

HDT

$--HDT,x.x,T*hh<CR><LF>

x.x,T: Heading (degrees) True

VTG

$--VTG,a.a,T,b.b,M,c.c,N,d.d,K,m,*hh<CR><LF>

a.a - Track Degrees (True)

b.b. Track Degrees (Magnetic)

c.c - Speed (Knots)

d.d - Speed Kilometers Per Hour

m - FAA mode indicator (NMEA 2.3 and later)

ZDA

$--ZDA,hhmmss.ss,aa,bb,cccc,dd,ee*hh<CR><LF>

hhmmss.ss - UTC time (hours, minutes, seconds, may have fractional subsecond)

aa - Day, 01 to 31

bb - Month, 01 to 12

cccc - Year (4 digits)

dd - Local zone description, 00 to +- 13 hours

ee - Local zone minutes description, apply same sign as local hours

DBT

$--DBT,a.a,f,b.b,M,c.c,F*hh<CR><LF>

a.a - Depth, feet

b.b - Depth, meters

c.c - Depth, Fathoms

MTW

$--MTW,x.x,C*hh<CR><LF>

x.x – Degrees

C – Units of measurment

XDR- Transducer Measurement (Dual Frequency)

$--XDR,a,b.b,c,d--d, ... *hh<CR><LF>

a – Transducer Type

b.b – Measurement Data

c – Units of Measurement

d--d – Name of Tranducer

There may be any number of quadruplets like this, each describing a sensor.

Chapter 5: Connectors & Cabling

5.1 GPS Cable

A RG223 coaxial cable with TNC female connectors on both ends. The default cable length is 10 metres, other cable lengths are available.

5.2 Power Connector

Looking into the connector, counting counter-clockwise

Name	Pin	Colour
Plus (+)	1	RED
Minus (-)	2	BLACK
N/C	3	--

5.3 COM-Port Connectors

Looking into the connector, counting counter-clockwise

Name	Pin	On the DB9 side
Plus (+) 12 VDC	1	N/C
RXD	2	2
TXD	3	3
GND	4	5
CTS	5	8
RTS	6	7

Chapter 6: Troubleshooting

6.1 Troubleshooting

GeoSounder Will Not Start Up

Please check or try the following:

- Is the power cable firmly connected
- Unplug the power cable and connect it again
- Is the fuse broken, replace it with a 4A fuse maximum

No GPS Signal

Please check the following:

- Is the GPS antenna connected
- Does the GPS antenna have a clear view of the sky
- Are all the settings correct in the survey software, COM-port number, baud rate
  Default baud-rate is 38400 Baud

No Profile Depth

Please check the following:

- Is the transducer firmly connected
- Is the transducer face clean and is the factory sticker removed
- Are all the settings correct in the survey software, COM-port number, baud rate?
  Default baud-rate is 38400 Baud

User Manual Revision History

Version 1.0 – 4 February 2015 Initial release.

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