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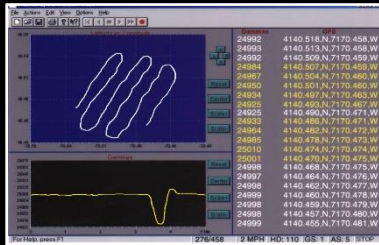
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# Data Sheet

## Proton 5 Magnetometer



Tracker 3 software



- Automatic / Manual Tuning Feature
- 1 nT Sensitivity
- 1,500 Foot Detection Range
- Breaks down for easy transport (case included)
- 6" LCD Screen with Full Function Menu such as POL Times, Sensitivity & Alarms
- All connections on side of control box for inclement weather operation

### System Information

- Sensitivity (menu adjustable) - resolves 1 nT
- Maximum detection distance - 1,500 feet
- Cycle time (menu adjustable) - 2 to 10 seconds
- Tow speed - 1 to 10 MPH
- Maximum operating depth (standard unit) - 200 feet
- Input voltage (two marine or automotive batteries) - 24 VDC
- Power consumption - 40 watt



### Dimensions and Weights

- Fish - 52"L x 6"D - 45 lbs.
- Control box - 14"L x 10"W x 6"H - 7.5 lbs.
- Tow line - .375"D x 150 feet to 1,000 feet - 15 to 100 lbs.
- Carry case - 37"L x 27"D x 14.5"H - 38 lbs.

### Options

- USB data output and GPS input (includes GPS receiver)
- Tracker Software display package (includes boat tracking)
- UA-3 altimeter
- Deep Dive Wing (downrigger)
- 1,000 depth capability
- Longer cable lengths and CMS cable management system
- Microsoft Surface® tablet mounted in the control box lid
- Rugged, splash proof Panasonic Toughbook® laptop

The PROTON 5 is a fifth generation proton magnetometer from JW Fishers. It is a top performing microprocessor driven marine magnetometer detection system. With a one Nano -Tesla (nT) sensitivity, it has the maximum usable sensitivity for a towed proton precession magnetometer. A two second cycle time gives a strong return signal and is fast enough to detect even small iron/steel targets. The PROTON 5 features a triaxial noise-cancelling sensor that allows omnidirectional towing without heading error or dead zone. The system is fully digitized and displays the current 5-digit measurement on an easy to read 6 inch LCD screen that is backlit for night operations. Up to 80 of the previous measurements are also displayed graphically in a history plot on the LCD. With the optional altimeter, distance off bottom of the towfish is displayed. User friendly menus allow easy configuration of all operation settings and system tuning directly from the topside control box. An adjustable audio alarm lets the operator decide how much of a change in the baseline reading will cause the alarm to fire.

The towfish has excellent hydrodynamic characteristics, moving smoothly through the water at tow speeds up to 10 knots. The Fish can be towed at almost any speed, but a 2-3 knot tow speed is recommended for small targets. With the optional UA-3 Altimeter, precise distance off the bottom can be maintained. For deep water towing, the Fish is towed behind the optional DDW-1 Deep Dive Wing depressor. The collapsible PROTON 5 towfish it easily fits into a watertight Pelican® case. Modular construction allows easy field repair, should it ever be necessary.

The base system includes a 200 foot depth rated towfish, 150 feet of Kevlar reinforced tow cable, and topside control box. Optional USB data output and Tracker 3 software are available which allow the mag readout to be displayed on a laptop computer, along with GPS position coordinates. Target position is displayed and recorded on the computer. An optional Microsoft Surface® tablet can be mounted in the control box lid, eliminating the need for a separate laptop computer making it a streamlined package.



Towfish separated into two pieces

## General

Magnetometers are precision electronic instruments that measure and display the strength of the earth's magnetic field in an area. If ferrous metal is present, the earth's magnetic field is altered and the readout of the magnetometer changes accordingly.



Since the 1940's, almost every major wreck find was made with a magnetometer. Metal hulled ships and barges are easy targets and can be detected hundreds of feet away. The Spanish galleons laden with gold and silver (metal not detectable by magnetometer) were also found with mags by detecting the ship's anchors, cannons, cannon balls, or ballast stones (magnetite was often used as ballast).

## Proton Magnetometer

In the 1960's, the proton magnetometer (as we know it today) was invented. Since that time the proton magnetometer has dominated the field, both in the scientific community and in salvage work. It is both a rugged and sensitive instrument. The claim to fame of the proton magnetometer is, unlike fluxgate mags, the orientation of the sensor head does not alter the out-put reading. Once this mag is tuned to an area, no further adjustments are necessary.

## PROTON 5

The PROTON 5 is a proton magnetometer that was specially designed for underwater salvage work. The system consists of a Control Box, a 150-1,000' cable and a towfish.

**CONTROL BOX** – The topside Control Box consists of an Underwater Kinetic case that houses the display, control electronics and interface connections between the towfish, GPS receiver (optional), PC (optional) and batteries (2 x 12v deep cycle marine type). The (optional) Microsoft Surface tablet PC mounts directly in the cover of the case.

**CABLE** - The 150-1,000' tow cable consists of multiple wire pairs and coax cables protected by a Kevlar reinforcement braid encased in a highly abrasion-resistant urethane jacket.

**TOWFISH** - The towfish is 52 inches long and has a watertight compartment that contains the sensors and the electronics necessary for processing the signal before sending to the control box. The Fish has four fins for stability and is weighted for negative buoyancy. The materials used in the construction of the Fish were specifically selected for high impact resistance and low maintenance. It can be separated in the midsection for easy transportation.



## Operation and Use

When you receive your PROTON 5, it has been fully factory and field tested and is almost ready to operate; all you need are two 12v batteries (car or marine type) for power and locally sourced fluid for the proton sensor. After cabling up the system, deploying the towfish and turning on the power, an auto-tuning routine is entered via the display's user interface menu system. The routine selects the optimum system tuning for the area that you are operating in. Once the tuning routine is complete (it only takes a few short minutes), you will not need to re-tune unless you relocate the system to a different area. The system automatically enters the operating mode when the auto-tuning routine has completed. From here, you are ready to begin your search! At any time, you can enter the user interface menu system to change settings for cycle time, sensitivity, detection alarm, history graph and manual or automatic tuning.

### NOTE:

In some areas of central South America (i.e. Brazil) the magnetic field is so weak that operation of a magnetometer is not reliable. Contact the factory if you plan on using the mag in SA.

When towing the Fish, as you approach a ferromagnetic (steel) target, the readout number will decrease; the amount of decrease will depend on the size of the target and how close the Fish passes to it. A change of several thousand nT can be expected for a very large target. The PROTON 5 can easily pinpoint wrecks.

### DETECTION RANGES

Object	Near Range	Far Range
1 gallon can		2 nT at 12'
5 gallon can		2 nT at 18'
55 gallon can		2 nT at 45'
Small plane	25 nT at 20'	2 nT at 50'
6" pipeline	200 nT at 20'	2 nT at 100'
12" pipeline	350 nT at 20'	2 nT at 175'
Large anchor	500 nT at 50'	2 nT at 200'
Medium ship	1500 nT at 100'	2 nT at 1000'
Large ship	2000 nT at 100'	2 nT at 1500'

### PROTON 5

- Auto Tuning
- Connections on side of case for harsh weather operation
- 6" LCD screen displays current 5 digit nT measurement, POL time, sensitivity and alarms
- Collapsible fish stored in Pelican® case for storage and easy transport
- Fish comes standard with connector option to easily remove cable from fish

### VS.

### PROTON 4

- Manual Tuning
- Connections in case
- No LCD screen
- Cannot breakdown fish
- Optional Connector