

# Reference manual



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## **Kongsberg MDM 500 Marine Data Management**







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# ***Kongsberg MDM 500***

## ***Reference manual***

Release 2.0.0.

This manual provides you with reference information required to operate and fully understand the commands, menus, operational modes and options provided by the Kongsberg MDM 500. For user information in brief, refer to the *Kongsberg MDM 500 Operator manual*.

361017/D

30.09.2013 © Kongsberg Maritime AS

## Revision status

Document number: 361017 / Current revision: D		
Rev.A	09.09.2011	First version.
Rev.B	14.12.2011	Added sensor drivers, updated dialogs.
Rev.C	23.01.2012	Added sensor drivers (AIS, Bridgemaster and WeatherPAK).
Rev.D	30.09.2013	Updated for SW release 2.0.0. Added sensor drivers (DESO25, Water Temperature)

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## Support information

If you require maintenance or repair, contact one of our offices, distributors or dealers. You can also contact us using the following address: [km.hydrographic.support@kongsberg.com](mailto:km.hydrographic.support@kongsberg.com). If you need information about our other products, visit <http://www.km.kongsberg.com>.

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# About this manual

## **Purpose**

The purpose of this reference manual is to provide the descriptions, procedures and detailed parameter explanations required to allow for safe and efficient use of the Kongsberg MDM 500, as well as a thorough understanding of the system parameters and adjustments.

A good understanding of system functions and controls is essential to fully take advantage of the functionality provided. Sea conditions vary, sometimes drastically, and it is not possible to identify settings that will provide the best data at all times. Careful study of the information in this manual is highly recommended, preferably while exploring the system's functionality.

## **Software version**

This manual complies to software version 2.0.0.

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# MDM 500

Study this chapter to familiarize yourself with the Kongsberg MDM 500.

## **Topics**

- *System description* on page 11
- *System diagram* on page 12
- *System modules* on page 13
- *How it works* on page 15
- *Network security* on page 18
- *Scope of supply* on page 19
- *Support information* on page 20

## System description

The Kongsberg MDM 500 Marine Data Management system is a Windows-based utility for storage and distribution of the data recorded by the various sensors normally found on oceanographic research vessels.

These sensors may include instruments such as:

- navigation systems
- weather sensors
- sound propagation sensors
- hydrographic instruments

The MDM 500 collects data from these sensors, and stores the data in a relational database. All sensors are physically connected to the MDM 500 system through dedicated Client computers or are accessible over the LAN. Each Client computer offers the necessary software drivers to accept and decode the information provided by the sensors. You can use any number of Client computers on your MDM 500 system. You can also connect any number of sensors to each Client computer, this is only limited by the interface capabilities on each computer.

Data may also be distributed to other instruments or computers on board. Each Client computers offers a remote output. You can add any number of Client Monitor computers to the network to supervise the data traffic.

### *Example 1 Data distribution*

The exact time received from the GPS system may be distributed to all personal computers on the network, as well as all to other instruments that need time data.

Position data from the GPS may be distributed to any system on sensor that need geographic information.

By means of the MDM 500 applications and tools provided, you may select which sensor to log data from. For each sensor you can define logging parameters, such as the sampling rate.

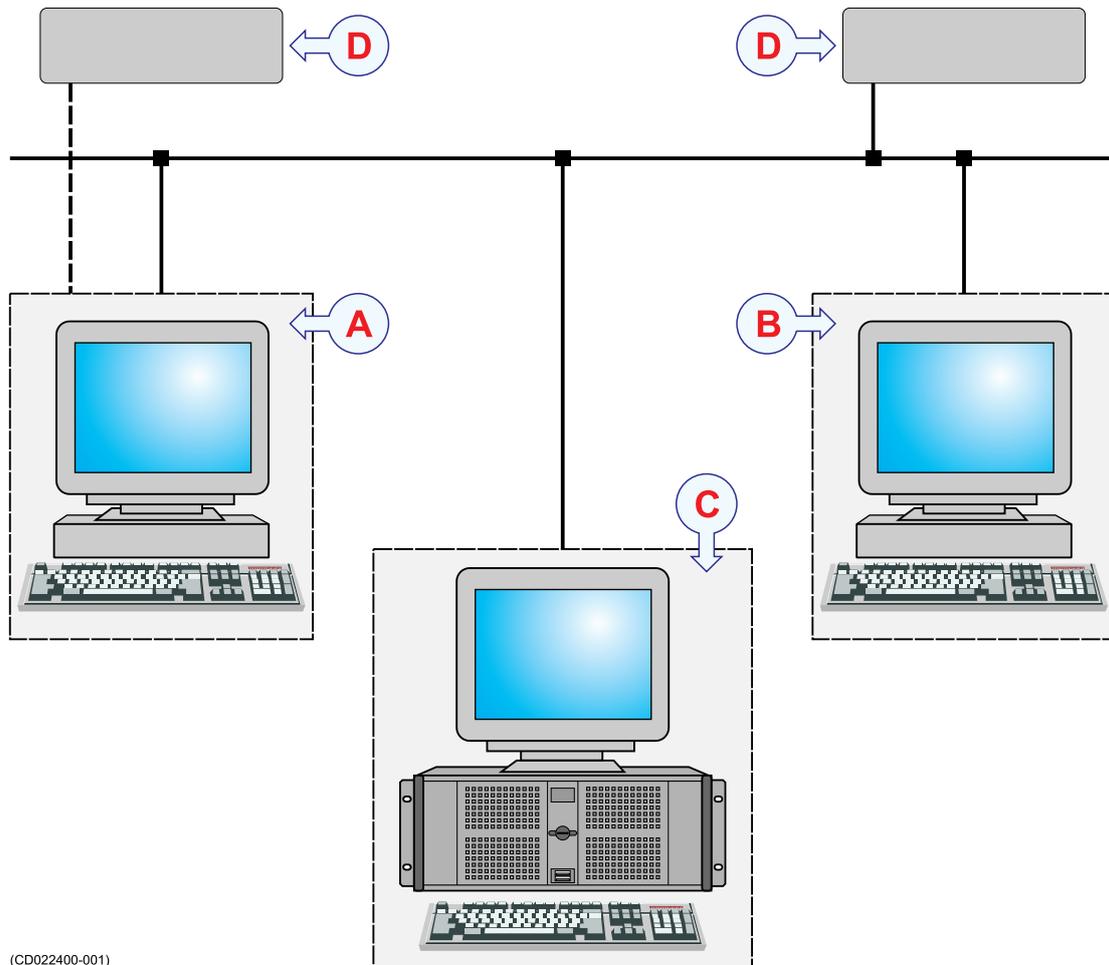
All data from sensors without their own logging facility are recorded. From sensors with their own logging facility, usually only a reduced data set is recorded.

The MDM 500 provides a selection of either alphanumerical or graphical data for on-line monitoring. Reports based on the data stored in the database can be generated, either as standard reports or custom reports via an open database connectivity (ODBC) protocol interface.

## System diagram

A simplified system diagram is provided.

Figure 1 MDM 500 Marine Data Management



**A** This is the Client computer.

Any number of Client computers may be used in a MDM 500 system. Any number of peripheral sensors may be connected to each Client computer by means of serial or Ethernet lines. Each Client computer runs the MDM 500 Client Manager software, as well as any tool applications that are required. The Client Manager software also provides the necessary drivers to accept and decode the information from the sensors.

**B** This is the Client Monitor computer.

Any number of Client Monitor computers may be used in a MDM 500 system. No sensors are connected to this computer. The MDM 500 Client Manager software allows you to monitor the information provided by any sensor connected to the network.

**C** This is the MDM 500 Server computer.

Only one Server computer is used in the MDM 500 system. The Server computer runs the MDM 500 Server Manager software, as well as any tool applications that are required. The Server computer also provides the database application supported by the necessary data storage hardware.

Normally, no sensors are connected to this computer. However, it is possible to install the Client Manager software on the Server computer, and thus allow this computer to have two roles in the system. The relevant sensors are then connected directly to the Server computer.

**D** This is an external sensor.

Any number of external sensors can be connected to the Client computer by means of serial or Ethernet lines. The number of sensors is only limited by the interface capabilities on the Client computer. Several different sensor types may be connected to collect navigation, weather, sound propagation or hydrographic data.

## System modules

### Topics

- *Hardware* on page 13
- *Interchangeability* on page 13
- *Software* on page 14

### Hardware

The design philosophy for the MDM 500 is to use standard high-end personal computers both for the MDM 500 main server, spare server and MDM 500 client computers.

All MDM 500 software will run under any personal computer with the Windows 7 operating system.

All data equipment belonging to the MDM 500 system, including the hubs must be connected to a uninterrupted power supply.

### Interchangeability

The hardware can be upgraded with parts approved by Kongsberg Maritime without changing any MDM 500 software.

New sensors and/or instruments are added by installing a new driver on the relevant Client computer. All interface configuration is done on the Client computer, while other logging parameters are defined on the Server computer.

## Software

The following software applications, modules and drivers are implemented:

### 1 MDM 500 Server Manager

This is the main software application on the MDM 500 Server computer. It provides a relational database management system for storing sensor data and reduced data sets from single- and multibeam echo sounders. It also controls the data recording and distribution, as well as the overall system performance. A Display Driver module allows the software to communicate with you.

### 2 MDM 500 Tools

A set of tool applications is available for dedicated purposes.

- SVP Editor
- SVP Manager (no longer used, replaced by SVP Editor)
- Report Manager
- Watchdog

### 3 MDM 500 Client Manager

This is the main software application that runs on the Client and Client Monitor computers. The Client Manager holds all the Sensor Drivers to render possible the data inputs from the peripheral sensors and instruments. It also provides an Output Data Formatter to distribute the sensor data on the internal MDM 500 format. A Display Driver module allows the software to communicate with you.

The Output Data Formatter also provides an auxiliary data output to the network.

For use on a Client Monitor computer, the Client Manager includes a Input Data Decoder module. This module will convert the sensor data from the internal MDM 500 format to formats fitted for supervision.

The MDM 500 Client Manager can be started in different modes:

- Normal mode: this is the mode described in this manual.
- Floating mode: in this mode you can show more than six sensor forms simultaneously, and they can be moved freely around the screen.

Floating mode is started by adding the parameter `-floating` when starting the Client Manager.

- Debug mode: this is a special mode used for debugging. In this mode a log file `mdm.log` is created in the folder `MDM 500` under `%AppData%`

---

#### Note

*The log file is not deleted automatically and can become very large. Do not use Debug mode for normal operation, it is provided for investigation of problems.*

---

Debug mode is started by adding the parameter `-debug` when starting the Client Manager.

## How it works

The MDM 500 consists of several independent applications working together. The structure includes the following applications, drivers and modules:

- 1 MDM 500 Server Manager
  - Logging & Distribution
  - Database Controller
  - System Setup
- 2 MDM 500 Tools
  - SVP Editor
  - SVP Manager (no longer used, replaced by SVP Editor)
  - Report Manager
  - Watchdog
- 3 MDM 500 Client Manager
  - Sensor Drivers
    - Single beam sounder
    - Aanderaa
    - EK 60 echo sounder
    - APOS
    - VmDAS ADCP
    - Speed Log
    - Gyro compass
    - Depth sounder
    - Multibeam sounder
    - GPS
    - Seapath
    - ITI
    - SmartSV
    - SeapathNav
    - Wind sensor
    - Scanmar
    - Simrad FS2X
    - ThermoFluor
    - MRU
    - Vaisala
    - Generic driver
  - Output Data Formatter
  - Input Data Decoder

- Display Driver

## System configuration

An MDM 500 system runs on one or several Windows 7 computers connected to a local area network. One of the computers is configured as a server. On this computer, the MDM 500 Server Manager is installed. The database is also usually installed on this machine. The MDM 500 Server Manager stores data received from the Client computer(s), and distribute the data to the Client Monitor computer(s).

On all the other computers on the network, the Client Manager software is installed.

The Watchdog tool is installed on a computer other than the one running the Server Manager. This tool monitors the operational status of the Server Manager.

## Operational principles

The MDM 500 Marine Data Management system consists of several separate applications and modules that used on a number of networked computers.

The “heart” of the system is the Server Computer with the Server Manager software and the database. All MDM 500 operation is controlled from this Server Manager, and all logged data – as well as configuration data – are stored in this database.

### Data flow

Data from each individual sensor are connected to the Client computer(s). The Client Manager on each Client computer uses a Sensor Driver, which allows you to define the communication parameters. The individual Sensor Drivers are predefined to interpret certain data formats, such as NMEA serial line transmissions, and common or proprietary telegrams. The following Sensor Drivers are currently described in this manual:

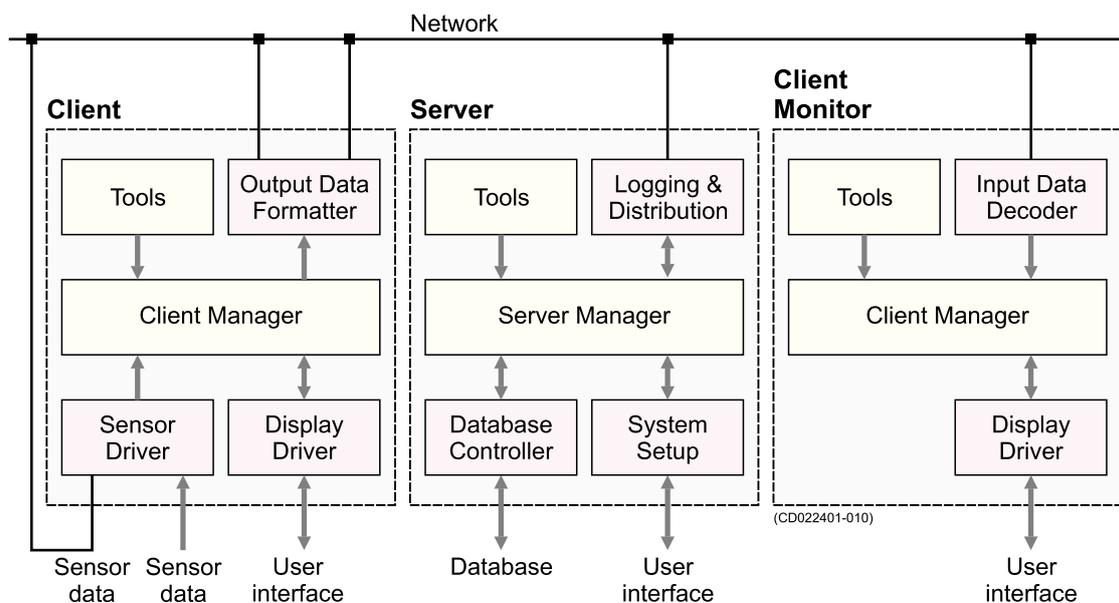
- Single beam sounder
- Aanderaa
- EK 60 echo sounder
- APOS
- VmDAS ADCP
- Speed Log
- Gyro compass
- Depth sounder
- Multibeam sounder
- GPS
- Seapath
- ITI
- SmartSV
- SeapathNav

- Wind sensor
- Scanmar
- Simrad FS2X
- ThermoFluor
- MRU
- Vaisala
- Generic driver

The data collected from the sensor(s) are formatted by the Output Data Formatter module to conform to the internal MDM 500 data format.

The Output Data Formatter also provides a auxiliary data output to the Ethernet. Data is then exported to other programs via the open database connectivity (ODBC) protocol.

*Figure 2 MDM 500 Data flow*



The data collected by the Client computer(s) are distributed to the Client Monitor computer(s) and the Server computer.

The Server Computer controls these operations by means of the Logging & Distribution module. The Server Manager uses the Database Controller module to place all the collected data in the database, and – when requested – read it back for secondary distribution. The System Setup module allows you to define the operational parameters, and control the overall operation.

The Client Monitor computer(s) uses the Input Data Decoder module to convert the internal MDM 500 data format to a format suitable for display.

## Data storage

On the Client computer(s), the Sensor Drivers issue each sensor with a unique identification. The data collected from the sensor are formatted as telegrams. Each telegram is provided with a unique number, and it is tagged with the time of reception. Every data item stored in the database is then provided with a unique item identification. All data collected by the MDM 500 system are thus identified with:

- Time
- Sensor identification
- Telegram
- Data item identification (information field in the telegram)

By assigning such unique identifications to each and every data item recorded, it is possible to store, recall, distribute and process only the specific data you are interested in. This will effectively reduce the amount of data that are stored, and at the same time increase the accuracy of the information.

The Database Controller in the Server Manager software controls all data storage. It is possible to control which data items to store, and how often these shall be stored.

Since all data are time-tagged by the Sensor Drivers in the Client Manager, you may extract data from any number of sensors for a given period of time.

## Related topics

- *Driver, sensor and data field identification numbers* on page 179

## Network security

Equipment manufactured by Kongsberg Maritime are frequently connected to the ship's local area network. Connecting any computer to a network will always expose the data on that computer to all other computers connected to the network. Several threats may immediately occur:

- Remote computers can read the data.
- Remote computers can change the data.
- Remote computers can change the behaviour of the computer, for example by installing unwanted software.

Usually, two parameters are used to define the threat level:

- The likelihood that any remote connection will do any of the above.
- The damage done if a remote connection succeeds doing this.

Because Kongsberg Maritime has no information regarding the complete system installation on any vessel, we can not estimate the threat level and the need for network security. For this reason, we can not accept responsibility for network security. Systems provided by Kongsberg Maritime are regarded as stand-alone systems, even though they may be connected to a network for sensor interfaces and/or data distribution.

## Important

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No safety applications are installed on any Kongsberg Maritime computers to protect these against viruses, malware or unintentional access from external users.

---

Securing the MDM 500 itself has no meaning unless there is a policy in place that secures all computers in the network, including physical access by trained and trusted users. This must always be a task for the customer to implement.

If you wish to connect the MDM 500 to the ship's network, you must implement the same security mechanisms on the MDM 500 computer(s) as for the rest of the network. In the tentative standard from Det Norske Veritas (DNV) - *Integrated Software Dependent System (DNV-OS-D203)* – this is described as a task for the network responsible person in charge of the overall behaviour of the network system. Some key elements here must be:

- The same anti-virus protection on all computers, including routines for updating this protection.
- The same settings for the firewall on all computers.
- Controlled physical access to computers on the network.
- Trusted operators.
- Log-in access mechanisms
- Same policy for attaching peripheral equipment to the computers (USB devices, hard drives etc)
- Installation of programs on any computer in the network, verification that each program is authentic.
- Definition of which programs are allowed to run on each computer.
- Logging mechanism of computer activity, and inspection of these logs.

How to define and implement these rules depends on each end user's network system configuration, which again must be a result of the policies and threat levels the end user has defined for the complete installation. For some products the network consists of only processor units or work stations, transceivers and a few sensors. On other vessels, larger computer systems can be installed to include numerous products and data systems. As the DNV-OS-D203 suggests, there must be one responsible person for the security of a system, large or small.

## Scope of supply

A typical Kongsberg MDM 500 Marine Data Management will comprise the following items:

- 1 Software dongle
- 2 DVD with database software
- 3 CD with MDM 500 software

Optionally, the following items may be provided:

**1** Server computer

Typically, a Hydrographic Work Station (HWS) computer is provided. Keyboard and mouse is included.

**2** Client computer(s)

Typically, a Hydrographic Work Station (HWS) computer is provided. Keyboard and mouse is included.

**3** Colour display(s)

## Support information

If you need technical support on the MDM 500 system you must contact a Kongsberg Maritime office. A list of all our support offices is provided on <http://www.km.kongsberg.com>.

You can also contact our main support office in Norway.

- **Address:** Strandpromenaden 50, 3190 Horten, Norway
- **Telephone:** +47 33 02 38 00
- **Telephone, 24h:** +47 815 35 355
- **E-mail address:** [km.hydrographic.support@kongsberg.com](mailto:km.hydrographic.support@kongsberg.com)
- **Website:** <http://www.km.kongsberg.com>

# Getting started

This chapter describes how to get started with the basic operation of the MDM 500.

It contains a brief overview of the basic system operation and procedures. If you are a first time user, we recommend that you read through this chapter while operating the MDM 500 so that you can familiarize yourself with the menus, dialog boxes and display presentations.

This chapter assumes that the MDM 500 Marine Data Management system has been installed on a Server computer, and that a number of sensors have connected and set up using one or more Client computers. If this is not the case, observe the dedicated procedures.

→ *Sensor interface procedures* on page 46

## Topics

- *System familiarization* on page 21
- *Power on/off procedures* on page 22
- *How to perform basic operations* on page 23
- *MDM 500 Tools* on page 29
- *About reports and queries* on page 31
- *About the message system* on page 32
- *On-line help* on page 34

## System familiarization

Even though the MDM 500 Marine Data Management system may be implemented with numerous Client and/or Client Monitor computers, the Server computer with the Server Manager software is the heart of the system.

The Server computer is set up as an HTTP server. This means that you can access the Server computer from any other computer on the network by means of a standard web browser. This HTTP access is used when you wish to install the Client Manager software – and Tools – on any Client or Client Monitor computer.

All operation of the various applications conform to standard procedures for Windows® software. It is assumed that you are familiar with normal operation of Windows® software, and with standard web browsers and similar programs.

**Note**

---

*The name of the Server computer is vital for access to the HTTP server.*

*To access the server, use the following address in the browser's address field:  
http://computername:80*

---

**Related topics**

- *System description* on page 11
- *System diagram* on page 12
- *How it works* on page 15

## Power on/off procedures

These procedures explain how to switch the MDM 500 system on and off.

### How to power up the MDM 500

**Purpose**

This procedure explains how to power up the Kongsberg MDM 500 system.

**Note**

---

*The MDM 500 system runs on standard commercial computers. In a typical operational environment, these may not have been supplied by Kongsberg Maritime.*

---

- 1 Verify that the peripheral sensors are all operational, and that they are connected to the Client computer(s).
- 2 Power up the Server and Client computer(s) as described in the relevant computer manuals.
- 3 Allow the operating systems to start, and log in as a system user.

Unless your system administrator has made other arrangements, the standard log-on credentials are:

- User name: operator
  - Password: simrad1
- 4 Start the relevant applications from the operating systems **Start** button, or click the icons on the desktop.

## How to power off the MDM 500

### Purpose

This procedure explains how to power off the Kongsberg MDM 500.

### Note

---

*The MDM 500 computers will normally be kept permanently operational, especially during a survey. On most vessels, the system is only powered down when the ship is berthed.*

---

- 1 Close down the applications using the relevant **Exit** commands.
- 2 Power down the computer(s) using the functionality provided by the operating system.

## How to perform basic operations

In most operational environments, the Kongsberg MDM 500 is powered up and activated as long as one or more hydrographic instruments are in use. Observe these brief procedures to familiarize yourself with the basic operations of the MDM 500 system.

### Topics

- *How to start the MDM 500 applications on page 23*
- *How to start logging on page 24*
- *How to stop logging on page 24*
- *How to monitor the MDM 500 operation on page 25*
- *How to run a report with data from a single sensor on page 25*
- *How to run a report with data from two sensors on page 27*
- *How to run a report with data from a group of sensors on page 28*

## How to start the MDM 500 applications

All MDM 500 applications are started like any other Windows® programs. As a minimum requirement for operation, the Server Manager and Client Manager must be operational with one or more active sensors.

### Note

---

*On the Server computer, the Server Manager and Watchdog applications will start automatically once you log on.*

---

- 1 Click the **Start** button in the bottom left corner of the desktop.
- 2 Click **All programs**.
- 3 Locate the **MDM 500** group.

4 Click to start the relevant application:

- Server Manager
- Client Manager
- SVP Manager
- Watchdog
- Report Manager

Tip

---

The same programs may also be started from the desktop or the task bar if the relevant short-cut icons have been created.

---

## How to start logging

This procedure explains how to start the logging operation. It is assumed that all relevant sensors have been connected, and that the recording configuration has been completed.

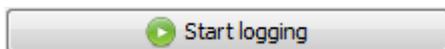
1 Access the **Server Manager** dialog on the Server computer.

The Server Manager application is already running, and you need to see the **Server Manager** dialog.

→ *How to start the MDM 500 applications* on page 23

→ *Server Manager application* on page 75

2 Click the button **Start logging**



## How to stop logging

This procedure explains how to stop the logging operation.

1 Access the **Server Manager** dialog on the Server computer.

The Server Manager application is already running, and you need to see the **Server Manager** dialog.

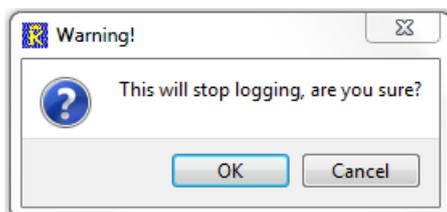
→ *How to start the MDM 500 applications* on page 23

→ *Server Manager application* on page 75

2 Click the button **Stop logging**



3 Verify that you will in fact stop the logging.



## How to monitor the MDM 500 operation

Once the MDM 500 is up and running it will need neither attention nor adjustments. However, you may still wish to monitor the operation.

- 1 Alternative 1:** Use the functionality in the **Client Manager** dialog.
  - a** Open the **Client Manager** dialog on the Client computer(s).

The Client Manager application is already running.

    - *How to start the MDM 500 applications* on page 23
    - *Client Manager application* on page 82
  - b** On the main menu, click **File** → **Status bar**, and observe that the dialog expands to include a text field.
  - c** In the Status bar, click **Show status information**.
  - d** On the **Check for status information** list, check the individual boxes to select from which of the sensors you wish to see messages from.
  - e** In any sensor form in the **Client Manager** dialog, click **Show info**, and observe that the form expands to include a text field.
- 2 Alternative 2:** Use the Watchdog application
  - a** Start the Watchdog application.
    - *How to start the MDM 500 applications* on page 23
    - *Introduction to Watchdog* on page 30
  - b** Observe the messages provided by the Watchdog.
- 3 Alternative 3:** Use the Server Manager application
  - a** Access the **Server Manager** dialog on the Server computer.

The Server Manager application is already running, and you need to see the **Server Manager** dialog.

    - *How to start the MDM 500 applications* on page 23
    - *Server Manager application* on page 75
  - b** Observe the information in the **Network Items** table.

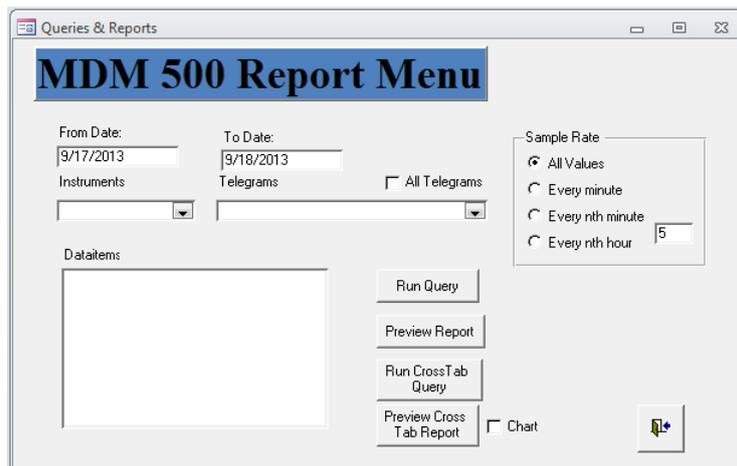
The table provides one row for each sensor connected to the system. The row identifies the sensor by its name, and the number of received and stored telegrams. Each row is thus dynamic, and you can use this information to verify that you are in fact receiving data from the various sensors.

## How to run a report with data from a single sensor

The Report Manager application provided with the MDM 500 system allows you to create numerous report types. All these reports are based on queries made in the Report Manager dialogs, and the reports can be provided on different formats.

This procedure explains how to create a report with data recorded from a single sensor.

- 1 Start the **Report Manager** application on the Server computer.
  - *How to start the MDM 500 applications* on page 23
  - *Introduction to Report Manager* on page 30
- 2 In the main dialog, click the **Queries & Reports** button and observe that the **Queries & Reports** dialog is opened
  - *Queries & Reports* on page 154



- 3 Select the start and stop dates for the recorded data you wish to include in the report.

Enter the date on the format defined in your operating system setup. Note that both dates are inclusive.

- 4 Use the **Instrument** drop-down box to select which instrument (sensor) you wish to retrieve data from.
- 5 Use the **Telegram** drop-down box to select which telegrams from the chosen sensor you wish to see.

If you wish to include all the telegrams, click the **All Telegrams** box.

- 6 In the **Dataitem** list, click to select which field(s) in each telegram you wish to include in the report.

If you wish to include more than one field, hold down the **Shift** key and click to select the desired group of fields.

- 7 Click one of the four **Sample Rate** boxes to choose how much data you wish to include in the report.

**All** allows you to include all the data recorded from within the chosen time span, while the other options will reduce the amount of data in your report.

**Note**

---

*Consider the type of data before you choose to include mean values in your report. For example, mean depth values make sense, while mean positions do not.*

---

- 8 Click one of the four report- and query buttons to generate the report based on the parameters you have entered.

- *About reports and queries* on page 31

Observe that the report is provided in the Report Manager's host application. For further functionality (including print and export), observe the toolbar.

## How to run a report with data from two sensors

The Report Manager application provided with the MDM 500 system allows you to create numerous report types. All these reports are based on queries made in the Report Manager dialogs, and the reports can be provided on different formats.

This procedure explains how to create a report with data recorded from two sensors.

- 1 Start the **Report Manager** application on the Server computer.
  - *How to start the MDM 500 applications* on page 23
  - *Introduction to Report Manager* on page 30
- 2 In the main dialog, click the **Queries & Reports 2** button and observe that the **Queries & Reports 2** dialog is opened

→ *Queries & Reports 2* on page 157

- 3 Select the start and stop dates for the recorded data you wish to include in the report.

Enter the date on the format defined in your operating system setup. Note that both dates are inclusive.

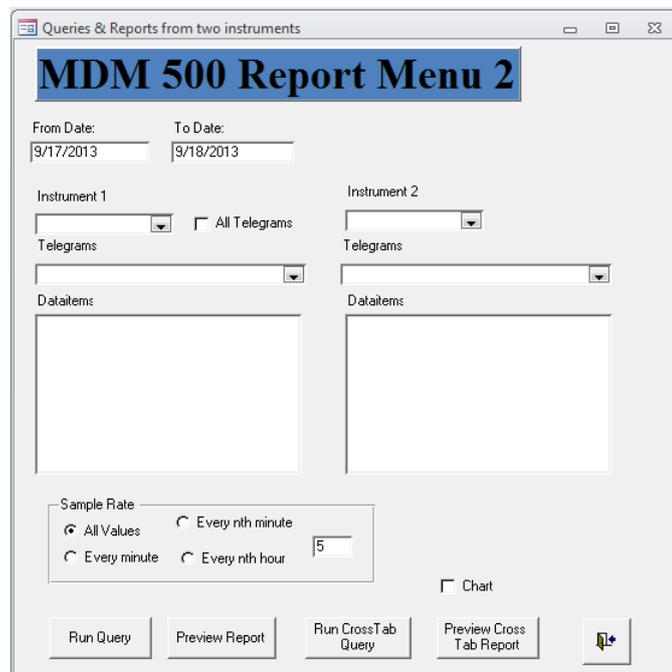
- 4 For each of the two sensors, use the **Instrument** drop-down boxes to select which instrument (sensor) you wish to retrieve data from.

- 5 For each of the two sensors, use the **Telegram** drop-down boxes to select which telegrams from the chosen sensor you wish to see.

If you wish to include all the telegrams from the first sensor, click the **All Telegrams** box.

- 6 In the **Dataitem** list, click to select which field(s) in each telegram you wish to include in the report.

If you wish to include more than one field, hold down the **Shift** key and click to select the desired group of fields.



- 7 Click one of the four **Sample Rate** boxes to choose how much data you wish to include in the report.

**All** allows you to include all the data recorded from within the chosen time span, while the other options will reduce the amount of data in your report.

**Note**

---

*Consider the type of data before you choose to include mean values in your report. For example, mean depth values make sense, while mean positions do not.*

---

- 8 Click one of the four report- and query buttons to generate the report based on the parameters you have entered.

→ *About reports and queries* on page 31

Observe that the report is provided in the Report Manager's host application. For further functionality (including print and export), observe the toolbar.

## How to run a report with data from a group of sensors

The Report Manager application provided with the MDM 500 system allows you to create numerous report types. All these reports are based on queries made in the Report Manager dialogs, and the reports can be provided on different formats.

This procedure explains how to create a report with data recorded from a chosen group of sensors.

- 1 Start the **Report Manager** application on the Server computer.

→ *How to start the MDM 500 applications* on page 23

→ *Introduction to Report Manager* on page 30

- In the main dialog, click the **Group Queries** button and observe that the **Group Queries** dialog is opened

→ *Group Queries* on page 160

- Select the start and stop dates for the recorded data you wish to include in the report.

Enter the date on the format defined in your operating system setup. Note that both dates are inclusive.

- Click the appropriate box to select which group of sensors you wish to retrieve data from.

- Click one of the four **Sample Rate** boxes to choose how much data you wish to include in the report.

**All** allows you to include all the data recorded from within the chosen time span, while the other options will reduce the amount of data in your report.

Note

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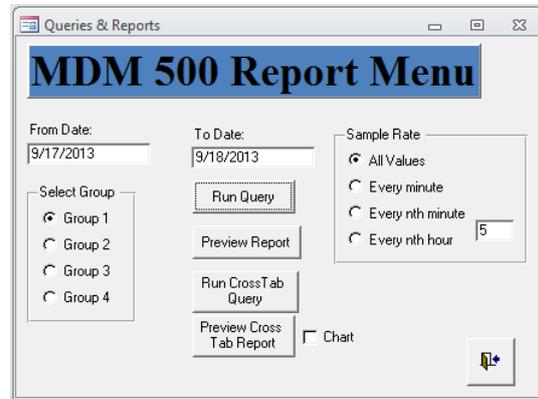
*Consider the type of data before you choose to include mean values in your report. For example, mean depth values make sense, while mean positions do not.*

---

- Click one of the four report- and query buttons to generate the report based on the parameters you have entered.

→ *About reports and queries* on page 31

Observe that the report is provided in the Report Manager's host application. For further functionality (including print and export), observe the toolbar.



## MDM 500 Tools

Several auxiliary applications are available. These are generally referred to as “Tools”. The following tools are available:

- SVP Editor
- SVP Manager (no longer used, replaced by SVP Editor)
- Report Manager
- Watchdog

The tools can be installed on any computer in the MDM 500 system.

## Introduction to SVP Manager

The SVP Manager is a tool for receiving and distributing sound velocity profile (SVP) and conductivity, temperature and depth (CTD) data. It can receive these data from various sensors over a serial line, a network line, or from a file. Data can also be converted and distributed on various formats over the local network to remote recipients.

Provided that the **Enable Storing** function is enabled in the **Configure SVP Manager** dialog, the data is automatically stored in the MDM 500 database once it is imported from the sensor.

### Note

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*The SVP Manager has been replaced by SVP Editor from release 2.0 of MDM 500. The SVP Manager is still included but may be removed in future releases.*

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### Related topics

- *Introduction to SVP Manager* on page 30
- *Sound velocity profile procedures* on page 61
- *SVP Manager application* on page 134
- *SVP Manager* on page 135

## Introduction to Report Manager

The Report Manager allows you to run queries and print reports based on the stored data. You are also permitted to edit sensor names for the reports.

By means of the Report Manager it is easy to view the data recorded from any given sensor, from any two sensors combined, or from the Cruise Recorder. The data can be printed using the built-in report template, or you can create your own layout. The data can also be copied and pasted into other applications, such as office text editors and spreadsheets.

### Related topics

- *Introduction to Report Manager* on page 30
- *About reports and queries* on page 31
- *Report procedures* on page 52
- *Report Manager application* on page 150
- *Report Manager* on page 152

## Introduction to Watchdog

The Watchdog application monitors the status of the Server Manager and the Client Manager with the Sensor Drivers. It will provide you with a warning if there is anything wrong with the MDM 500 system.

You can install the Watchdog on any computer in the in the MDM 500 system, and it may run on several computers simultaneously. Since the MDM 500 system is designed to operate without any user interventions, you may choose to install the Watchdog application on computers that are being monitored more frequently.

### Related topics

- *Introduction to Watchdog* on page 30
- *About the message system* on page 32
- *Watchdog application* on page 175
- *Watchdog* on page 175

## About reports and queries

The Report Manager application provided with the MDM 500 system allows you to create numerous report types. All these reports are based on queries made in the Report Manager dialogs, and the reports can be provided on different formats.

### Topics

- *Standard reports* on page 31
- *Cross tab reports* on page 32

## Standard reports

A standard report provides the actual recorded data in a tabular format. Each row in the table contains the information from one record with columns for time stamp, field name and value. You can generate these reports using the **Run Query** and **Preview Report** buttons in the applicable dialogs.

- The **Run Query** option outputs the report for on-screen view. This format can easily be exported to a suitable file format using the functionality in the Report Manager's host application.
- The **Preview Report** option outputs the report for printed output, and provides additional information in a report header. To start the printing, use the functionality in the Report Manager's host application.

### Example 2 *Standard report from a typical GPS sensor*

Time stamp	Field	Value
30/08/2011 11:01:11	Clock	111438.000
30/08/2011 11:01:11	Latitude	6325.814
30/08/2011 11:01:11	Longitude	1023.731
30/08/2011 11:01:11	Quality	8.000
30/08/2011 11:01:13	Clock	111440.000
30/08/2011 11:01:13	Latitude	6325.814

*Example 2 Standard report from a typical GPS sensor (cont'd.)*

Time stamp	Field	Value
30/08/2011 11:01:13	Longitude	1023.731
30/08/2011 11:01:13	Quality	8.00

## Cross tab reports

Cross tabulation is the process of creating a contingency table from the multivariate frequency distribution of statistical variables.

In statistics, a contingency table (also referred to as cross tabulation or cross tab) is a type of table in a matrix format that displays the (multivariate) frequency distribution of the variables. It is often used to record and analyze the relation between two or more categorical variables.

— <http://en.wikipedia.org>

The **Run Cross Tab Query** and **Preview Cross Tab Report** buttons in the Report Manager dialogs allow you to output the sensor data in a contingency table.

In this table format, information that are common in multiple related records are grouped. You can generate these reports using the **Run Cross Tab Query** and **Preview Cross Tab Report** buttons in the applicable dialogs.

- The **Run Cross Tab Query** option outputs the report for on-screen view. This format can easily be exported to a suitable file format using the functionality in the Report Manager's host application.
- The **Preview Cross Tab Report** option outputs the report for printed output, and provides additional information in the report header. To start the printing, use the functionality in the Report Manager's host application.

*Example 3 Cross tab report from a typical GPS sensor*

Time stamp	Clock	Latitude	Longitude	Quality
30/08/2011 11:01:11	111438.000	6325.814	1023.731	8.000
30/08/2011 11:01:13	111440.000	6325.814	1023.731	8.000
30/08/2011 11:01:15	111442.000	6325.814	1023.731	8.000
30/08/2011 11:01:17	111444.000	6325.814	1023.731	8.000

## About the message system

The MDM 500 system provides a comprehensive message system to allow for operational monitoring.

**Note**

*The messages provided by the various MDM 500 applications are not logged to disk.*

---

**Topics**

- *Message providers* on page 33
- *Client Manager messages* on page 33
- *Server Manager messages* on page 33
- *Watchdog messages* on page 34

## Message providers

The messages can be viewed in following applications:

**1 Client Manager**

The **Client Manager** dialog provides messages in

- The dedicated status bar at the bottom of the dialog
- Under each sensor form when the **View info** option is checked

**2 Server Manager**

The **Client Manager** dialog provides messages on the right hand side of the main dialog. In addition, the communication with each sensor is monitored in the **Network Items** table.

**3 Watchdog**

The **Watchdog** dialog provides messages in the main dialog.

## Client Manager messages

The following messages types are provided in the status bar of the **Client Manager** dialog:

- Telegrams in ASCII format
- Messages from the Sensor Driver(s)

The following messages types are provided under the sensor forms in the **Client Manager** dialog:

- Formatting messages
- Time-out messages
- Connection failures

## Server Manager messages

The following messages types are provided in the **Server Manager** dialog:

- Logging messages
- Operational messages
- Status messages

- Server Manager failures

## Watchdog messages

The following messages types are provided in the **Watchdog** dialog:

- Time-out warnings
- Driver errors
- Client Manager failures

## On-line help

The MDM 500 Reference manual is available as on-line help on the Server and Client Manager application. Click the **Help** button on the main menu to open the help file.

# Operational procedures

This chapter contains several operational procedures explaining how you can put your MDM 500 to use.

Are there any procedures missing? Are you performing an operation that we have not explained? Write an e-mail to [km.hydrographic.support@kongsberg.com](mailto:km.hydrographic.support@kongsberg.com) and let us know. We may then include the procedure in the next version of this manual.

## Topics

- *Basic procedures* on page 35
- *Logging procedures* on page 36
- *Sensor interface procedures* on page 46
- *Report procedures* on page 52
- *Sound velocity profile procedures* on page 61
- *Software procedures* on page 68

## Basic procedures

For basic procedures, see the *Getting started* chapter.

## Topics

- *How to power up the MDM 500* on page 22
- *How to power off the MDM 500* on page 23
- *How to start the MDM 500 applications* on page 23
- *How to start logging* on page 24
- *How to stop logging* on page 24
- *How to monitor the MDM 500 operation* on page 25

## Logging procedures

These procedures explain how to start and stop logging on the MDM 500 system.

### Topics

- *How to start logging* on page 36
- *How to stop logging* on page 36
- *How to define logging groups* on page 37
- *How to define the logging parameters* on page 38
- *How to recall the content of the logging groups* on page 40
- *How to change logging group organisation on recorded data* on page 42
- *How to delete data from the database* on page 44
- *How to temporary disable the input from a sensor* on page 44

### How to start logging

This procedure explains how to start the logging operation. It is assumed that all relevant sensors have been connected, and that the recording configuration has been completed.

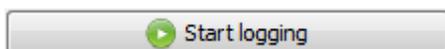
- 1 Access the **Server Manager** dialog on the Server computer.

The Server Manager application is already running, and you need to see the **Server Manager** dialog.

→ *How to start the MDM 500 applications* on page 23

→ *Server Manager application* on page 75

- 2 Click the button **Start logging**



### How to stop logging

This procedure explains how to stop the logging operation.

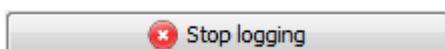
- 1 Access the **Server Manager** dialog on the Server computer.

The Server Manager application is already running, and you need to see the **Server Manager** dialog.

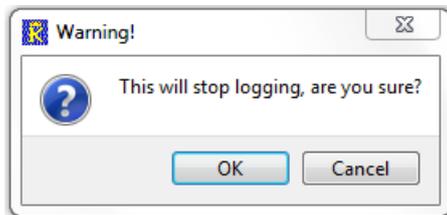
→ *How to start the MDM 500 applications* on page 23

→ *Server Manager application* on page 75

- 2 Click the button **Stop logging**



- 3 Verify that you will in fact stop the logging.



## How to define logging groups

The data recorded by the MDM 500 can be organized in four logging groups. By means of the **View Configuration** dialog, you can control which sensor data (telegrams) that is saved in each group, and the interval of the samples.

These groups are later used during reporting, as a dedicated report allows you to retrieve information from a group of sensors. By means of such logging groups, you may collect the information from related sensors.

	Field	ID	Master	Sampling	Interval
1	APOS-SNS-Clock	2601001	TRUE	MSECONDS	6
2	APOS-SNS-Pos_item	2601002	FALSE	ALL	0
3	APOS-SNS-Transceiver	2601003	FALSE	ALL	0
4	APOS-SNS-Transducer	2601004	FALSE	ALL	0
5	APOS-SNS-Roll	2601005	FALSE	ALL	0
6	Pitch	2601006	FALSE	ALL	0

- 1 Access the **Server Manager** dialog on the Server computer.

The **Server Manager** application is already running, and you need to see the **Server Manager** dialog.

→ *How to start the MDM 500 applications* on page 23

→ *Server Manager application* on page 75

- 2 Click **View Configuration** to open the **View Configuration** dialog.

→ *View Configuration* on page 77

The **View Configuration** dialog controls the entire logging operation.

The left side of the dialog contains a list of all the peripheral sensors currently interfaced to the MDM 500 system. For each sensor, you can expand the structure to see the telegram formats supported and the fields in each telegram.

The right side of the dialog provides you with four logging groups.

By means of the functionality provided, you can place any sensor data in any logging group, and control how often the data shall be recorded.

- 3 Observe the supported sensors on the left side of the **View Configuration** dialog.  
Each sensor is presented with a tree structure offering relevant telegrams and telegram fields.
- 4 For the chosen sensor, break down the structure, and click once on the telegram field you wish to include in a logging group.
- 5 Click **Add** to place the chosen field into one of the logging groups.  
You can add as many fields you like into one logging group.  
You can add the same field into several logging groups.
- 6 Click **OK** to save the current settings and close the dialog box.
- 7 Observe the related procedures:
  - *How to define logging groups* on page 37
  - *How to define the logging parameters* on page 38
  - *How to recall the content of the logging groups* on page 40
  - *How to change logging group organisation on recorded data* on page 42

## How to define the logging parameters

This procedure explains how to define the main parameters for logging, mainly how often you shall record information from each sensor.

- 1 Access the **Server Manager** dialog on the Server computer.  
The Server Manager application is already running, and you need to see the **Server Manager** dialog.
  - *How to start the MDM 500 applications* on page 23
  - *Server Manager application* on page 75
- 2 Click **View Configuration** to open the **View Configuration** dialog.
  - *View Configuration* on page 77

The **View Configuration** dialog controls the entire logging operation.

The left side of the dialog contains a list of all the peripheral sensors currently interfaced to the MDM 500 system. For each sensor, you can expand the structure to see the telegram formats supported and the fields in each telegram.

The right side of the dialog provides you with four logging groups.

By means of the functionality provided, you can place any sensor data in any logging group, and control how often the data shall be recorded.
- 3 Observe the supported sensors on the left side of the **View Configuration** dialog.  
Each sensor is presented with a tree structure offering relevant telegrams and telegram fields.

- 4 Observe the logging groups on the right hand side of the **View Configuration** dialog.

	Field	ID	Master	Sampling	Interval
1	APOS-SNS-Clock	2601001	TRUE	MSECONDS	6
2	APOS-SNS-Pos_item	2601002	FALSE	ALL	0
3	APOS-SNS-Transceiver	2601003	FALSE	ALL	0
4	APOS-SNS-Transducer	2601004	FALSE	ALL	0
5	APOS-SNS-Roll	2601005	FALSE	ALL	0
6	Pitch	2601006	FALSE	ALL	0

- 5 Set up the logging parameters using the functionality provided.

**1 Field**

This column identifies the sensor, selected telegram, and the information provided by the telegram.

**2 ID**

This column identifies the sensor, the selected telegram, and the information using the sensor identification number.

→ *Driver, sensor and data field identification numbers* on page 179

**3 Master**

This parameter allows the settings identified for the relevant sensor (data item) to be used for the other sensors in the same group. The following options are available:

**a True:** The relevant sensor (data item) is set up as Master to share its data recording parameters (Sampling and Interval). In order to inherit these settings, the **Sampling** parameter for the other sensors must be set to *Slave*.

**b False:** The relevant sensor will not share any parameters.

Only one of the sensor connected to any given group can be set up as Master. The status for all the other sensors in the same group will then automatically be set to *False*.

Note

*The information provided by the Master data item will always be logged first. The other data items will then be logged in the order they appear in the group. For this reason, we recommend that the Master data item is placed at the top of each group.*

#### 4 Sampling

This parameter controls how much of the data provided by the sensor that are saved to the database. The following options are available:

**a All**

All data telegrams received from the sensor are saved to the database.

**b MSeconds**

Only the telegrams received every given millisecond will be stored. The interval (number of milliseconds between each capture) is controlled by the **Interval** parameter.

**c Sample**

Only every “x” telegram are saved, for example every fifth. The interval is controlled by the **Interval** parameter.

**d Slave**

The **Sampling** and **Interval** parameters are inherited from the sensor (data item) currently set up as Master.

#### 5 Interval

This parameter controls interval between each saved data telegram. The parameter field is only activated when **Sampling** is set to *MSeconds* or *Sample*. You are then permitted to enter any valid integer.

##### *Example 4 Sample and Interval settings*

If you only wish to save the telegrams provided every second, set **Sampling** to *MSeconds* and **Interval** to *1000*.

If you only wish to save every tenth telegram, set **Sampling** to *Sample* and **Interval** to *10*.

6 Click **OK** to save the current settings and close the dialog box.

7 Observe the related procedures:

→ *How to define logging groups* on page 37

→ *How to define the logging parameters* on page 38

→ *How to recall the content of the logging groups* on page 40

→ *How to change logging group organisation on recorded data* on page 42

## How to recall the content of the logging groups

The **View Configuration** dialog in the Server manager application allows you to record data from the sensors into four logging groups. This **Logging Groups** dialog provides you with a viewer to recall this information. You can recall any of the four groups, and see which sensors, telegrams and data items that are recorded into each group.

→ *View Configuration* on page 77

- 1 Start the **Report Manager** application on the Server computer.

→ *How to start the MDM 500 applications* on page 23

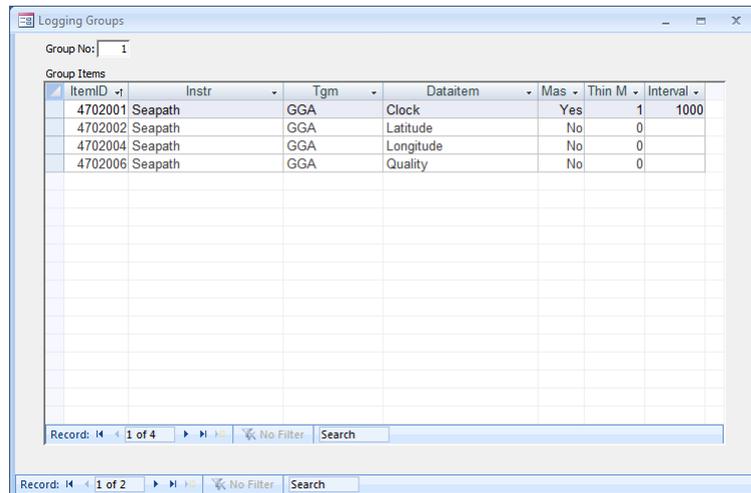
→ *Introduction to Report Manager* on page 30

- 2 Click **Logging Groups** to open the **Logging Groups** dialog.

→ *Logging Groups* on page 170

- 3 In the **Group No** field, enter the group number you wish to investigate (1 to 4).

- 4 Observe that the information related to the chosen group and the sensor(s) in it are shown in the table.



ItemID	Instr	Tgm	Dataitem	Mas	Thin M	Interval
4702001	Seapath	GGA	Clock	Yes	1	1000
4702002	Seapath	GGA	Latitude	No	0	
4702004	Seapath	GGA	Longitude	No	0	
4702006	Seapath	GGA	Quality	No	0	

The table provides the information about which sensor(s), telegrams and data items that are recorded in the specific group. The information in the table corresponds to the parameters that were defined in the **View Configuration** dialog in the Server Manager application.

→ *View Configuration* on page 77

The following columns are provided:

- 1 **ItemID**

This column provides the unique identification provided to each data item (part of a telegram) from a sensor.

→ *Driver, sensor and data field identification numbers* on page 179

- 2 **Instr**

This column identifies the sensor

- 3 **Tgm**

This column identifies the telegram

- 4 **DataItem**

This column identifies the data item (field).

- 5 **Master**

This column identifies if the recording of this specific data item is established as a master for all the other data items in the same group.

- 6 **Thin M**

This parameter controls how much of the data provided by the sensor that are saved to the database. It corresponds to the **Sampling** parameter in the **View Configuration** dialog

**7 Interval**

This parameter controls interval between each saved data telegram.

**8 Record**

This function allows you to leaf through the records in the database. Since this **Record** function is located inside the table, it allows you to step through the individual table rows.

**9 Search**

This function allows you to search through the records in the database. Since this **Search** function is located inside the table, it allows you to search for information within the data currently provided in the table. Click in the search field, write the phrase, and then push **Enter**.

**5** Observe the related procedures:

- *How to define logging groups* on page 37
- *How to define the logging parameters* on page 38
- *How to recall the content of the logging groups* on page 40
- *How to change logging group organisation on recorded data* on page 42

## How to change logging group organisation on recorded data

The **Data Values** dialog allows you to retrieve, examine and modify data recorded by a defined sensor. The dialog allows you to click through the currently selected sensors, and provide all relevant information related to:

- Recorded data for each individual data item (part of telegram)
- Group belonging

You can also use this dialog to change the sensor group organisation on previously recorded data. This organisation is initially defined in the **View Configuration** dialog in the Server Manager application. However, when you later generate reports, you may find that this organization was somewhat unfortunate. The **Data Values** dialog then allows you to change this.

**Note**

---

*The changes you make to the sensor group organization using the **Data Values** dialog are permanent. If you wish to change back to the original configuration, you must do so manually using this procedure one more time.*

---

**1** Start the **Report Manager** application on the Server computer.

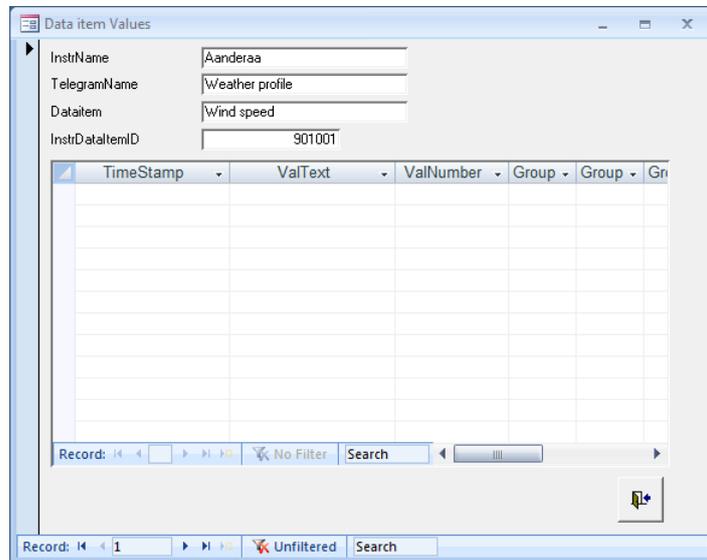
- *How to start the MDM 500 applications* on page 23
- *Introduction to Report Manager* on page 30

- 2 Click the **Data Values** button to open the **Data Values** dialog.

→ *Data Values* on page 166

The **Data Values** dialog allows you to view all data values recorded from a specific sensor.

- 3 In the **Data Values** dialog, enter the necessary information to identify the sensor and the telegram. Observe that the resulting information is provided in the table.



The table provides the current data item

information from the sensor. Each line in the table corresponds to a reading from the chosen sensor. Each reading is time stamped.

Tip

If you have many sensors, you may use the **Record** or **Search** functions at the bottom of the dialog.

- 4 Observe that you may change the sensor's group belonging using the **Group** column.

**a Group**

This cell identifies the group of sensors the current sensor belongs to. These groups are defined in the **View Configuration** dialog in the Server Manager application.

If the cells shows **-1**, this means that the sensor belongs to the group. If the value **0** is shown, the sensor does not belong to the group. These values can be changed manually, and you can thus rearrange the group organization you have previously made in the **View Configuration** dialog in the Server Manager application.

→ *View Configuration* on page 77

- 5 Click the **X** in the top right corner of the dialog to close it and save all settings.

- 6 Observe the related procedures:

→ *How to define logging groups* on page 37

→ *How to define the logging parameters* on page 38

→ *How to recall the content of the logging groups* on page 40

→ *How to change logging group organisation on recorded data* on page 42

## How to delete data from the database

This procedure explains how to delete data from the database.

The data you delete from the database using the **Delete Data** dialog are permanently removed, unless you have previously made a backup with the data. This dialog must thus be used with extreme care.

You are only permitted to use a start data and an end date to select the data to be deleted. Both dates are inclusive. The recorded information from all sensors within the defined time period will be removed. You are not able to delete information for specific sensors.

### Note

---

*Make sure that you have made the necessary backup copies before you delete data from the database!*

---

- 1 Start the **Report Manager** application on the Server computer.

→ *How to start the MDM 500 applications on page 23*

→ *Introduction to Report Manager on page 30*

- 2 Click **Delete Data** to open the **Delete Data** dialog.

→ *Delete Data on page 173*

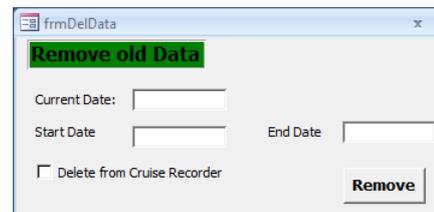
- 3 Enter today's date.

- 4 Select the start and stop dates for the recorded data you wish to delete.

Enter the date on the format defined in your operating system setup. Note that both dates are inclusive.

- 5 Click **Remove**.

- 6 Click the **X** in the top right corner of the dialog to close it and save all settings.



## How to temporary disable the input from a sensor

This procedure explain how to temporary disable the input from a dedicated sensor.

The sensor forms in the **Client Manager** dialog are used to display the information received from each sensor. This information is provided in text fields specific for each sensor type and the telegrams that are received. For each sensor, you can click to view additional information, disable the input from the sensor, and set up the communication parameters.

- 1 Open the **Client Manager** dialog on the Client computer(s).

The Client Manager application is already running.

→ *How to start the MDM 500 applications on page 23*

→ *Client Manager application on page 82*

- 2 Verify that the sensor you wish to modify is visible in a sensor form.  
If not, activate the form as described in the applicable procedure.  
→ *How to select which sensors forms to display in the Client Manager* on page 46
- 3 In the relevant sensor form, click the **Disable** button.  
The input from the sensor is now disabled.
- 4 To reactivate the input, click the respective **Serial** or **Network** button to open the interface setup dialog.  
You do not need to do any changes in the dialog.
- 5 Click **OK** to save the current settings and close the dialog box.
- 6 The sensor input is now active.

## Sensor interface procedures

These procedures explain how to connect and set up sensors on the serial or network interfaces provided by the computers in the MDM 500 network.

### Topics

- *How to select which sensors forms to display in the Client Manager* on page 46
- *How to access the messages provided by the Client Manager* on page 47
- *How to define serial line parameters for the sensor interface* on page 47
- *How to define network parameters for the sensor interface* on page 48
- *How to connect a new sensor to the MDM 500 system* on page 48
- *How to change the main identification number on a sensor* on page 49
- *How to remove a sensor from the MDM 500 system* on page 50

## How to select which sensors forms to display in the Client Manager

The **Client Manager** dialog allows you to define which sensors you wish to connect to the MDM 500 system. For each sensor input, you can set up the reception parameters, and you can disable or enable the data flow.

The sensor forms in the **Client Manager** dialog are used to display the information received from each sensor. This information is provided in text fields specific for each sensor type and the telegrams that are received. For each sensor, you can click to view additional information, disable the input from the sensor, and set up the communication parameters.

- 1 Open the **Client Manager** dialog on the Client computer(s).

The Client Manager application is already running.

→ *How to start the MDM 500 applications* on page 23

→ *Client Manager application* on page 82

- 2 Click **Select Sensor** to open the **Select Sensor** dialog.

→ *Select Sensors* on page 115

- 3 In the **Select Sensor** dialog:

- a Click on a sensor in the list, and drag it into one of the vacant rectangles.
- b Double-click on a sensor in the list, and it will automatically use populate one of the vacant rectangles.
- c Double-click on the sensor name in a rectangle to remove it.

#### Note

---

*Even if the data from a sensor is not shown in a dedicated form in the **Client Manager** dialog, the MDM 500 will still be able to receive and log the data from it.*

---

- 4 Click **OK** to save the current settings and close the dialog box.

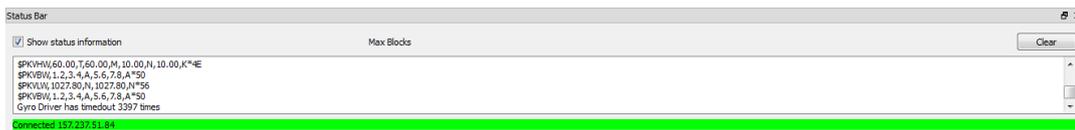
## How to access the messages provided by the Client Manager

The **Client Manager** dialog provides messages in

- The dedicated status bar at the bottom of the dialog
- Under each sensor form when the **View info** option is checked

This procedure describes how to access the various messages in the Client Manager application.

- 1 Open the **Client Manager** dialog on the Client computer(s).  
The Client Manager application is already running.  
→ *How to start the MDM 500 applications* on page 23  
→ *Client Manager application* on page 82
- 2 Click **File** → **Status bar**, and observe that the Status bar opens at the bottom of the dialog.
- 3 In the Status bar, click **Show status information**.



- 4 At the top of the dialog (under the **Select Sensors** button), click to choose which sensor interfaces you wish to see messages from.  
→ *About the message system* on page 32
- 5 Under each sensor form, click **View info** to open a sensor specific message field.

## How to define serial line parameters for the sensor interface

The sensor forms in the **Client Manager** dialog are used to display the information received from each sensor. This information is provided in text fields specific for each sensor type and the telegrams that are received. For each sensor, you can click to view additional information, disable the input from the sensor, and set up the communication parameters.

- 1 Open the **Client Manager** dialog on the Client computer(s).  
The Client Manager application is already running.  
→ *How to start the MDM 500 applications* on page 23  
→ *Client Manager application* on page 82
- 2 Verify that the sensor you wish to modify is visible in a sensor form.  
If not, activate the form as described in the applicable procedure.  
→ *How to select which sensors forms to display in the Client Manager* on page 46
- 3 Click the **Serial** button in the form to open the **Serial Port Setup** dialog.  
→ *Serial Port Setup* on page 122
- 4 In the **Serial Port Setup** dialog, enter the applicable parameters for the serial line.  
Which parameters to use are normally specified in the sensor documentation.

- 5 Click **OK** to save the current settings and close the dialog box.

## How to define network parameters for the sensor interface

The sensor forms in the **Client Manager** dialog are used to display the information received from each sensor. This information is provided in text fields specific for each sensor type and the telegrams that are received. For each sensor, you can click to view additional information, disable the input from the sensor, and set up the communication parameters.

- 1 Open the **Client Manager** dialog on the Client computer(s).  
The Client Manager application is already running.  
→ *How to start the MDM 500 applications* on page 23  
→ *Client Manager application* on page 82
- 2 Verify that the sensor you wish to modify is visible in a sensor form.  
If not, activate the form as described in the applicable procedure.  
→ *How to select which sensors forms to display in the Client Manager* on page 46
- 3 Click the **Network** button in the form to open the **LAN Port Setup** dialog.  
→ *LAN Port Setup* on page 123
- 4 In the **LAN Port Setup** dialog, enter the applicable parameters for the Ethernet communication.
- 5 Click **OK** to save the current settings and close the dialog box.

## How to connect a new sensor to the MDM 500 system

This procedure explains how to connect a new sensor to a computer running the MDM 500 Client Manager software. Only a rough procedure is provided. For additional details, consult the documentation provided with the software modules provided by Kongsberg Maritime.

### Note

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*When a new sensor shall be connected, you will need support from Kongsberg Maritime to provide the necessary sensor and database interfaces. You must then specify which type of sensor you will connect.*

---

- 1 Make the physical connection of the sensor to the Client computer.  
Note that for some sensor types only a serial line interface is supported. Other sensors may be connected using a network interface.
- 2 On the Server computer, run the database script you received from Kongsberg Maritime.  
To run the script, double-click the file name.
- 3 On the Client computer, stop the Client Manager application.
- 4 Locate the server sensor DLL files on the Client computer harddisk.  
Observe the installation instructions provided with the software for further details.

- 5 Copy the new DLL to the same folder.
- 6 Restart the Client Manager application.
- 7 Open the **Client Manager** dialog on the Client computer(s).  
The Client Manager application is already running.
  - *How to start the MDM 500 applications* on page 23
  - *Client Manager application* on page 82
- 8 Click **Select Sensor** to open the **Select Sensor** dialog.
  - *Select Sensors* on page 115The **Select Sensors** dialog box allows you to define which sensors you will set up and/or monitor in the **Client Manager** dialog.
- 9 In the **Select Sensor** dialog, observe the relevant sensor option in the list of sensors. Click on the sensor name in the list, and drag it into one of the vacant rectangles.
- 10 Click **OK** to save the current settings and close the dialog box.

## How to change the main identification number on a sensor

The **Installed Instruments** dialog allows you to retrieve, examine and modify the information related to each sensor. The dialog allows you to click through the currently active sensors, and see and/or modify all relevant information related to:

- Sensor identification
- Sensor name
- Type of sensor
- Physical location of the sensor

You may – in special circumstances – wish to provide a sensor with a new identification number. This may be useful if you for example install a new or updated driver with the same identification number as the old one. You must then changed the identification number on the old sensor to prevent the data from being erased.

For an overview of the identification numbers, see chapter *Driver descriptions*.

→ *Driver descriptions* on page 178

Note

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*This function must be used with care!*

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- 1 Start the **Report Manager** application on the Server computer.
  - *How to start the MDM 500 applications* on page 23
  - *Introduction to Report Manager* on page 30

- 2 Click the **Installed Instruments** button to open the **Installed Instruments** dialog.

→ *Installed Instruments* on page 168

The **Installed Instruments** dialog allows you to view all the sensors currently providing information into your database.

- 3 Use the **Record** and/or **Search** functions at the bottom of the dialog to locate the requested sensor.

**a Record**

This function allows you to leaf through the records in the database. Since this **Record** function is located at the bottom of the dialog and outside the table, it allows you to step through the individual sensors connected to the MDM 500 system. If you have very many sensors connected, you will need to click many times. You may then choose to use the Search function.

**b Search**

This function allows you to search through the records in the database. Since this **Search** function is located at the bottom of the dialog and outside the table, it allows you search through the list of sensors connected to the MDM 500 system. Click in the search field, write the phrase, and then push **Enter**.

- 4 Observe the **New ID** text field.
  - a Enter the new identification number
  - b Click **Change**.
- 5 Click the **X** in the top right corner of the dialog to close it and save all settings.

## How to remove a sensor from the MDM 500 system

This procedure explain how to remove a sensor from the MDM 500 system.

- 1 Open the **Client Manager** dialog on the Client computer(s).  
The Client Manager application is already running.  
→ *How to start the MDM 500 applications* on page 23  
→ *Client Manager application* on page 82
- 2 Verify that the sensor you wish to modify is visible in a sensor form.  
If not, activate the form as described in the applicable procedure.  
→ *How to select which sensors forms to display in the Client Manager* on page 46
- 3 In the relevant sensor form, click the **Disable** button.  
The input from the sensor is now disabled.

- 4 Click **Select Sensor** to open the **Select Sensor** dialog.

→ *Select Sensors* on page 115

The **Select Sensors** dialog box allows you to define which sensors you will set up and/or monitor in the **Client Manager** dialog.

- 5 Remove the sensor from the sensor forms.
- 6 Click **OK** to save the current settings and close the dialog box.
- 7 Access the **Server Manager** dialog on the Server computer.

The Server Manager application is already running, and you need to see the **Server Manager** dialog.

→ *How to start the MDM 500 applications* on page 23

→ *Server Manager application* on page 75

- 8 Click **View Configuration** to open the **View Configuration** dialog.

→ *View Configuration* on page 77

The **View Configuration** dialog controls the entire logging operation.

The left side of the dialog contains a list of all the peripheral sensors currently interfaced to the MDM 500 system. For each sensor, you can expand the structure to see the telegram formats supported and the fields in each telegram.

The right side of the dialog provides you with four logging groups.

By means of the functionality provided, you can place any sensor data in any logging group, and control how often the data shall be recorded.

- 9 Remove the sensor from any logging groups, and make sure that none of the fields have been set up to master any input.
- 10 Click **OK** to save the current settings and close the dialog box.
- 11 Remove the sensor's physical connection to the Client computer.

## Report procedures

This section provides procedures related to report generation using the Report Manager application.

The Report Manager allows you to run queries and print reports based on the stored data. You are also permitted to edit sensor names for the reports.

By means of the Report Manager it is easy to view the data recorded from any given sensor, from any two sensors combined, or from the Cruise Recorder. The data can be printed using the built-in report template, or you can create your own layout. The data can also be copied and pasted into other applications, such as office text editors and spreadsheets.

### Tip

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The data from the various sensors are stored in a standard commercial SQL database. If you have basic knowledge of the SQL language, you may easily create any report using "standard" SQL-tools provided with the Microsoft *SQL Server*. This option very flexible, but requires some SQL programming skills.

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### Topics

- *How to run a report with data from a single sensor* on page 25
- *How to run a report with data from two sensors* on page 27
- *How to run a report with data from a group of sensors* on page 28
- *How to run a report with data from all the sensors* on page 56
- *How to recall and view all the data recorded by a chosen sensor* on page 57
- *How to retrieve information about sensors connected to the MDM 500 system* on page 59

## How to run a report with data from a single sensor

The Report Manager application provided with the MDM 500 system allows you to create numerous report types. All these reports are based on queries made in the Report Manager dialogs, and the reports can be provided on different formats.

This procedure explains how to create a report with data recorded from a single sensor.

**1** Start the **Report Manager** application on the Server computer.

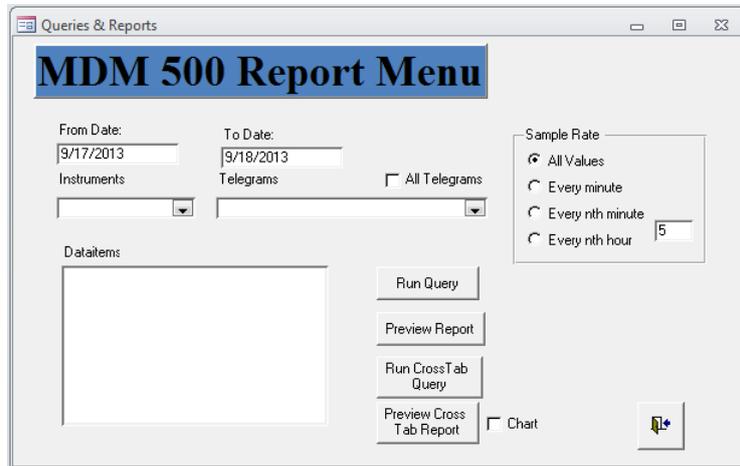
→ *How to start the MDM 500 applications* on page 23

→ *Introduction to Report Manager* on page 30

- 2 In the main dialog, click the **Queries & Reports** button and observe that the **Queries & Reports** dialog is opened

→ *Queries & Reports* on page 154

- 3 Select the start and stop dates for the recorded data you wish to include in the report.



Enter the date on the format defined in your operating system setup. Note that both dates are inclusive.

- 4 Use the **Instrument** drop-down box to select which instrument (sensor) you wish to retrieve data from.
- 5 Use the **Telegram** drop-down box to select which telegrams from the chosen sensor you wish to see.

If you wish to include all the telegrams, click the **All Telegrams** box.

- 6 In the **Dataitem** list, click to select which field(s) in each telegram you wish to include in the report.

If you wish to include more than one field, hold down the **Shift** key and click to select the desired group of fields.

- 7 Click one of the four **Sample Rate** boxes to choose how much data you wish to include in the report.

**All** allows you to include all the data recorded from within the chosen time span, while the other options will reduce the amount of data in your report.

Note

---

*Consider the type of data before you choose to include mean values in your report. For example, mean depth values make sense, while mean positions do not.*

---

- 8 Click one of the four report- and query buttons to generate the report based on the parameters you have entered.

→ *About reports and queries* on page 31

Observe that the report is provided in the Report Manager's host application. For further functionality (including print and export), observe the toolbar.

## How to run a report with data from two sensors

The Report Manager application provided with the MDM 500 system allows you to create numerous report types. All these reports are based on queries made in the Report Manager dialogs, and the reports can be provided on different formats.

This procedure explains how to create a report with data recorded from two sensors.

- 1 Start the **Report Manager** application on the Server computer.
  - *How to start the MDM 500 applications* on page 23
  - *Introduction to Report Manager* on page 30
- 2 In the main dialog, click the **Queries & Reports 2** button and observe that the **Queries & Reports 2** dialog is opened

→ *Queries & Reports 2* on page 157

- 3 Select the start and stop dates for the recorded data you wish to include in the report.

Enter the date on the format defined in your operating system setup. Note that both dates are inclusive.

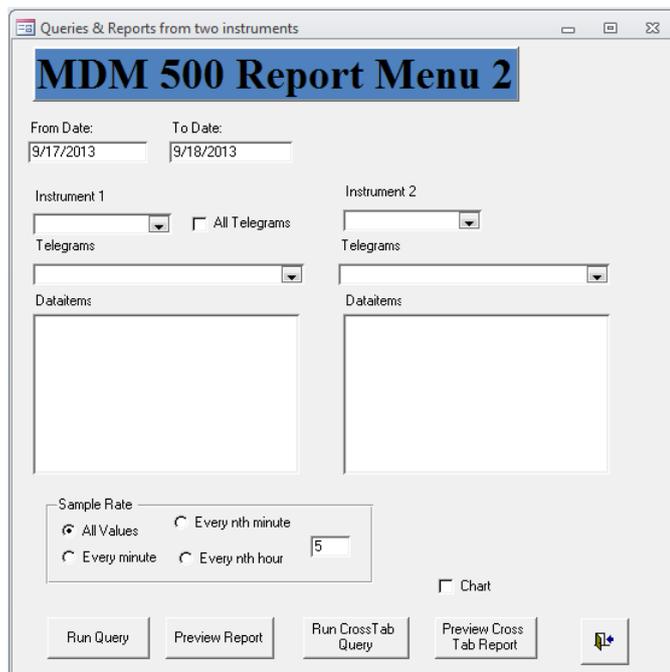
- 4 For each of the two sensors, use the **Instrument** drop-down boxes to select which instrument (sensor) you wish to retrieve data from.

- 5 For each of the two sensors, use the **Telegram** drop-down boxes to select which telegrams from the chosen sensor you wish to see.

If you wish to include all the telegrams from the first sensor, click the **All Telegrams** box.

- 6 In the **Dataitem** list, click to select which field(s) in each telegram you wish to include in the report.

If you wish to include more than one field, hold down the **Shift** key and click to select the desired group of fields.



- 7 Click one of the four **Sample Rate** boxes to choose how much data you wish to include in the report.

**All** allows you to include all the data recorded from within the chosen time span, while the other options will reduce the amount of data in your report.

**Note**

---

*Consider the type of data before you choose to include mean values in your report. For example, mean depth values make sense, while mean positions do not.*

---

- 8 Click one of the four report- and query buttons to generate the report based on the parameters you have entered.

→ *About reports and queries* on page 31

Observe that the report is provided in the Report Manager's host application. For further functionality (including print and export), observe the toolbar.

## How to run a report with data from a group of sensors

The Report Manager application provided with the MDM 500 system allows you to create numerous report types. All these reports are based on queries made in the Report Manager dialogs, and the reports can be provided on different formats.

This procedure explains how to create a report with data recorded from a chosen group of sensors.

- 1 Start the **Report Manager** application on the Server computer.

→ *How to start the MDM 500 applications* on page 23

→ *Introduction to Report Manager* on page 30

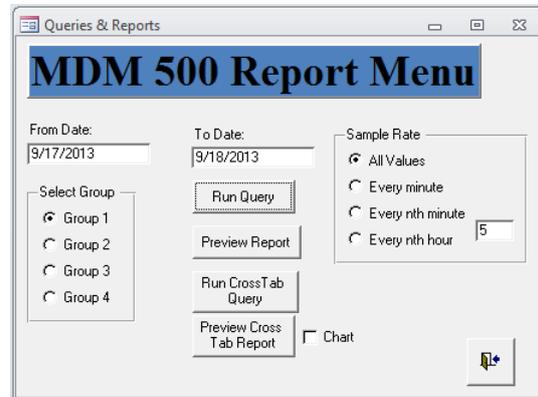
- 2 In the main dialog, click the **Group Queries** button and observe that the **Group Queries** dialog is opened

→ *Group Queries* on page 160

- 3 Select the start and stop dates for the recorded data you wish to include in the report.

Enter the date on the format defined in your operating system setup. Note that both dates are inclusive.

- 4 Click the appropriate box to select which group of sensors you wish to retrieve data from.



- 5 Click one of the four **Sample Rate** boxes to choose how much data you wish to include in the report.

**All** allows you to include all the data recorded from within the chosen time span, while the other options will reduce the amount of data in your report.

Note

---

*Consider the type of data before you choose to include mean values in your report. For example, mean depth values make sense, while mean positions do not.*

---

- 6 Click one of the four report- and query buttons to generate the report based on the parameters you have entered.

→ *About reports and queries* on page 31

Observe that the report is provided in the Report Manager's host application. For further functionality (including print and export), observe the toolbar.

## How to run a report with data from all the sensors

The Report Manager application provided with the MDM 500 system allows you to create numerous report types. All these reports are based on queries made in the Report Manager dialogs, and the reports can be provided on different formats.

This procedure explains how to create a report with data recorded from all the sensors.

- 1 Start the **Report Manager** application on the Server computer.

→ *How to start the MDM 500 applications* on page 23

→ *Introduction to Report Manager* on page 30

- 2 In the main dialog, click the **All Selected Values** button and observe that the **Queries & Reports** dialog is opened

→ *Group Queries* on page 160

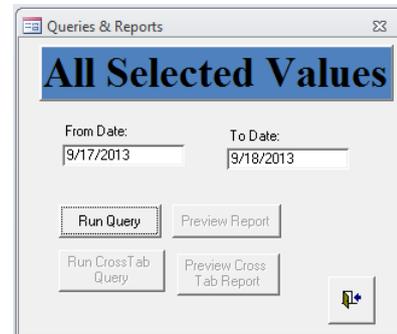
- 3 Select the start and stop dates for the recorded data you wish to include in the report.

Enter the date on the format defined in your operating system setup. Note that both dates are inclusive.

- 4 Click one of the four report- and query buttons to generate the report based on the parameters you have entered.

→ *About reports and queries* on page 31

Observe that the report is provided in the Report Manager's host application. For further functionality (including print and export), observe the toolbar.



## How to recall and view all the data recorded by a chosen sensor

The **Data Values** dialog allows you to retrieve, examine and modify data recorded by a defined sensor. The dialog allows you to click through the currently selected sensors, and provide all relevant information related to:

- Recorded data for each individual data item (part of telegram)
  - Group belonging
- 1 Start the **Report Manager** application on the Server computer.

→ *How to start the MDM 500 applications* on page 23

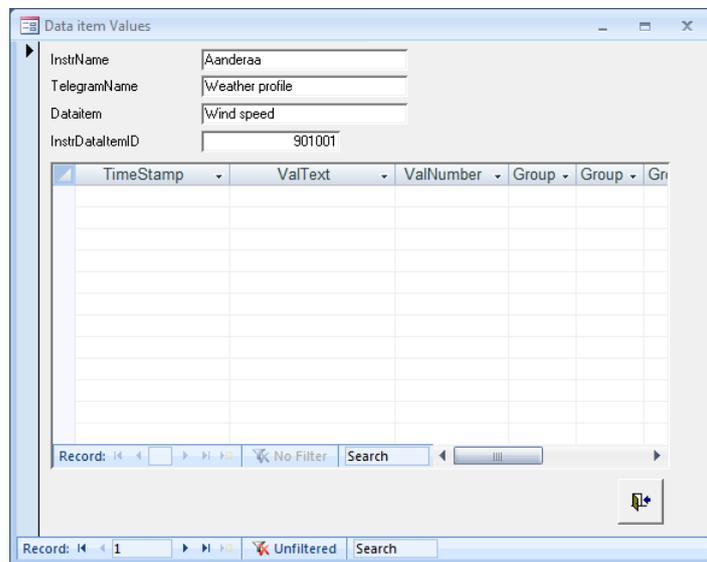
→ *Introduction to Report Manager* on page 30

- 2 Click the **Data Values** button to open the **Data Values** dialog.

→ *Data Values* on page 166

The **Data Values** dialog allows you to view all data values recorded from a specific sensor.

- 3 In the **Data Values** dialog, enter the necessary information to identify the sensor and the telegram. Observe that the resulting information is provided in the table.



The table provides the current data item

information from the sensor. Each line in the table corresponds to a reading from the chosen sensor. Each reading is time stamped.

Tip

If you have many sensors, you may use the **Record** or **Search** functions at the bottom of the dialog.

- 4 Observe that the table functionality allows you to leaf through the rows, and to search in the table.

**a Record**

This function allows you to leaf through the records in the database. Since this **Record** function is located inside the table, it allows you to step through the individual table rows.

**b Search**

This function allows you to search through the records in the database. Since this **Search** function is located inside the table, it allows you to search for information within the data currently provided in the table. Click in the search field, write the phrase, and then push **Enter**.

- 5 Observe the functions at the bottom of the dialog. You can use these to leaf and search through the sensors currently connected to the system

**a Record**

This function allows you to leaf through the records in the database. Since this **Record** function is located at the bottom of the dialog and outside the table, it allows you to step through the individual sensors connected to the MDM 500 system. If you have very many sensors connected, you will need to click many times. You may then choose to use the Search function.

## b Search

This function allows you to search through the records in the database. Since this **Search** function is located at the bottom of the dialog and outside the table, it allows you search through the list of sensors connected to the MDM 500 system. Click in the search field, write the phrase, and then push **Enter**.

## How to retrieve information about sensors connected to the MDM 500 system

The **Installed Instruments** dialog allows you to retrieve, examine and modify the information related to each sensor. The dialog allows you to click through the currently active sensors, and see and/or modify all relevant information related to:

- Sensor identification
- Sensor name
- Type of sensor
- Physical location of the sensor

### 1 Start the **Report Manager** application on the Server computer.

→ *How to start the MDM 500 applications* on page 23

→ *Introduction to Report Manager* on page 30

### 2 Click the **Installed Instruments** button to open the **Installed Instruments** dialog.

→ *Installed Instruments* on page 168

The **Installed Instruments** dialog allows you to view all the sensors currently providing information into your database.

### 3 Use the **Record** and/or **Search** functions at the bottom of the dialog to locate the requested sensor.

#### a Record

This function allows you to leaf through the records in the database. Since this **Record** function is located at the bottom of the dialog and outside the table, it allows you to step through the individual sensors connected to the MDM 500 system. If you have very many sensors connected, you will need to click many times. You may then choose to use the Search function.

#### b Search

This function allows you to search through the records in the database. Since this **Search** function is located at the bottom of the dialog and outside the table, it allows you search through the list of sensors connected to the MDM 500 system. Click in the search field, write the phrase, and then push **Enter**.

- 4** You are permitted to change the following information for each sensor:
  - a** Type of sensor
  - b** Location
  - c** Remarks
- 5** Click the **X** in the top right corner of the dialog to close it and save all settings.

## Sound velocity profile procedures

This section provides procedures related to retrieval and distribution of sound velocity information.

The SVP Manager is a tool for receiving and distributing sound velocity profile (SVP) and conductivity, temperature and depth (CTD) data. It can receive these data from various sensors over a serial line, a network line, or from a file. Data can also be converted and distributed on various formats over the local network to remote recipients.

Provided that the **Enable Storing** function is enabled in the **Configure SVP Manager** dialog, the data is automatically stored in the MDM 500 database once it is imported from the sensor.

### Note

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*The SVP Manager has been replaced by SVP Editor from release 2.0 of MDM 500. The SVP Manager is still included but may be removed in future releases.*

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### Topics

- *How to import and distribute SVP information on page 61*
- *How to read SVP information from a file on page 62*
- *How to add a new sound velocity sensor on page 62*
- *How to edit the input parameters for an existing sound velocity sensor on page 63*
- *How to define a receiving system for SVP information on page 63*
- *How to edit an existing receiving system for SVP information on page 64*
- *How to view or edit the latest sound velocity profile on page 65*
- *How to export the latest sound velocity profile on page 66*

## How to import and distribute SVP information

This procedure explains how to set up the SVP Manager application for automatic import and distribution of sound velocity profile information.

- 1 Start the **SVP Manager** application on the Server computer.
  - *How to start the MDM 500 applications on page 23*
  - *Introduction to SVP Manager on page 30*
  - *SVP Manager application on page 134*
- 2 Make sure that you have defined one or more sensors to provide the SVP information.
  - *How to add a new sound velocity sensor on page 62*
- 3 Make sure that you have defined the necessary instruments to receive the SVP information.
  - *How to define a receiving system for SVP information on page 63*

- 4 In the **Control** field in the **SVP Manager** dialog, click **Configure** to open the **Configure SVP Manager** dialog.  
→ *Configure SVP Manager* on page 148
- 5 Make sure that the **Auto Enable** box is activated.  
The SVP information is only distributed automatically when this box is checked. Alternatively, you must click the **Distribute** button for manual export. If you do this manually, you may edit the profiles before they are distributed.
- 6 If you operate on extended depths, enter a corresponding **Extend to** value.  
This will allow the SVP Manager application to artificially extend the profiles to the requested depth.
- 7 Click **OK** to save the current settings and close the dialog box.

## How to read SVP information from a file

This procedure explains how to read SVP information from a file.

- 1 Start the **SVP Manager** application on the Server computer.  
→ *How to start the MDM 500 applications* on page 23  
→ *Introduction to SVP Manager* on page 30  
→ *SVP Manager application* on page 134
- 2 Make sure that you have defined one or more sensors to provide the SVP information on file format.  
For each sensor, you must also provide the file format.  
→ *How to add a new sound velocity sensor* on page 62
- 3 Click on the sensor name in the **SVP Sources** list.
- 4 Click **Read File**.
- 5 Observe that an operating system dialog opens to collect the file from an available disk.  
The information contained in the file is automatically stored in the MDM 500 database.  
If **Auto Enable** (in the **Configure SVP Manager** dialog) is activated, the information is automatically distributed to all the SVP receivers.
- 6 Click **OK** to save the current settings and close the dialog box.

## How to add a new sound velocity sensor

This procedure explains how to add a new sound velocity sensor to the MDM 500 system.

The **Add SVP Source** dialog is used to define the name, source, location and data type for the sensor to be used.

- 1 Start the **SVP Manager** application on the Server computer.
  - *How to start the MDM 500 applications* on page 23
  - *Introduction to SVP Manager* on page 30
  - *SVP Manager application* on page 134
- 2 In the **SVP Source** field, click **Add** to open the **Add SVP Sources** dialog
  - *Add SVP Source* on page 138
- 3 Enter the name, source, location and data type for the new sound velocity sensor.  
For more information about the parameters, see the dialog description.
- 4 Click **OK** to save the current settings and close the dialog box.

### How to edit the input parameters for an existing sound velocity sensor

This procedure explains how to edit an existing sound velocity sensor to the MDM 500 system.

The **Add SVP Source** dialog is used to edit the name, source, location and data type for the sensor to be used. Note that dialog is identical to the **Add SVP Source** dialog.

- 1 Start the **SVP Manager** application on the Server computer.
  - *How to start the MDM 500 applications* on page 23
  - *Introduction to SVP Manager* on page 30
  - *SVP Manager application* on page 134
- 2 In the **SVP Source** field, click on a sensor, then click **Edit** to open the **Edit SVP Sources** dialog
  - *Edit SVP Source* on page 140
- 3 Edit the name, source, location and/or data type for the sound velocity sensor.  
For more information about the parameters, see the dialog description.
- 4 Click **OK** to save the current settings and close the dialog box.

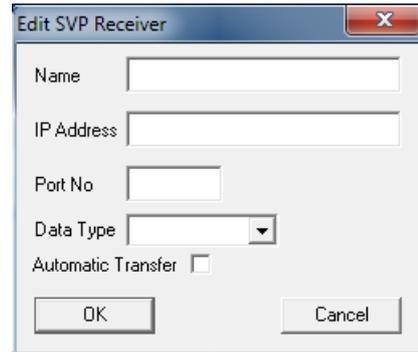
### How to define a receiving system for SVP information

This procedure explains how to define a remote receiving system for sound velocity information. This could be any other instrument – for example a multibeam or single beam echo sounder – that needs this information to provide correct results.

The **Edit SVP Receiver** dialog is used to edit the name, IP address, port number and data type for an existing remote system receiving the sound velocity profile information.

- 1 Start the **SVP Manager** application on the Server computer.
  - *How to start the MDM 500 applications* on page 23
  - *Introduction to SVP Manager* on page 30
  - *SVP Manager application* on page 134
- 2 In the **Receiver** field, click **Add** to open the **Add SVP Receiver** dialog
  - *Edit SVP Receiver* on page 143
- 3 Define the new receiver by adding the name, IP address and port number for the remote instrument.
 

For more information about the parameters, see the dialog description.
- 4 Check the **Automatic Transfer** box to ensure that the sound velocity profiles are automatically transferred to the recipient system.
- 5 Click **OK** to save the current settings and close the dialog box.



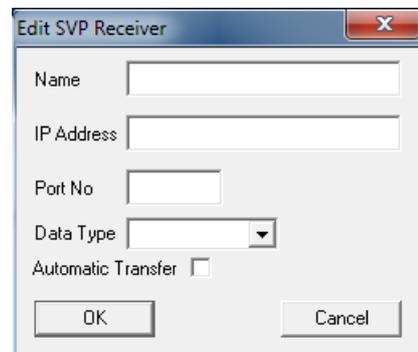
## How to edit an existing receiving system for SVP information

This procedure explains how to edit an existing remote receiving system for sound velocity information. This could be any other instrument – for example a multibeam or single beam echo sounder – that needs this information to provide correct results.

The **Edit SVP Receiver** dialog is used to edit the name, IP address, port number and data type for an existing remote system receiving the sound velocity profile information.

- 1 Start the **SVP Manager** application on the Server computer.
  - *How to start the MDM 500 applications* on page 23
  - *Introduction to SVP Manager* on page 30
  - *SVP Manager application* on page 134
- 2 In the **Receiver** field, click a receiving instrument in the list, then click **Edit** to open the **Edit SVP Receiver** dialog
  - *Edit SVP Receiver* on page 143
- 3 Edit the receiver parameters by changing the name, IP address or port number.
 

For more information about the parameters, see the dialog description.
- 4 Check the **Automatic Transfer** box to ensure that the sound velocity profiles are automatically transferred to the recipient system.
- 5 Click **OK** to save the current settings and close the dialog box.



## How to view or edit the latest sound velocity profile

This procedure explains how to view and/or edit the latest SVP profile.

### Tip

If you wish to edit your profiles before they are distributed to the receivers, you must disable the **Auto Enable** function in the **Configure SVP Manager** dialog. You can manually distribute your edited profile using the **Distribute** button.

- 1 Start the **SVP Manager** application on the Server computer.
  - *How to start the MDM 500 applications* on page 23
  - *Introduction to SVP Manager* on page 30
  - *SVP Manager application* on page 134
- 2 Observe that the time of latest SVP profile is identified in the **Last SVP received at** field
- 3 Click **View Stored** to open the **SVP Viewer** dialog.

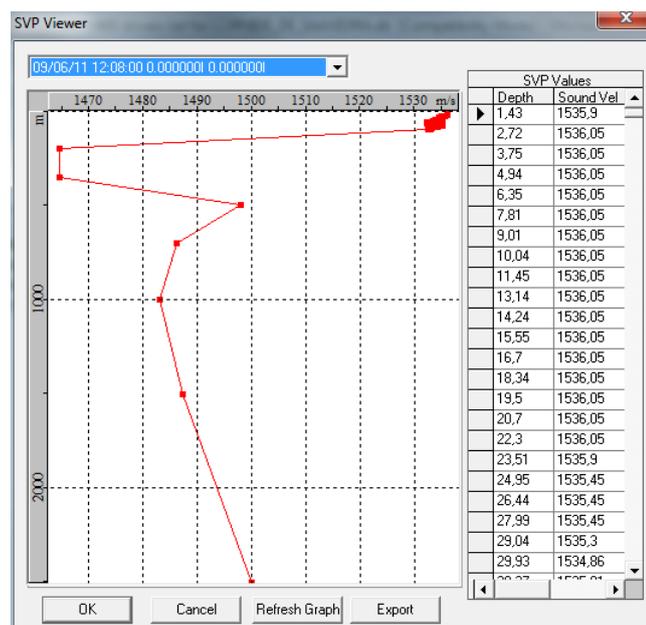
The **SVP Viewer** dialog displays the latest sound velocity profile stored in the database.

Individual points in the profile can be edited by changing the values in the table. This feature can be used to remove obvious errors in the profile. Points cannot be removed, but changing the value of individual points in the profile equal to the previous or next value has the same effect as removing it.

If you right-click in the curve, a short-cut menu appears.

- *SVP Viewer short-cut menu* on page 147
- *SVP Viewer* on page 145

- 4 Click **OK** to save the current settings and close the dialog box.



5 Click **View** to open the **SVP Edit** dialog.

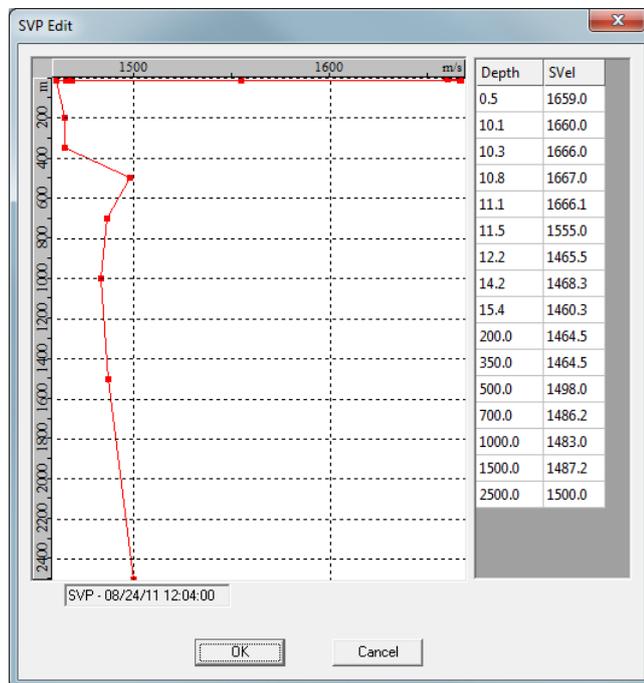
The **SVP Edit** dialog displays the latest received sound velocity profile.

Individual points in the profile can be edited by changing the values in the table. This feature can be used to remove obvious errors in the profile. Points cannot be removed, but changing the value of individual points in the profile equal to the previous or next value has the same effect as removing it.

If you right-click in the curve, a short-cut menu appears.

→ *SVP Edit short-cut menu* on page 145

→ *SVP Edit* on page 143



6 Click **OK** to save the current settings and close the dialog box.

## How to export the latest sound velocity profile

This procedure explains how to export the latest SVP profile.

### Tip

If you wish to edit your profiles before they are distributed to the receivers, you must disable the **Auto Enable** function in the **Configure SVP Manager** dialog. You can manually distribute your edited profile using the **Distribute** button.

1 Start the **SVP Manager** application on the Server computer.

→ *How to start the MDM 500 applications* on page 23

→ *Introduction to SVP Manager* on page 30

→ *SVP Manager application* on page 134

2 Observe that the time of latest SVP profile is identified in the **Last SVP received at field**

3 Click **View Stored** to open the **SVP Viewer** dialog.

The **SVP Viewer** dialog displays the latest sound velocity profile stored in the database.

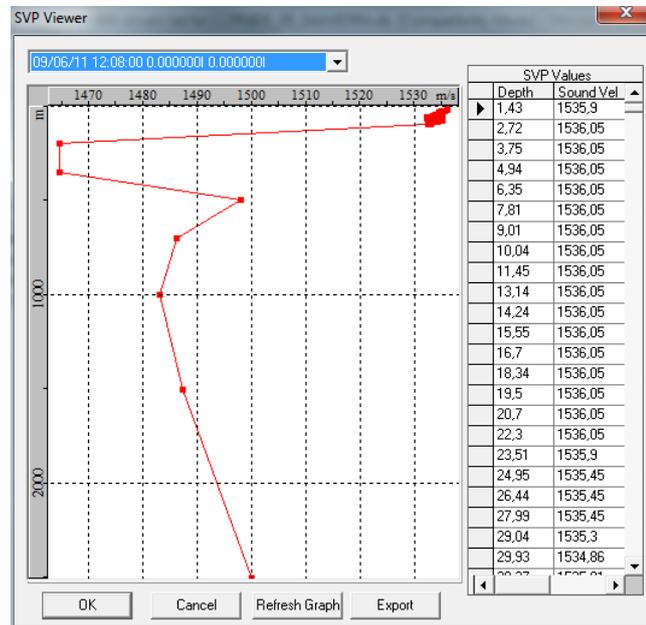
Individual points in the profile can be edited by changing the values in the table. This feature can be used to remove obvious errors in the profile. Points cannot be removed, but changing the value of individual points in the profile equal to the previous or next value has the same effect as removing it.

If you right-click in the curve, a short-cut menu appears.

→ *SVP Viewer short-cut menu* on page 147

→ *SVP Viewer* on page 145

4 Click **OK** to save the current settings and close the dialog box.



## Software procedures

This section provides procedures related to software installation and maintenance.

Note that the majority of these procedures are provided in the *Software installation* chapter.

### Topics

- *Software installation procedure* on page 68
- *How to restore the operating system* on page 68
- *How to troubleshoot the device driver software* on page 69

### Related topics

- *Software installation* on page 70

## Software installation procedure

In order to install the complete Kongsberg MDM 500 system on a Server computer and one or more Client and Client Monitor computers, observe the following steps. Each step refers to a more detailed procedure.

- 1 Install the Microsoft® SQL Database server on the Server computer.  
→ *Installation of the Microsoft® SQL Database server* on page 72
- 2 Install the MDM 500 database on the Server computer.  
→ on page
- 3 Install the MDM 500 Server Manager on the Server computer.  
→ *Installation of the MDM 500 Server Manager* on page 74
- 4 Install the MDM 500 Client Manager on the Client and Client Monitor computers.  
→ *Installation of the MDM 500 Client Manager* on page 74

## How to restore the operating system

### Purpose

Each computer provided by Kongsberg Maritime is equipped with a system restore DVD. This DVD can be used to restore the computer hard disk in case of serious errors or hard disk replacements.

### Note

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*This procedure will delete all data on your hard disk. Use this procedure only for emergency restore.*

---

### Procedure

- 1 Insert the Windows® 7 DVD.
- 2 Re-boot the computer.
- 3 When prompted, press any key on the keyboard to boot from the DVD or USB disk.

- 4 When the first installation screen appears, press **Enter**.
- 5 On the second installation screen, select **Repair Computer**.
- 6 In the **System Recovery Options** window that appears, click **Restore your computer using a system image ...** and click **Next**.
- 7 Accept the defaults in the **Re-image your computer window** dialog, and click **Next**.
- 8 Follow the on-screen instructions to complete the restore operation.

## How to troubleshoot the device driver software

The device drivers in the MDM 500 system have been designed using all the information available. However, since the physical products from third party manufacturers are not always available to the developers during software testing, there may be ambiguities in the communication formats from the equipment and in the documentation at hand.

To provide the correct data format, two applications are made available, *SerialLogger* and *UDPLogger*. These applications will log the actual data flow from the sensor to a file that can be sent to Kongsberg Maritime to help correct the device driver software.

- 1 Insert the CD with the MDM 500 software into the DVD player.
- 2 Use any file manager application provided to locate the `readme.txt` file located on the CD.
- 3 Open the `readme.txt` to find additional information.
- 4 Open a command prompt, and use DOS commands to move to the relevant folder on the CD.
- 5 To collect data from a serial line, run this command from the command prompt:  
`SerialLogger 2,9600,8,0,1`  
Replace the communication parameters as required
- 6 To collect data from a network interface, run this command from the command prompt:  
`UDPLogger 10003`  
Replace the UDP port as required
- 7 Collect the log files, and send them to Kongsberg Maritime.

# Software installation

These sections explain how to install and maintain the main operational software on the Kongsberg MDM 500.

We assume that you are familiar with the Windows® 7 operating system, and conversant with network addressing and communication principles.

## Topics

- *Overall MDM 500 software installation procedure* on page 70
- *Network setup* on page 71
- *Software installation procedures* on page 71
  - *Installation of the Microsoft® SQL Database server* on page 72
  - *Installation of the MDM 500 Server Manager* on page 74
  - *Installation of the MDM 500 Client Manager* on page 74

## Overall MDM 500 software installation procedure

In order to install the complete Kongsberg MDM 500 system on a Server computer and one or more Client and Client Monitor computers, observe the following steps. Each step refers to a more detailed procedure.

- 1 Install the Microsoft® SQL Database server on the Server computer.  
→ *Installation of the Microsoft® SQL Database server* on page 72
- 2 Install the MDM 500 database on the Server computer.  
→ on page
- 3 Install the MDM 500 Server Manager on the Server computer.  
→ *Installation of the MDM 500 Server Manager* on page 74
- 4 Install the MDM 500 Client Manager on the Client and Client Monitor computers.  
→ *Installation of the MDM 500 Client Manager* on page 74

## Network setup

On most computers delivered from Kongsberg Maritime there are more than one local area network connection provided. Only one network connection is enabled, the others are disabled.

If additional network connections are required, they must first be enabled in the operating system.

Computers delivered from Kongsberg Maritime have been assigned static Internet Protocol 4 (IP4) addresses, not Dynamic Host Configuration Protocol (DHCP). This has been done to make sure that the delivered system will work in a stand-alone environment. Read chapter *Network Security* in the MDM 500 end user manuals before attaching the computers to your local area network.

### Tip

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If the access to the MDM 500 database is lost after changing the network address, it is most likely because the Open Database Connectivity (ODBC) connection has changed.

In Windows® 7, The ODBC connection can be verified using the following application:

*C:\Windows\System32\odbcad32.exe.*

On the **System DSN** tab, check entry **MDM4**.

---

The file *C:\Windows\System32\drivers\etc\hosts* has been edited by Kongsberg Maritime to allow the use of logical names rather than IP4 addresses when communicating with other MDM 500 computers. If the IP4 addresses are later changed, for example by allowing DHCP to set the addresses automatically, these entries must be removed.

Changing the network setup requires that the MDM 500 system must be tested afterwards. When there is a connection between the Server and the Client computers, and data from the sensors are stored in the database, the setup has been completed successfully.

## Software installation procedures

This section provides the software installation procedures.

### Topics

- *Installation of the Microsoft® SQL Database server on page 72*
- *on page*
- *Installation of the MDM 500 Server Manager on page 74*
- *Installation of the MDM 500 Client Manager on page 74*

## Installation of the Microsoft® SQL Database server

Whenever computers are provided by Kongsberg Maritime, the Microsoft® *SQL Server 2008 R2* is provided readily installed.

This procedure explains how to install the Microsoft® *SQL Server* on a new computer.

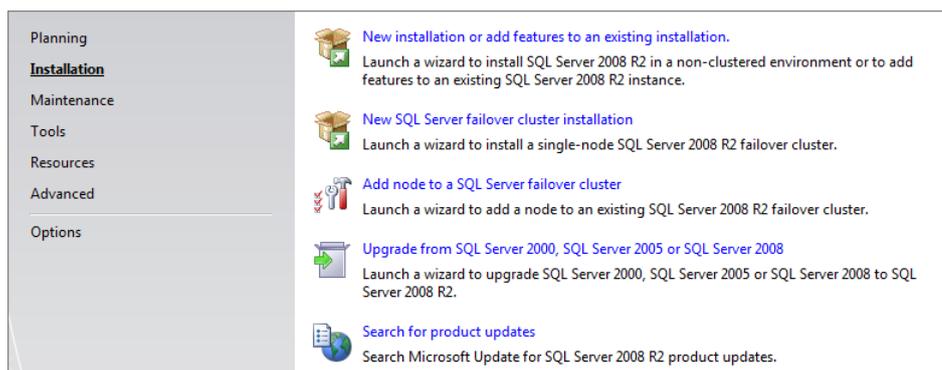
### Important

---

Whenever a screen capture is not shown in the instructions, it means that the default value(s) provided by the relevant dialog shall be used.

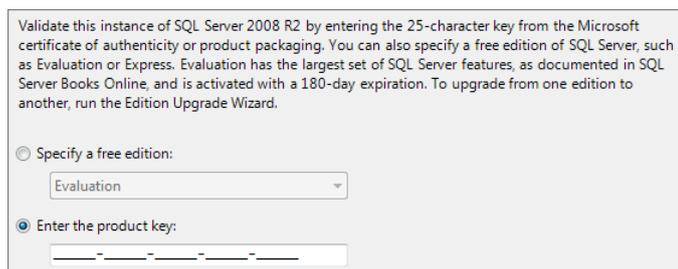
---

- 1 Insert the DVD labelled *Microsoft SQL Server 2008 R2* into the DVD player on the computer.
- 2 If the start-up program does not start automatically, start the file *setup.exe* on the DVD.
- 3 Observe the dialog provided.



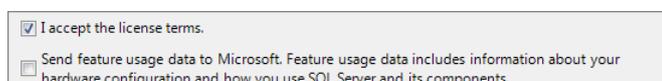
Click **New installation or add features to an existing installation**, then click **Next**.

- 4 Observe the **Product Key** dialog provided.



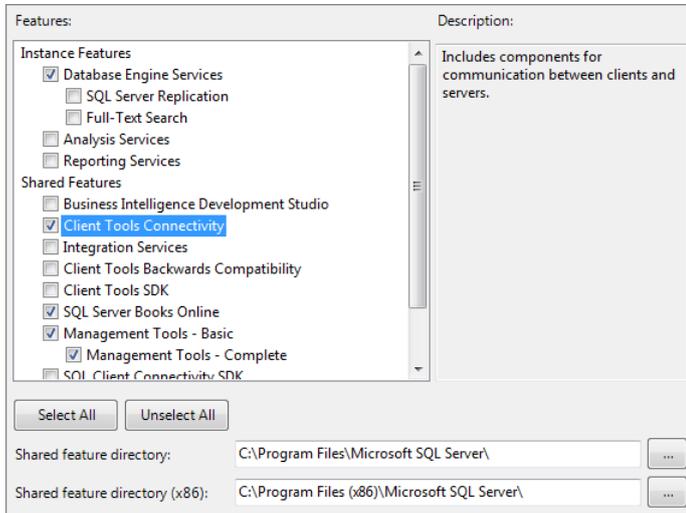
Enter the serial number found inside the DVD cover, then click **Next**.

- 5 Observe the **License Terms** dialog provided.



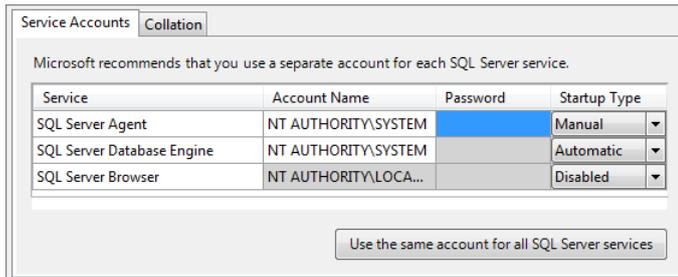
Click the appropriate box to accept the terms, then click **Next**.

6 Observe the **Feature Selection** dialog provided.



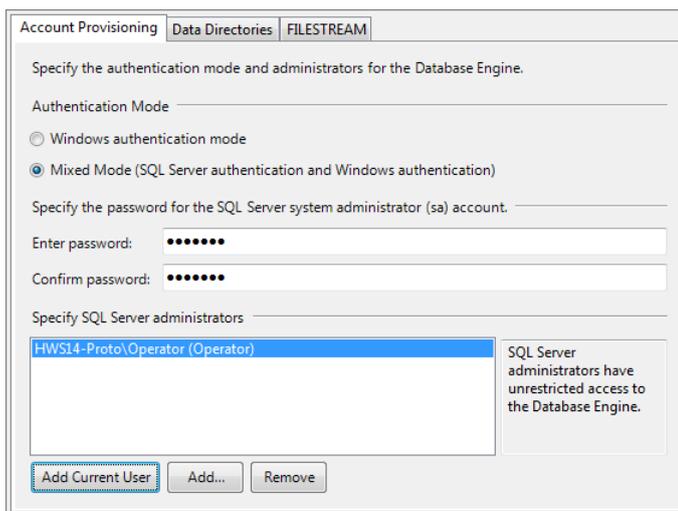
Click to choose the options shown in the screen capture, then click **Next**.

7 Observe the **Server Configuration** dialog provided.



Choose the Account Name as shown in the screen capture, then click **Next**.

8 Observe the **Database Engine Configuration** dialog provided.



Set Authentication Mode to *Mixed Mode*.

Set the password to `simrad0`.

Click **Add Current User** to add the current user to the list, then click **Next**.

- 9 Observe the **Complete** dialog provided.  
This dialog will appear when the installation is complete.
- 10 Click **Close** to exit.

## Installation of the MDM 500 Server Manager

Whenever computers are provided by Kongsberg Maritime, the MDM 500 Server Manager is provided readily installed.

This is the procedure explains how to install the MDM 500 Server Manager on a new computer, or update the installation on an existing Server computer.

- 1 Insert the CD with the MDM 500 software into the DVD player.
- 2 Allow the installation wizard to start automatically.  
If the CD-ROM does not start immediately, use any file manager application provided to start program *MDM500\_Server.exe* located on the CD.
- 3 Follow the instructions provided by the installation wizard.

## Installation of the MDM 500 Client Manager

Whenever computers are provided by Kongsberg Maritime, the MDM 500 Client Manager is provided readily installed.

This is the procedure explains how to install the MDM 500 Client Manager on a new computer, or update the installation on an existing Client or Client Monitor computer.

- 1 Start *Internet Explorer* (or another web browser) on the Client computer.
- 2 In the address field, enter the URL to the Server computer.

*Example 5 Server computer URL*

http://MyMDM500Server

- 3 Follow the instructions provided by the website that opens.

# Functions and dialogs

This chapter presents a detailed description of each function and dialog box used by the MDM 500. Whenever applicable, references are made to the *Operational procedures* chapter.

You do not need to have an in-depth knowledge of these functions and dialog boxes to use the MDM 500. The information in this chapter is for reference only.

## Topics

- *Server Manager application* on page 75
- *Client Manager application* on page 82
- *SVP Editor application* on page 128
- *SVP Manager application* on page 134
- *Report Manager application* on page 150
- *Watchdog application* on page 175

## Server Manager application

The Server Manager application is the main software program used on the Server computer.

### Topics

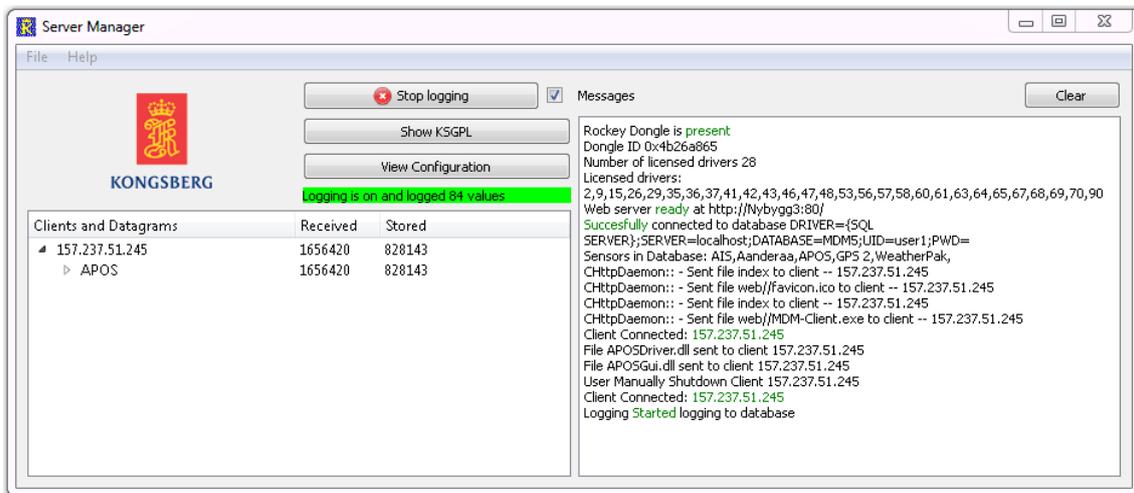
- *Server Manager* on page 75
- *View Configuration* on page 77

## Server Manager

The **Server Manager** dialog is opened when you start the **Server Manager** application. It is the main dialog provided by the application.

### Purpose

The **Server Manager** dialog allows you to control the entire logging operation made by the MDM 500 system.



## Description

The **Server Manager** is the main dialog in the Sever Manager application. All other Client and Client Manager computers – with input from peripheral sensors – are controlled from this application.

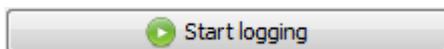
The **Server Manager** provides the following features:

- **Start/Stop Logging:** Logging is controlled with a single on/off button.
- **View Configuration:** A dedicated dialog can be opened to view the configuration.
- **Clients and Datagrams:** A list providing all network items and their data is provided.
- **Messages:** A message field is used to provide messages related to the logging.

## Parameters

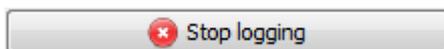
### 1 Start Logging

This is an on/off switch provided to start or stop the logging activity. The text in the button reflects the current mode. When logging is started or stopped, a message related to this is presented in the Message field.



### 2 Stop Logging

See the description for the **Start Logging** button.



### 3 Show KSGPL

This button opens the **KSGPL Export** dialog where you can export data to Kongsberg SIS Graphical Programming Language (KSGPL).

### 4 Clients and Datagrams

This list provides information related to the MDM 500 system's configuration.

The rows in the **Network items** table identifies each connected sensor.

The table provides one row for each sensor connected to the system. The row identifies the sensor by its name, and the number of received and stored telegrams. Each row is thus dynamic, and you can use this information to verify that you are in fact receiving data from the various sensors.

If data flow from a sensor stops, and a time-out occurs, the background colour of the applicable field changes to red.

Depth Sounder	count 5992
---------------	------------

### 5 Remember logging for next session

Set this option on if you want Server Manager to remember if logging was on last time you closed it. Default is off.

### 6 Messages

This field provides dynamic information related to the operation of the MDM 500 system. The field provides:

- Actions
- Errors
- Time-outs

→ *About the message system* on page 32

### Related topics

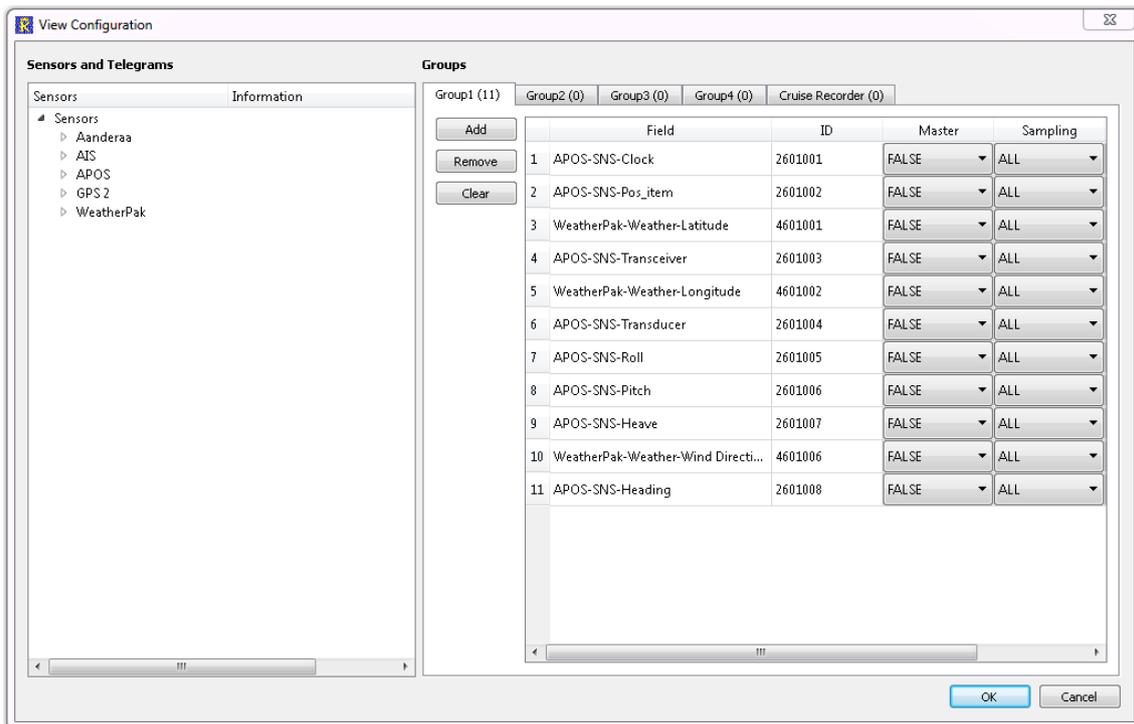
- *About the message system* on page 32
- *View Configuration* on page 77

## View Configuration

The **View Configuration** dialog is opened when you click the **View Configuration** button in the **Server Manager** dialog.

### Purpose

The **View Configuration** dialog allows you to group the sensor data you save in the database. You can also define how often you wish to save the individual telegrams received from the sensors.



## Description

The **View Configuration** dialog controls the entire logging operation.

The left side of the dialog contains a list of all the peripheral sensors currently interfaced to the MDM 500 system. For each sensor, you can expand the structure to see the telegram formats supported and the fields in each telegram.

The right side of the dialog provides you with four logging groups.

By means of the functionality provided, you can place any sensor data in any logging group, and control how often the data shall be recorded.

## Parameters

### 1 Sensors and telegrams

This list reflects the current availability of sensors. Click on the small triangles to open (and close) the tree structure. The supported telegram formats are listed under each sensor.

### 2 Add

Click once on a telegram format, then click this button to add the selected telegram to the respective group. The same telegram format can be connected to many groups simultaneously.

### 3 Remove

Click once on a telegram format in the logical group, then click this button to remove the format from the group.

### 4 Clear

This button will remove all the telegrams in the group.

## 5 Groups

You can organize the data in four logging groups. These are identified as Group 1 through Group 4. The logging groups are used by the Report Manager, and allows you to create reports with only a selected number of sensors in each group.

You can change the group configuration in the Report Manager configuration.

→ *Data Values* on page 166

### Related topics

- *Server Manager* on page 75
- *Report Manager application* on page 150
- *Data Values* on page 166

## Groups

The data recorded by the MDM 500 can be organized in four logging groups. By means of the **View Configuration** dialog, you can control which sensor data (telegrams) that is saved in each group, and the interval of the samples.

These groups are later used during reporting, as a dedicated report allows you to retrieve information from a group of sensors. By means of such logging groups, you may collect the information from related sensors.

	Field	ID	Master	Sampling	Interval
1	APOS-SNS-Clock	2601001	TRUE	MSECONDS	6
2	APOS-SNS-Pos_item	2601002	FALSE	ALL	0
3	APOS-SNS-Transceiver	2601003	FALSE	ALL	0
4	APOS-SNS-Transducer	2601004	FALSE	ALL	0
5	APOS-SNS-Roll	2601005	FALSE	ALL	0
6	Pitch	2601006	FALSE	ALL	0

### Note

*The groups you define here may be changed in the Report Manager application. The Report Manager also provides a feature that allows you to retrieve information about the logging groups.*

→ *Data Values* on page 166

→ *Logging Groups* on page 170

## 1 Field

This column identifies the sensor, selected telegram, and the information provided by the telegram.

## 2 ID

This column identifies the sensor, the selected telegram, and the information using the sensor identification number.

→ *Driver, sensor and data field identification numbers* on page 179

## 3 Master

This parameter allows the settings identified for the relevant sensor (data item) to be used for the other sensors in the same group. The following options are available:

- a True:** The relevant sensor (data item) is set up as Master to share its data recording parameters (Sampling and Interval). In order to inherit these settings, the **Sampling** parameter for the other sensors must be set to *Slave*.
- b False:** The relevant sensor will not share any parameters.

Only one of the sensor connected to any given group can be set up as Master. The status for all the other sensors in the same group will then automatically be set to *False*.

### Note

---

*The information provided by the Master data item will always be logged first. The other data items will then be logged in the order they appear in the group. For this reason, we recommend that the Master data item is placed at the top of each group.*

---

## 4 Sampling

This parameter controls how much of the data provided by the sensor that are saved to the database. The following options are available:

- a All**

All data telegrams received from the sensor are saved to the database.
- b MSeconds**

Only the telegrams received every given millisecond will be stored. The interval (number of milliseconds between each capture) is controlled by the **Interval** parameter.
- c Sample**

Only every “x” telegram are saved, for example every fifth. The interval is controlled by the **Interval** parameter.
- d Slave**

The **Sampling** and **Interval** parameters are inherited from the sensor (data item) currently set up as Master.

## 5 Interval

This parameter controls interval between each saved data telegram. The parameter field is only activated when **Sampling** is set to *MSeconds* or *Sample*. You are then permitted to enter any valid integer.

*Example 6 Sample and Interval settings*

If you only wish to save the telegrams provided every second, set **Sampling** to *MSeconds* and **Interval** to *1000*.

If you only wish to save every tenth telegram, set **Sampling** to *Sample* and **Interval** to *10*.

## Client Manager application

The Client Manager application is the main software program used on the Client and Client Monitor computers.

### Topics

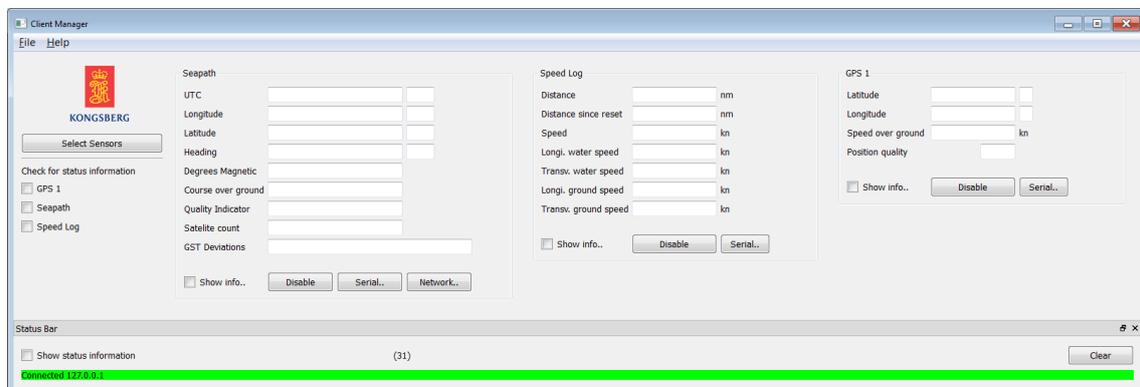
- *Client Manager* on page 82
- *Select Sensors* on page 115
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123

## Client Manager

The **Client Manager** dialog is opened when you start the **Client Manager** application. It is the main dialog provided by the application.

### Purpose

The **Client Manager** dialog allows you to define which sensors you wish to connect to the MDM 500 system. For each sensor input, you can set up the reception parameters, and you can disable or enable the data flow.



### Description

The **Client Manager** is the main dialog in the Client Manager application. All peripheral sensors connected to the Client computer are controlled using this application and dialog.

The **Client Manager** provides the following features:

- **File:** This menu allows you to close the application and view additional information related to the sensor data.
- **Help:** This menu help topics.
- **Sensor data forms:** These rectangular fields providing the information received from maximum six peripheral sensors.
- **Select Sensors:** This button allows you to choose which sensors to be shown in sensor data forms in the dialog.

- **Status Bar:** This bottom part of the dialog offers Information related to and issued by the sensor drivers.
- **Status switches:** There is one status switch for every sensor connected to the Client computer. Each switch enables the status information from the respective sensor to be presented in the Status Bar.

## Parameters

### 1 File menu

The **File** menu offers two choices:

- a Exit:** Closes down the application
- b Status Bar:** Opens and closes the Status Bar at the bottom of the dialog.  
→ *Status bar* on page 84

### 2 Help menu

The **Help** menu offers one choice:

- a About:** Provides information about the current software release.

### 3 Select Sensors

The **Select Sensors** button opens the **Select Sensors** dialog.

The **Select Sensors** dialog box allows you to define which sensors you will set up and/or monitor in the **Client Manager** dialog.

→ *Select Sensors* on page 115

### 4 Check for status information

Each of the peripheral sensors currently connected to the Client computer provides the data on various telegram formats. Check one of these options to view the telegrams – and other relevant information – in the Status Bar text field at the bottom of the **Client Manager** dialog.

→ *Status bar* on page 84

### 5 Sensor forms

The sensor forms in the **Client Manager** dialog are used to display the information received from each sensor. This information is provided in text fields specific for each sensor type and the telegrams that are received. For each sensor, you can click to view additional information, disable the input from the sensor, and set up the communication parameters.

Due to the fact that the **Client Manager** dialog can only show six sensor data fields simultaneously in normal mode, you may need to enable or disable one or more sensor forms in the **Select Sensors** dialog. If you need to see more than six sensor forms, consider using Floating mode or a second Client computer.

#### Note

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*Even if the data from a sensor is not shown in a dedicated form in the **Client Manager** dialog, the MDM 500 will still be able to receive and log the data from it.*

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It is possible to copy and paste information from the text fields and to a text editor. To do this, place the cursor in the text field you wish to copy, and double-click.

## Related topics

- *Status bar* on page 84
- *Aanderaa sensor form* on page 85
- *AIS sensor form* on page 86
- *APOS sensor form* on page 88
- *Bridgemaster sensor form* on page 89
- *Depth sounder sensor form* on page 91
- *DESO25 sensor form* on page 92
- *EK 60 sensor form* on page 94
- *Generic sensor form* on page 95
- *GPS sensor form* on page 95
- *Gyro sensor form* on page 96
- *ITI sensor form* on page 98
- *MRU sensor form* on page 99
- *Multibeam sounder sensor form* on page 100
- *Multibeam sounder 2 sensor form* on page 101
- *Scanmar sensor form* on page 102
- *Seapath sensor form* on page 103
- *SeapathNav sensor form* on page 105
- *Single beam sounder sensor form* on page 93
- *Simrad FS sensor form* on page 106
- *SmartSV sensor form* on page 107
- *Speed Log sensor form* on page 108
- *ThermoFluor sensor form* on page 109
- *Vaisala sensor form* on page 110
- *VmDAS ADCP sensor form* on page 111
- *Water temperature sensor form* on page 112
- *Weather PAK sensor form* on page 113
- *Wind sensor form* on page 114

## Status bar

The Status Bar is located the bottom of the Client Manager dialog. To open the Status Bar, click **File** → **Status Bar**.

The purpose of the Status Bar is to provide information generated by the Sensor Drivers.



When opened and activated, the text field in the Status Bar provides messages generated by the Sensor Drivers currently in use on the computer. To choose which Sensor Driver to contribute to these messages, check the applicable sensors using one of the status switches at the top of the **Client Manager** dialog.

The following information is provided:

- Telegrams in ASCII format
- Messages from the Sensor Driver(s)

### Parameters

#### 1 Show status information

Check this box to see the status information from the selected sensors.

#### 2 Clear

Click this button to empty the message field.

#### 3 Connected

The green line indicates that the computer is connected to the Server computer in the MDM 500 system. The IP address provided is the Server computer's address.

#### 4 Operating systems controls

Two standard operating system controls are provided in the top right corner of the Status Bar. One is used to close the Status Bar. The other is used to disconnect the Status Bar and generate it as a separate dialog.

If you close the Status Bar, you can reopen it by clicking **File** → **Status Bar**.

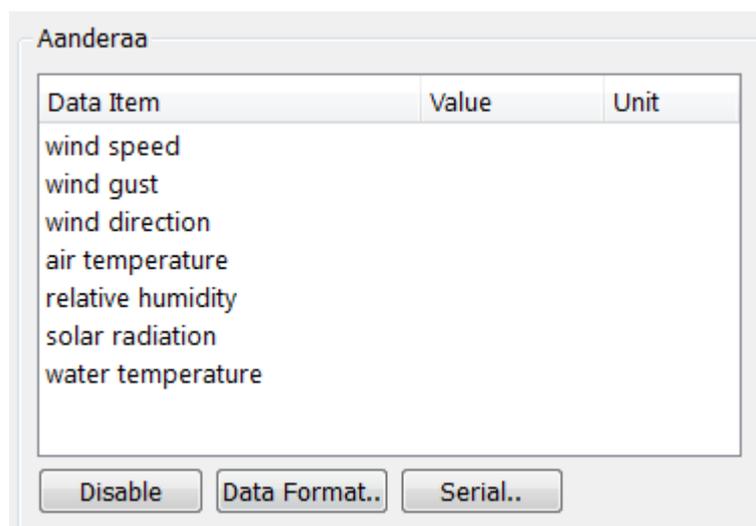
### Related topics

- *About the message system* on page 32

### Aanderaa sensor form

Whenever an Aanderaa weather station is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 Wind speed
- 2 Wind gust
- 3 Wind direction
- 4 Air temperature
- 5 Relative humidity
- 6 Solar radiation



**7** Water temperature**8** **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

**9** **Data format**

This button opens the **Aanderaa Configuration** dialog. This dialog allows you to define the data item names in the datagram. Edit the **Name** fields in the table to change the names. The names must match the output data from the sensor.

**10** **Serial**

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

**Related topics**

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

**AIS sensor form**

Automatic Identification System (AIS) is an automatic tracking system used on ships and by vessel traffic services for identifying and locating vessels by electronically exchanging data with other nearby ships and AIS base stations.

Whenever an AIS system is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 Maritime Mobile Service Identity (MMSI)
- 2 Latitude

The screenshot shows a dialog box titled "AIS" with the following fields and buttons:

- MMSI: [Text Input Field]
- Latitude: [Text Input Field] deg
- Longitude: [Text Input Field] deg
- Speed Over Ground: [Text Input Field] m/s
- Heading: [Text Input Field] deg
- Course Over Ground: [Text Input Field] deg
- Nav Status: [Text Input Field]
- Buttons: Disable, Serial.., Network..

3 Longitude

4 Speed over ground (SOG)

5 Heading

6 Course over ground (COG)

7 Nav status

**8 Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

**9 Serial**

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

**10 Network**

Click this button to open the **LAN Port Setup** dialog.

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

**Related topics**

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### APOS sensor form

Whenever a Kongsberg HPR or HiPAP system is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 Positioning system (choose type, Super Short Base Line or Long Base Line)
- 2 Time
- 3 TP code
- 4 Status
- 5 Orientation
- 6 SW filter
- 7 Coordinate system
- 8 X coordinate
- 9 Y coordinate
- 10 Depth
- 11 **Disable**

The screenshot shows the APOS sensor form with the following fields and buttons:

- Positioning system: SSBL (dropdown menu)
- Time: [text field]
- TP code: [text field]
- Status: [text field]
- Orientation: [text field]
- SW filter: [text field]
- Coord. sys: [text field]
- X coordinate: [text field] m
- Y coordinate: [text field] m
- Depth: [text field] m
- Buttons: Disable, Serial.., Network..

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

### 12 Serial

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### 13 Network

Click this button to open the **LAN Port Setup** dialog.

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

**Related topics**

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

**Bridgemaster sensor form**

The form is titled "Radar" and is divided into three main sections:

- Own Ship Data:** Contains four text input fields: True Heading, True Course, Speed, and Drift.
- Radar System Data:** Contains ten text input fields: Origin 1 Range, Origin 1 Bearing, VRM1 Range, EBL1, Origin 2 Range, Origin 2 Bearing, VRM2 Range, EBL2, Cursor Range, and Cursor Bearing.
- Tracked Target Message:** Contains ten text input fields: Target Number, Target Distance, Target True Bearing, Target Speed, Target True Course, Distance of CPA, Time to CPA, Target Name, Target Status, and Time of Data.

At the bottom of the form, there are three buttons: "Disable", "Serial..", and "Network..".

Whenever a Bridgemaster radar system is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 Own ship data:
  - True heading

- True course
  - Speed
  - Drift
- 2 Radar system data:**
- Origin 1 range
  - Origin 1 bearing
  - VRM1 range (Variable Range Marker)
  - EBL1 (Electronic Bearing Line)
  - Origin 2 range
  - Origin 2 bearing
  - VRM2 range (Variable Range Marker)
  - EBL2 (Electronic Bearing Line)
  - Cursor range
  - Cursor bearing
- 3 Tracked target message:**
- Target number
  - Target distance
  - Target true bearing
  - Target speed
  - Target true course
  - Distance of CPA (Closest Point of Approach)
  - Time to CPA (Closest Point of Approach)
  - Target name
  - Target status
  - Time of data
- 4 Disable**
- Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.
- Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.
- 5 Serial**
- Click this button to open the **Serial Port Setup** dialog.
- The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems. When the Client Manager application is run on a Client Monitor computer, this option is not available.
- 6 Network**
- Click this button to open the **LAN Port Setup** dialog.

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### Depth sounder sensor form

Whenever a generic depth sounder (depth finder) is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog.

The text fields in the sensor form depend on the data items (fields) provided by the telegram(s) that are supported. In some cases, text fields may be empty. That is because the information the text field was prepared for is not provided by the telegram format.

The form provides the following text fields and functions:

- 1 Sentence (choose which of the depths you wish to see)
- 2 Depth
- 3 Graphic presentation
- 4 **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

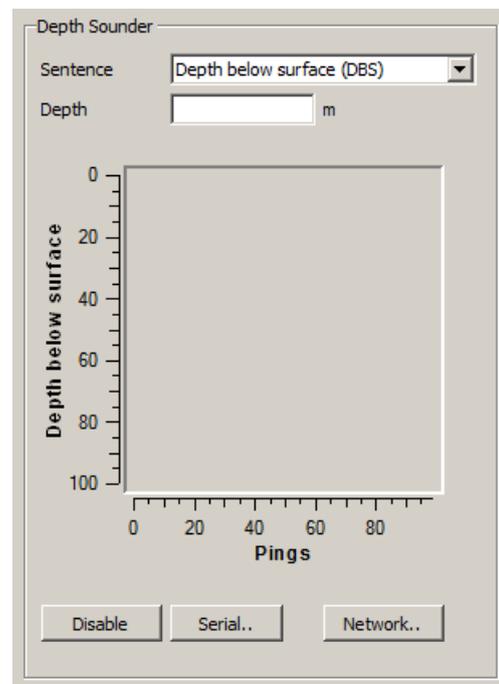
Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

- 5 **Serial**

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.



## 6 Network

Click this button to open the **LAN Port Setup** dialog.

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

## DESO25 sensor form

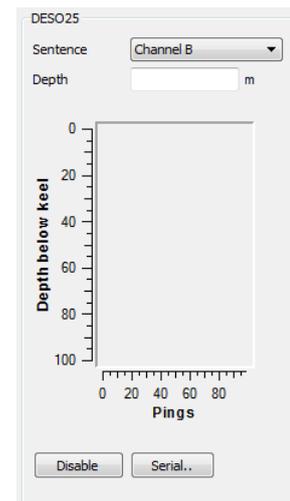
Whenever a DESO 25 single beam echo sounder from Atlas Hydrographic GmbH is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog.

The form provides the following text fields and functions:

- 1 Sentence (choose which of the channels you wish to see)
- 2 Depth
- 3 Graphic presentation
- 4 **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.



## 5 Serial

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122

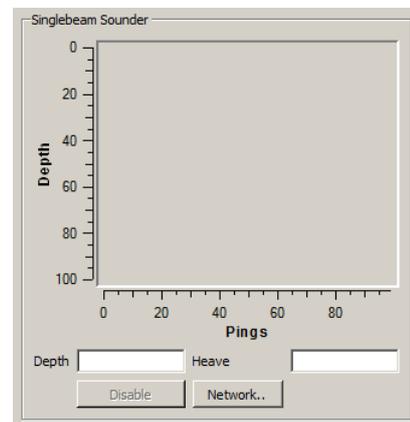
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### Single beam sounder sensor form

Whenever a single beam hydrographic echo sounder is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog.

The text fields in the sensor form depend on the data items (fields) provided by the telegram(s) that are supported. In some cases, text fields may be empty. That is because the information the text field was prepared for is not provided by the telegram format.

The form provides the following text fields and functions:



- 1 Graphic presentation
- 2 Depth
- 3 Heave (provided that the source echo sounder is connected to a relevant sensor)
- 4 **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

- 5 **Network**

Click this button to open the **LAN Port Setup** dialog.

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### EK 60 sensor form

Whenever a Simrad EK 60 echo sounder is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 Depth
- 2 Head number
- 3 Graphic presentation
- 4 **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

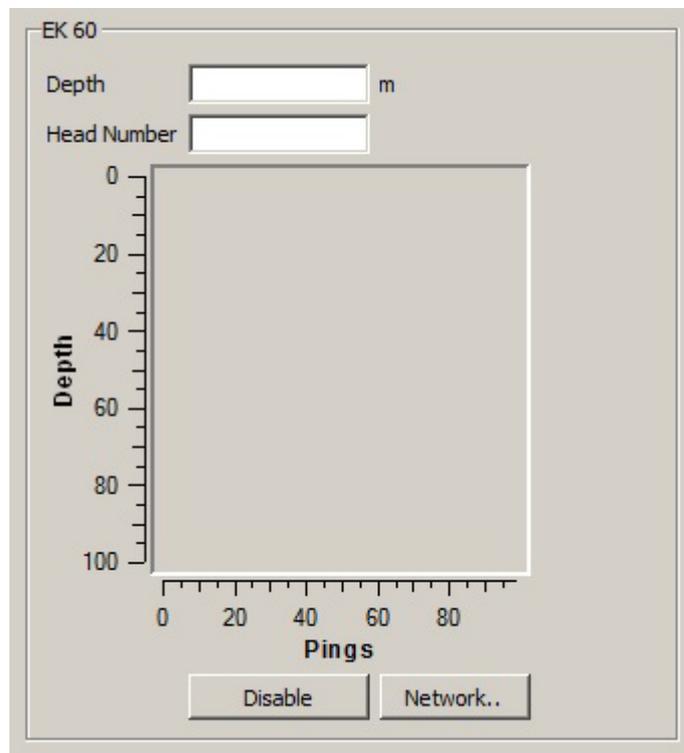
Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

### 5 Network

Click this button to open the **LAN Port Setup** dialog.

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.



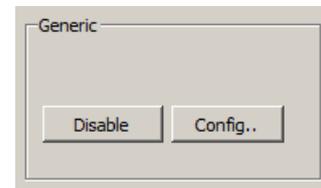
### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

## Generic sensor form

This form can be used to define a custom sensor interface.

The text fields in the sensor form depend on the data items (fields) provided by the telegram(s) that are supported. In some cases, text fields may be empty. That is because the information the text field was prepared for is not provided by the telegram format.



The text fields in the Generic sensor form are automatically generated from the fields that are defined in the **Fields** tab in the **Generic Configuration** dialog.

→ *Generic Configuration* on page 117

### 1 Disable

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

### 2 Config

This button opens the **Generic Configuration** dialog. This dialog allows you to define the input parameters (serial or network connection) as well as the detailed telegram properties.

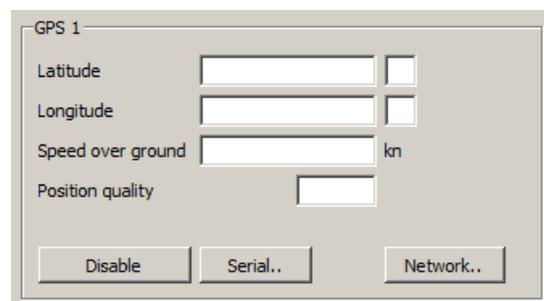
## Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

## GPS sensor form

Whenever a global positioning system (GPS) is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog.

The text fields in the sensor form depend on the data items (fields) provided by the telegram(s) that are supported. In some cases, text fields may be empty. That is because the information the text field was prepared for is not provided by the telegram format.



The form provides the following text fields and functions:

- 1 Latitude
- 2 Longitude

**3** Speed over ground

**4** Position quality

**5** **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

**6** **Serial**

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

**7** **Network**

Click this button to open the **LAN Port Setup** dialog.

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

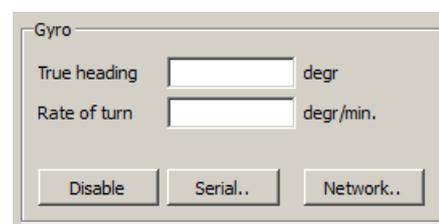
**Related topics**

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

**Gyro sensor form**

Whenever a gyro is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog.

The text fields in the sensor form depend on the data items (fields) provided by the telegram(s) that are supported. In some cases, text fields may be empty. That is because the information the text field was prepared for is not provided by the telegram format.



The form provides the following text fields and functions:

- 1** True heading
- 2** Rate of turn

### 3 **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

### 4 **Serial**

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### 5 **Network**

Click this button to open the **LAN Port Setup** dialog.

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

#### **Related topics**

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

**ITI sensor form**

The screenshot shows a software interface for an ITI sensor. It is organized into several panels:

- Trawl position:** Four input fields for 'Horiz. range to target' (m), 'True bearing to target' (degr), 'Depth of trawl' (m), and 'Water temp. at trawl' (°C).
- Trawl eye/height sensor 1:** Two input fields for 'Headrope - footrope' (m) and 'Headrope - bottom' (m).
- Trawl eye/height sensor 2:** Two input fields for 'Headrope - footrope' (m) and 'Headrope - bottom' (m).
- Spread 1:** Six input fields for 'Spread distance' (m), 'Slant range' (m), 'Horiz. range' (m), 'True bearing' (degr), 'Spread measurement' (m), and 'Time of transmission'.
- Spread 2:** Six input fields for 'Spread distance' (m), 'Slant range' (m), 'Horiz. range' (m), 'True bearing' (degr), 'Spread measurement' (m), and 'Time of transmission'.

At the bottom right of the form, there are two buttons: 'Disable' and 'Serial..'

Whenever a Simrad ITI catch monitoring system is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 Trawl position:
  - Horiz. range to target
  - True bearing to target
  - Depth of trawl
  - Water temp. at trawl
- 2 Trawl eye/height sensor 1:
  - Headrope — footrope
  - Headrope — bottom
- 3 Trawl eye/height sensor 2:
  - Headrope — footrope
  - Headrope — bottom
- 4 Spread 1:
  - Spread distance
  - Slant range
  - Horiz. range
  - True bearing
  - Spread measurement
  - Time of transmission
- 5 Spread 2:
  - Spread distance

- Slant range
- Horiz. range
- True bearing
- Spread measurement
- Time of transmission

## 6 Disable

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

## 7 Serial

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### MRU sensor form

Whenever a Motion Reference Unit (MRU) is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 Pitch
- 2 Roll
- 3 Heave
- 4 Heading
- 5 **Disable**

The image shows a dialog box titled "MRU". It contains four rows of input fields with labels and units: "Pitch" (degr), "Roll" (degr), "Heave" (meters), and "Heading" (degr). At the bottom of the dialog, there are two buttons: "Disable" and "Serial..". The "Disable" button is highlighted with a darker background, indicating it is the active or selected option.

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

## 6 Serial

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### Multibeam sounder sensor form

Whenever a multibeam hydrographic echo sounder is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog.

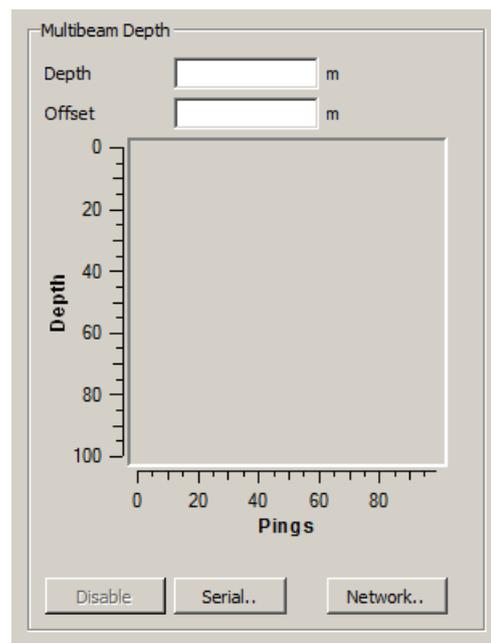
The text fields in the sensor form depend on the data items (fields) provided by the telegram(s) that are supported. In some cases, text fields may be empty. That is because the information the text field was prepared for is not provided by the telegram format.

The form provides the following text fields and functions:

- 1 Depth (from centre beam)
- 2 Offset (distance from water surface to transducer face)
- 3 Graphic presentation
- 4 **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.



## 5 Serial

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

## 6 Network

Click this button to open the **LAN Port Setup** dialog.

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

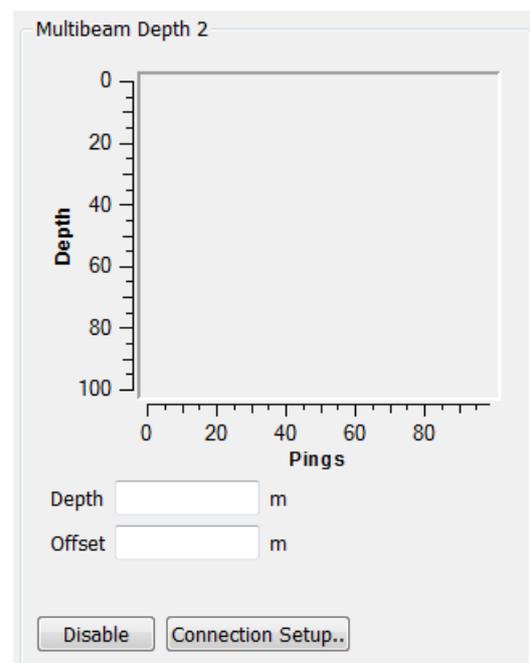
### Multibeam sounder 2 sensor form

Whenever a multibeam hydrographic echo sounder is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog.

The text fields in the sensor form depend on the data items (fields) provided by the telegram(s) that are supported. In some cases, text fields may be empty. That is because the information the text field was prepared for is not provided by the telegram format.

The form provides the following text fields and functions:

- 1 Graphic presentation
- 2 Depth (from centre beam)
- 3 Offset (distance from water surface to transducer face)



#### 4 Disable

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

#### 5 Connection Setup

Click this button to open the **Connection Setup** dialog.

The **Connection Setup** dialog box allows you to define the parameters for serial, Ethernet (Local Area Network (LAN)) and UDP communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

#### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

#### Scanmar sensor form

Whenever a Scanmar ScanBas system is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

##### 1 Sensor data:

- Time
- Sensor type
- Meas ID
- QA factor
- Status
- Sensor ID
- Value

##### 2 Vessel data:

- Latitude

- Longitude
- Depth
- Heading
- Ground speed

### 3 Disable

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

### 4 Serial

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### Seapath sensor form

The screenshot shows a dialog box titled "Seapath" with the following fields and controls:

- Position Data:**
  - UTC: [ ] [ ] [ ]
  - Longitude: [ ] [ ] [ ]
  - Latitude: [ ] [ ] [ ]
  - Heading(HDT): [ ] [ ] [ ]
  - COG (Magnetic): [ ] [ ] [ ]
  - COG (True): [ ] [ ] [ ]
  - Speed Over Ground: [ ] [ ] [ ]
  - Quality Indicator: [ ] [ ] [ ]
- MRU Data:**
  - Roll: [ ] [ ] [ ] Horiz. Quality: [ ] [ ] [ ]
  - Pitch: [ ] [ ] [ ] Hgt. Quality: [ ] [ ] [ ]
  - Heave: [ ] [ ] [ ] Head. Quality: [ ] [ ] [ ]
  - Heading: [ ] [ ] [ ] RP Quality: [ ] [ ] [ ]
- Buttons:**
  - Disable
  - Connection Setup..

Whenever a Seapath position, attitude, time and heading sensor is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

**1** Position data:

- UTC
- Longitude
- Latitude
- Heading
- Degrees magnetic
- Course over ground
- Speed over ground
- Quality indicator

**2** MRU data:

- Roll
- Pitch
- Heave
- Heading
- Horizontal quality
- Hgt. quality
- Hed. quality
- RP quality

**3** **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

**4** **Connection Setup**

Click this button to open the **Connection Setup** dialog.

The **Connection Setup** dialog box allows you to define the parameters for serial, Ethernet (Local Area Network (LAN)) and UDP communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

**Related topics**

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123

- *Connection Setup* on page 124

### SeapathNav sensor form

Whenever a Seapath Nav sensor is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 UTC
- 2 Longitude
- 3 Latitude
- 4 Heading (HDT)
- 5 COG (Magnetic)
- 6 COG (True)
- 7 Speed over ground
- 8 Quality indicator
- 9 **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog.

All the former parameters have been kept, so you only need to click **OK** to close the dialog.

### 10 Serial

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### 11 Network

Click this button to open the **LAN Port Setup** dialog.

The image shows two identical screenshots of the 'SeapathNav' sensor form. Each form contains the following elements:

- UTC: [text field] [checkbox]
- Longitude: [text field] [checkbox]
- Latitude: [text field] [checkbox]
- Heading (HDT): [text field] [checkbox]
- COG (Magnetic): [text field]
- COG (True): [text field]
- Speed over ground: [text field]
- Quality Indicator: [text field]
- Buttons: [Disable] [Serial..] [Network..]

In the bottom screenshot, the 'Disable' button is highlighted in a darker grey, indicating it is the active or selected option.

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### Simrad FS sensor form

Whenever a Simrad FS20 or FS 25 sensor is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 Depth
- 2 Water temp
- 3 Graphic presentation
- 4 **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

- 5 **Serial**

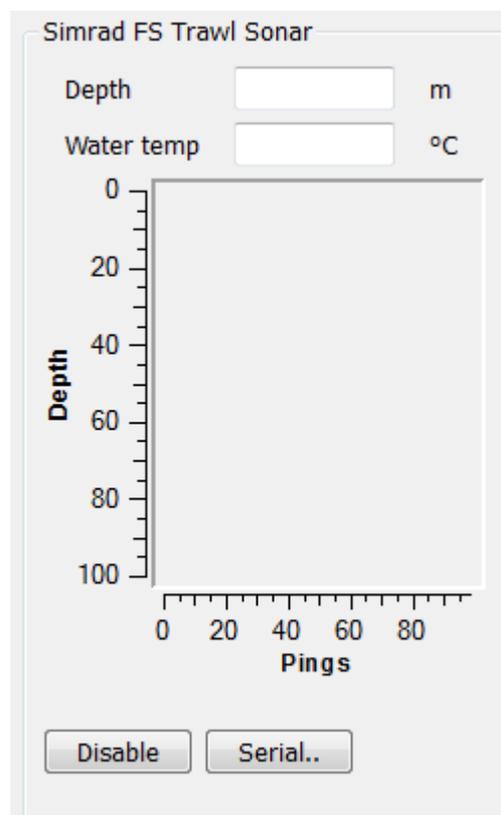
Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82



- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### SmartSV sensor form

Whenever an AML MicroSV, SV+P, SV+T or SV+P+T sensor is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 Sound speed
- 2 Temperature This field is only shown if sensor type SV+T or SV+P+T is selected in the **SmartSV Configuration** dialog.
- 3 Pressure. This field is only shown if sensor type SV+P or SV+P+T is selected in the **SmartSV Configuration** dialog.

#### 4 **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

#### 5 **Data format**

This button opens the **SmartSV Configuration** dialog. This dialog allows you to define the AML SmartSV data format. The following options are available:

- SV: Sound speed
- SV+P: Sound speed and pressure
- SV+T: Sound speed and temperature
- SV+P+T: Sound speed, pressure and temperature

Select the **Timestamp in data** check box if data are sent with timestamp.

#### 6 **Serial**

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

#### 7 **Network**

Click this button to open the **LAN Port Setup** dialog.

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### Speed Log sensor form

Whenever a speed log is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog.

The text fields in the sensor form depend on the data items (fields) provided by the telegram(s) that are supported. In some cases, text fields may be empty. That is because the information the text field was prepared for is not provided by the telegram format.

This form provides the following text fields and functions:

- 1 Distance
- 2 Distance since reset
- 3 Speed
- 4 Longitudinal water speed
- 5 Transverse water speed
- 6 Longitudinal ground speed
- 7 Transversal ground speed
- 8 **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

The screenshot shows a dialog box titled "Speed Log". It contains the following fields and units:

Distance	<input type="text"/>	nm
Distance since reset	<input type="text"/>	nm
Speed	<input type="text"/>	kn
Longi. water speed	<input type="text"/>	kn
Transv. water speed	<input type="text"/>	kn
Longi. ground speed	<input type="text"/>	kn
Transv. ground speed	<input type="text"/>	kn

At the bottom of the dialog are three buttons: "Disable", "Serial..", and "Network..".

## 9 Serial

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

## 10 Network

Click this button to open the **LAN Port Setup** dialog.

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### ThermoFluor sensor form

Whenever a SeaBird SeaSave sensor is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 Temperature 1
- 2 Temperature 2
- 3 Salinity
- 4 Fluorescence
- 5 **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

## 6 Serial

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### Vaisala sensor form

Whenever a Vaisala weather station is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 Wind angle
- 2 Wind speed
- 3 Air temperature
- 4 Relative humidity
- 5 Dew point temperature
- 6 Air pressure
- 7 Vertical visibility
- 8 Cloud layer 1
- 9 Cloud layer 2
- 10 Cloud layer 3
- 11 **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

Vaisala MAWS410

Wind Angle	<input type="text"/>	<input type="checkbox"/>
Wind Speed	<input type="text"/>	<input type="checkbox"/>
Air Temperature	<input type="text"/>	
Rel. Humidity	<input type="text"/>	
Dew Point Temp	<input type="text"/>	
Air Pressure	<input type="text"/>	
Vertical Visibility	<input type="text"/>	
Cloud Layer 1	<input type="text"/>	
Cloud Layer 2	<input type="text"/>	
Cloud Layer 3	<input type="text"/>	

## 12 Serial

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

## 13 Network

Click this button to open the **LAN Port Setup** dialog.

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### VmDAS ADCP sensor form

Whenever an Acoustic Doppler Current Profiler (ADCP) is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 Depth
- 2 Heading
- 3 Longitudinal water speed
- 4 Latitudinal water speed
- 5 Longitudinal ground speed
- 6 Latitudinal ground speed
- 7 **Disable**

The image shows a dialog box titled "VmDAS ADCP". It contains six text input fields, each followed by a unit: "Depth" (m), "Heading" (degr), "Long. water speed" (m/s), "Lat. water speed" (m/s), "Long. ground speed" (m/s), and "Lat. ground speed" (m/s). At the bottom of the dialog are two buttons: "Disable" and "Serial..".

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

## 8 Serial

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

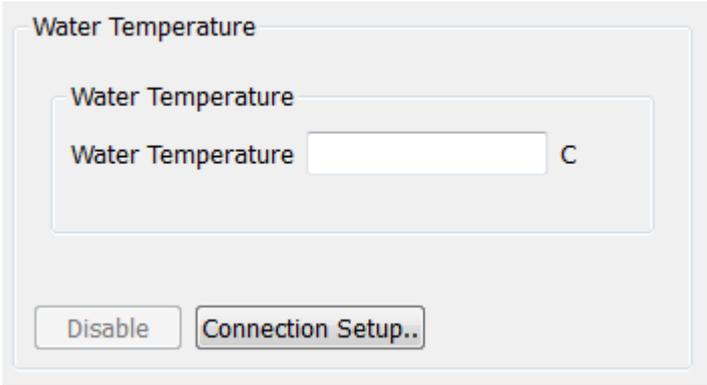
When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

## Water temperature sensor form

Whenever a water temperature sensor is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:



### 1 Water Temperature

### 2 Disable

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

### 3 Connection Setup

Click this button to open the **Connection Setup** dialog.

The **Connection Setup** dialog box allows you to define the parameters for serial, Ethernet (Local Area Network (LAN)) and UDP communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122

- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### Weather PAK sensor form

Whenever a Coastal Environment WeatherPak 2000 weather station system is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 Latitude
- 2 Longitude
- 3 Speed over ground (SOG)
- 4 Course over ground (COG)
- 5 Wind speed
- 6 Wind direction
- 7 Sigma-theta (standard deviation of wind direction)
- 8 Air temperature
- 9 Relative humidity
- 10 Barometric pressure
- 11 Water temperature
- 12 Volt battery
- 13 **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

### 14 Connection Setup

Click this button to open the **Connection Setup** dialog.

The **Connection Setup** dialog box allows you to define the parameters for serial, Ethernet (Local Area Network (LAN)) and UDP communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

### Related topics

- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

### Wind sensor form

Whenever a wind sensor is connected to the Client computer, a dedicated form is shown in the Sensor Data area in the **Client Manager** dialog. The form provides the following text fields and functions:

- 1 Wind angle (Relative)
- 2 Wind angle (True)
- 3 Wind speed (Relative)
- 4 Wind speed (True)
- 5 **Disable**

Click this button to disable the input from the selected sensor. All information received from the sensor will be lost.

Once this function is activated, the button changes colour to indicate that the sensor has been disabled. To activate the sensor, reopen the interface setup dialog. All the former parameters have been kept, so you only need to click **OK** to close the dialog.

- 6 **Serial**

Click this button to open the **Serial Port Setup** dialog.

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

- 7 **Network**

Click this button to open the **LAN Port Setup** dialog.

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

When the Client Manager application is run on a Client Monitor computer, this option is not available.

To be able to calculate true wind speed and true wind angle the driver requires the heading and speed of the vessel. This information is received from another sensor via the network. Use the **LAN Port Setup** dialog to define the port for receiving this data.

The sensor driver that provides heading and speed has to be set up to repeat the data on the network, this is done in the driver's ini file. To find the ini file type %appdata%\mdm 500 in the search field in the Windows® start menu.

#### *Example 7 Setting up the Seapath200RTK driver to repeat data on the network*

##### Seapath200RTK.ini

```
[Seapath]
UDPACTIVE=0
UDPPORTNAV=10001
UDPPORTMRU=10002
DEVICETIMEOUT=3000
UDPOut=1
OutIP=127.0.0.1
OutPort=44556
```

In this example the last three lines are the set-up for repeated data:

- UDPOut=1: enables repeating of data on the network
- OutIP=127.0.0.1: IP address for repeated data.
- OutPort=44556: Port number for repeated data. Use **LAN Port Setup** to set up the wind sensor driver accordingly.

#### **Related topics**

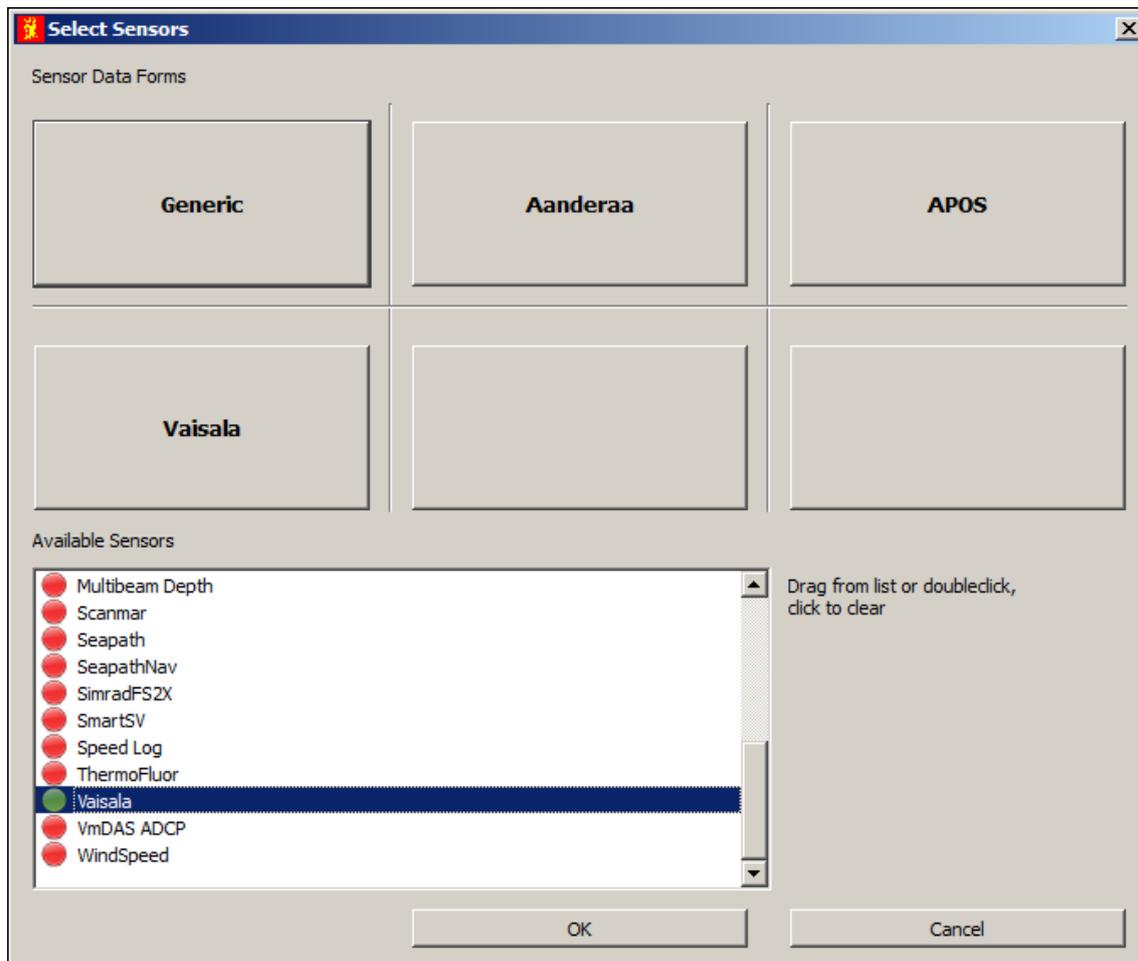
- *Client Manager* on page 82
- *Generic Configuration* on page 117
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123
- *Connection Setup* on page 124

## Select Sensors

The **Select Sensors** dialog box is opened by clicking the **Select Sensors** button in the **Client Manager** dialog box.

### **Purpose**

The **Select Sensors** dialog box allows you to define which sensors you will set up and/or monitor in the **Client Manager** dialog.



## Description

The **Select Sensors** dialog controls which sensors connected to the Client computer that are shown in the six available sensor data forms in the **Client Manager** dialog.

## Parameters

### 1 Sensor Data Forms

Each of these six rectangles correspond to the six forms available in the Client Manager dialog. If you have more than six sensors connected to the Client computer, you must choose which to see. You can also use a second Client computer and connect maximum six sensors to each of them.

### 2 Available Sensors

The list at the bottom of the dialog shows the available sensors connected to the Client computer. The list is populated automatically depending on your software license. Next to each sensors in the list is a symbol showing the status of the sensor:

- Green: The driver is activated and is trying to log data.
- Red: The driver is not activated.

- 1 To add a sensor to one of the data forms, click on the sensor name in the list, and drag it into the form you wish to use. You can also double-click on a sensor name, the relevant sensor will then automatically occupy a vacant form.
- 2 To remove a sensor from one of the data forms: click on it.

The Generic sensor is always available. This sensor allows you to create a custom interface to your MDM 500 system.

### Related topics

- *Client Manager* on page 82

## Generic Configuration

The **Generic Configuration** dialog is opened when you click the **Config** button in the Generic Sensor form in the **Client Manager** dialog.

### Purpose

The **Generic Configuration** dialog allows you to define custom interfaces for your own sensors.

### Description

The **Generic Configuration** dialog is typically used when you need to define a new sensor for interface with the MDM 500, and you are not able to get one from Kongsberg. The various parameters provided by the dialog will allow you to set up an interface to most sensors, but in order to do this efficiently, it is assumed that you have some prior experience with telegram formats.

- *About the NMEA telegram format* on page 205

The generic driver permits you to decode text sentences that are either formatted as a delimiter (e.g. comma delimited such as NMEA) or fixed width delimited. The data can be sent to the driver either as an network (UDP) telegram or as a serial telegram.

The telegram structure is specified by the following features:

- A telegram header is optional. If you specify one, the generic driver will verify that the sentence contains the specified header at the given offset. If not, the sentence will be discarded. If you are defining a delimited sentence, you must place the delimiter after the header.
- Each telegram normally contains one or more fields. These are labelled data items in the MDM 500 software. The fields can be separated by a delimiter, or they may have a fixed width.
- The end of telegram is identified by a termination character. One or more termination characters can be selected (including one arbitrary character). Once a termination character is found in the sentence, no further decoding will be done.
- The specific fields (data items) are entered into a table. All fields that are specified will be decoded and passed on to the MDM 500. Also, all these fields will automatically be shown in the Generic sensor form in the **Client Manager** dialog.

- If the telegram sentence is delimited, you must only specify an index. If the telegram has a fixed width, you must enter the start offset and the field length. The start offset is number of characters from the beginning of sentence.
- All fields (data items) are decoded as text strings, so they may contain spaces, decimal points, special characters just as these are presented in the input string from the sensor.

The **Generic Configuration** dialog offers four tabs:

- Data Source
- Data Structure
- Telegrams
- Fields

#### **Related topics**

- *Client Manager* on page 82

## Generic Configuration: Data Source

### Parameters

#### 1 UDP datagram

Click to specify that the telegram you wish to receive is retrieved from a network interface.

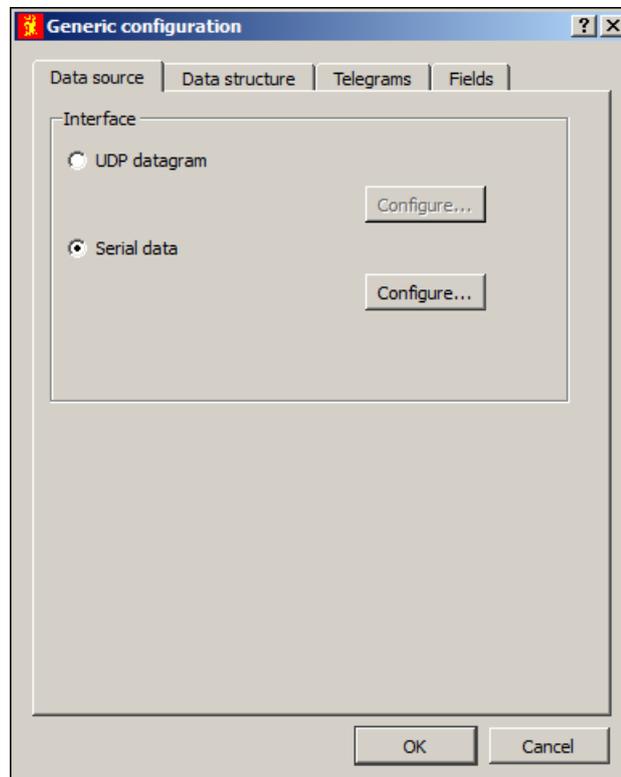
#### 2 Serial data

Click to specify that the telegram you wish to receive is retrieved from a serial line interface.

#### 3 Configure

There are two **Configure** buttons. Each open the relevant setup dialog to define the communication parameters.

- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123



## Generic Configuration: Data Structure

### Parameters

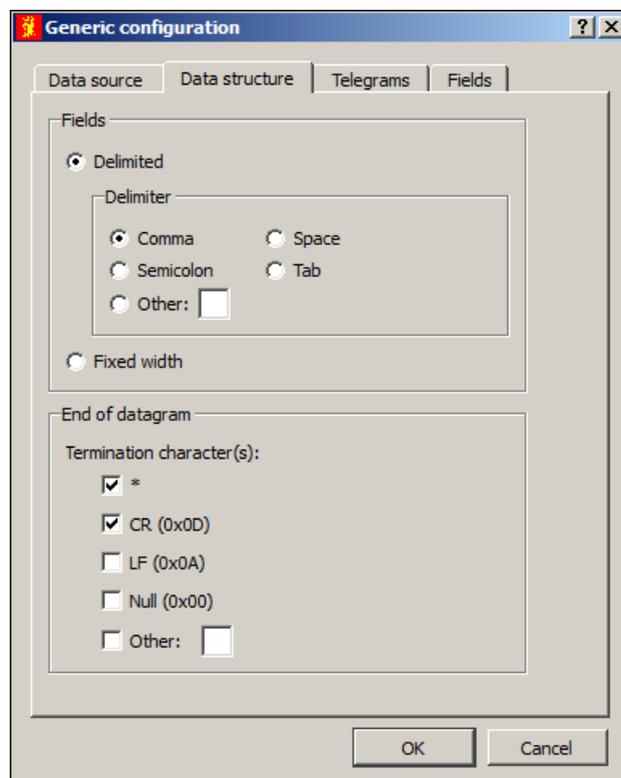
#### 1 Fields

These parameters are used to define how the fields (data items) in the telegram are provided. They may be delimited with a character between each field, or they may have a fixed length.

- a Delimited:** Click this box if the fields are delimited. Then, enter the applicable character that appears between each field in the telegram.
- b Fixed width:** Click if the fields in the telegram have fixed widths.

#### 2 End of datagram

The end of telegram is always identified by a termination character. One or more termination characters can be selected, including one arbitrary character. Check which character(s) you need, or enter your own if required.



*Example 8 Header offset*

A header offset must be used if the telegram sentence starts with a timestamp or counter, and this information is provided before the telegram's header.

*Example 9 Creating an telegram interface (data structure)*

You wish to log telegram format

```
$GPGLL,5215.84,N,00707.05,W,183406.00,A.
```

This telegram has a header (\$GPGLL), and each field uses a comma as a delimiter. Six fields are used, and no specific end characters are defined in the format.

In the **Data Structure** tab, you must first defined the header, then click to select **Delimited**, and choose “comma” as delimiter. Finally, since no end character is defined, click to select “\*”, “CR” (carriage return) and “LF” (line feed) as termination characters.

## Generic Configuration: Telegrams

### Parameters

This tab holds a table, in which you can define each of the telegrams you want to receive via the generic driver.

#### 1 Add

Click the **Add** button to create a new telegram.

To remove a telegram, click the row and press **Delete**.

#### 2 Telegram ID

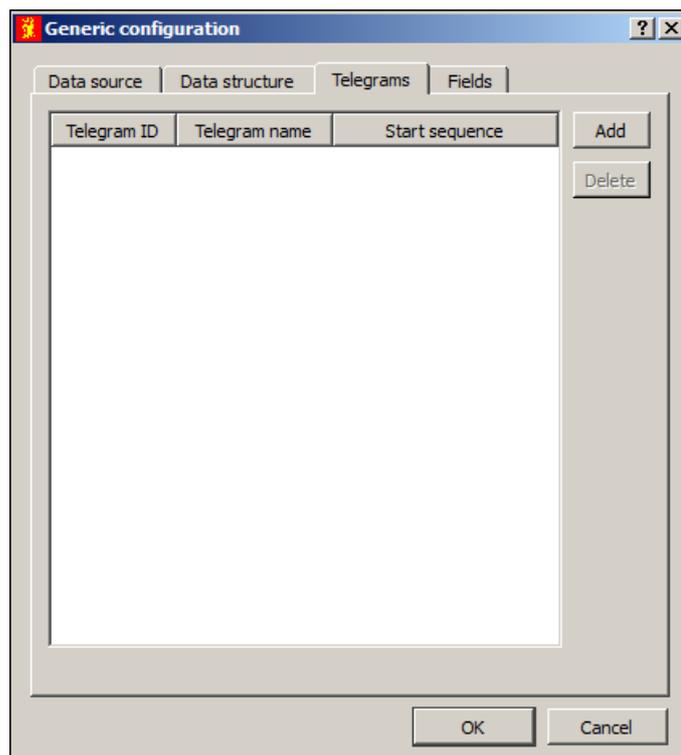
Each telegram will be assigned a unique ID number.

#### 3 Telegram name

Enter the name of the telegram. This is typically a five-character text string, for example GPVTG.

#### 4 Start sequence

Enter the header of the telegram. This is typically a six-character text string, for example \$GPVTG.



## Generic Configuration: Fields

### Parameters

This tab holds a table, in which you can define each of the fields (data items) in each telegram.

#### 1 Add

Click the **Add** button to create a new field.

To remove a field, click the row and press **Delete**.

#### 2 Telegram ID

Enter the telegram ID. This is defined under the tab **Telegrams**.

#### 3 Field name

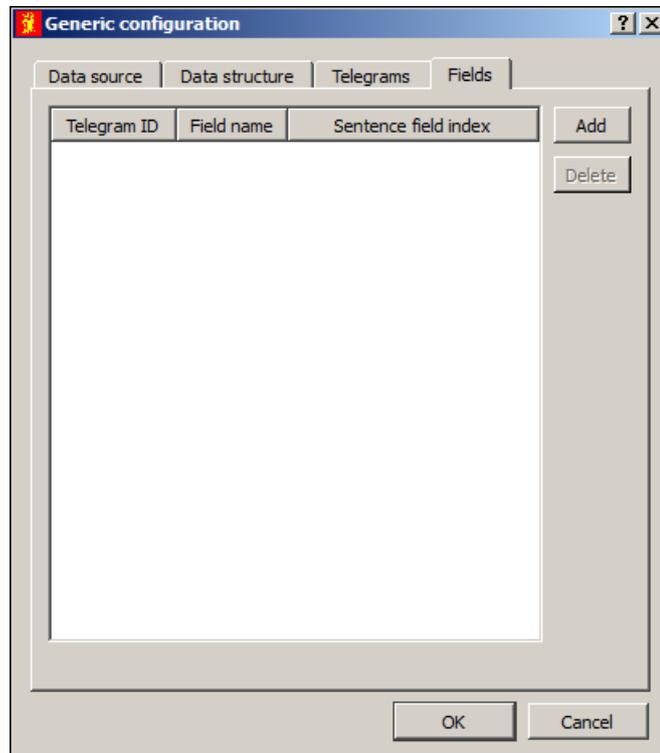
Enter the name of the field. This name is typically used to identify the type of information provided in the field.

#### 4 Sentence Field Index

This is the field's position in the text string.

#### 5 Field length

This column appears if you have defined a fixed width format. Enter the width (in number of characters) of each field.



### Example 10 Creating an telegram interface (delimited fields)

You wish to log telegram format

```
$GPGLL,5215.84,N,00707.05,W,183406.00,A.
```

This telegram has a header (\$GPGLL), and each field uses a comma as a delimiter. Six fields are used, and no specific end characters are defined in the format.

In the **Fields** tab you must then define the following fields:

Field name	Index
Latitude	1
Longitude	3
Time	5

The three fields providing “N”, “W” and “A” are only denominations, and you do not need to save these.

Indexes 1, 3 and 5 are used because the fields to be kept are the first, the third and the fifth after the header.

*Example 11 Creating an telegram interface (fixed width fields)*

If your fields have fixed widths, you must fill in the following columns in the **Fields** tab:

Field name	Offset	Field length
Value 1	1	2
Value 2	3	4
Value 3	7	6

The phrase “offset” is used because a fixed length telegram normally does not contain any delimiter characters. Offsets 1, 3 and 5 are used because the character fields to be kept starts with the first, the third and the seventh after the header. The field lengths provided are the number of characters in each field. Note that the field lengths must correspond to the offsets.

## Serial Port Setup

The **Serial Port Setup** dialog box is opened from the **Serial** button in the Client Manager. There is one **Serial** button for each Sensor Driver that supports serial interface.

### Purpose

The **Serial Port Setup** dialog box allows you to define the parameters for serial communication with external sensors (measuring devices) or peripheral systems.

### Description

Serial ports are still a very common method for interface between maritime systems.

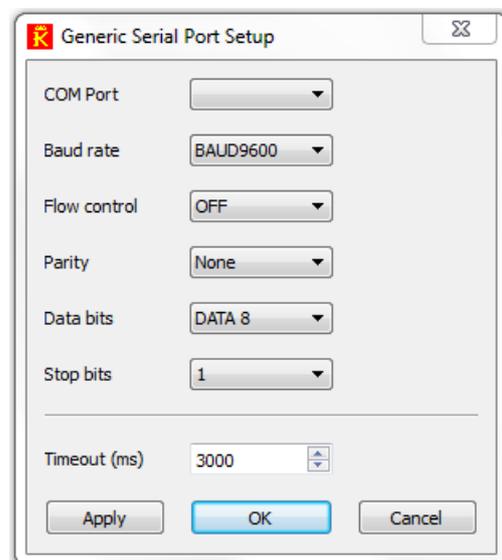
It is very important that any serial line between the MDM 500 and any external system is setup up correctly with identical parameters at each end.

The NMEA<sup>[1]</sup> standard for serial communication defines standard parameters for such interfaces.

### Parameters

#### 1 COM port

This selector allows you to choose one of the serial line communication ports on the computer.



1. “NMEA” means National Marine Electronics Association. See <http://www.nmea.org> for more information.

**2 Baud rate**

Use this entry to specify the baudrate (“speed”) for the serial communication. Standard baudrate defined for NMEA communication is *4800 baud*.

**3 Flow Control**

This parameter is also known as “handshaking”, and it is used to ensure safe data delivery between sender and receiver. You have three options:

- **Hardware:** This setting uses the “Ready To Send (RTS) and “Clear to Send (CTS)” controls signals on the serial communication, and thus requires that these are connected.
- **Software:** This setting requires that two databits; XON and XOFF are used to indicate that data can be sent.
- **None:** The data flow functionality is not used. This is the most common setting.

Data flow defined for NMEA communication is *None*. For more information, see:

→ [http://en.wikipedia.org/wiki/Flow\\_control](http://en.wikipedia.org/wiki/Flow_control)

**4 Parity**

Use this entry to specify the parity for the serial communication. Standard parity defined for NMEA communication is *None*.

**5 Data bits**

Use this entry to specify the number of data bits for the serial communication. Standard number of data bits defined for NMEA communication is *8*.

**6 Stop bits**

This parameter is used to indicate the end of the transmission. It is usually set to “1”. Standard number of stop bits defined for NMEA communication is *1*.

**7 Timeout**

This parameter controls how long the MDM 500 will wait for information from the remote sensor before a “Timeout” message is provided.

Recommended setting for best practice is *3000 ms*.

**Related topics**

## LAN Port Setup

The **LAN Port Setup** dialog box is opened from the **Network** button in the Client Manager. There is one **Network** button for each Sensor Driver that supports Ethernet interface.

**Purpose**

The **LAN Port Setup** dialog box allows you to define the parameters for Ethernet (Local Area Network (LAN)) communication with external sensors (measuring devices) or peripheral systems.

**Description**

Ethernet (Local Area Network (LAN)) communication is an efficient way to connect to external sensors, such as a global positioning system (GPS) to receive navigational data.

In order for this communication port to work, the parameters must be set up properly.

### Parameters

#### 1 Local port (UDP)

This port is important if you wish to receive information. It must match the port number on the remote computer.

#### 2 Timeout

This parameter controls how long the MDM 500 will wait for information from the remote sensor before a “Timeout” message is provided.

Recommended setting for best practice is *3000 ms*.

### Related topics

- *Client Manager* on page 82
- *Serial Port Setup* on page 122

## Connection Setup

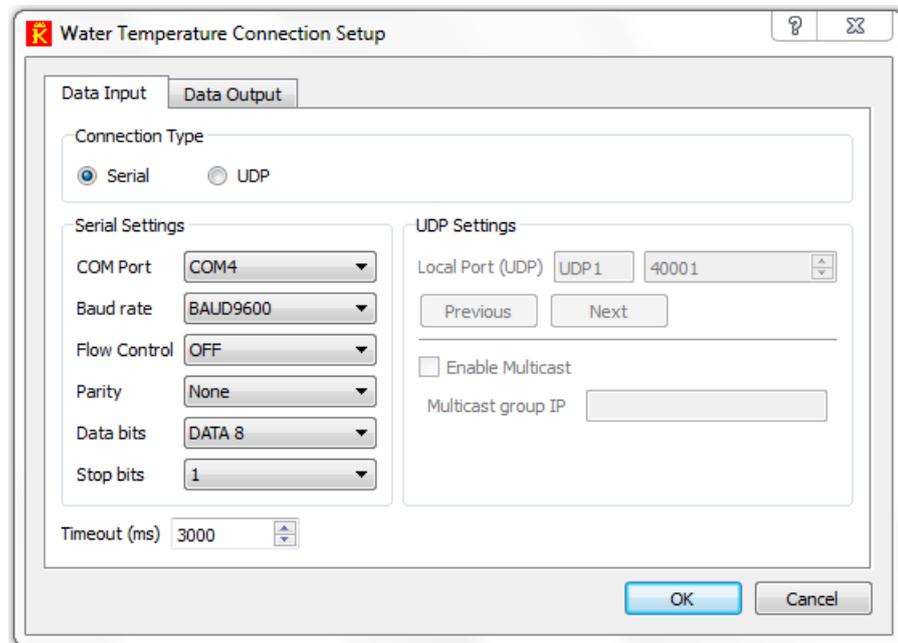
The **Connection Setup** dialog box is opened from the **Connection Setup** button in the Client Manager. There is one **Connection Setup** button for each Sensor Driver that supports the scheme with network connection, serial connection and UDP output combined into one dialog box.

### Purpose

The **Connection Setup** dialog box allows you to define the parameters for serial, Ethernet (Local Area Network (LAN)) and UDP communication with external sensors (measuring devices) or peripheral systems.

## Description

### Connection Setup: Data Input



## Parameters

- 1 Select **Serial** if the communication is serial. This will make the parameters under **Serial Settings** available.
- 2 Select **UDP** if the communication is by UDP. This will make the parameters under **UDP Settings** available.

### 3 COM port

This selector allows you to choose one of the serial line communication ports on the computer.

### 4 Baud rate

Use this entry to specify the baudrate (“speed”) for the serial communication. Standard baudrate defined for NMEA communication is *4800 baud*.

### 5 Flow Control

This parameter is also known as “handshaking”, and it is used to ensure safe data delivery between sender and receiver. You have three options:

- **Hardware:** This setting uses the “Ready To Send (RTS) and “Clear to Send (CTS)” controls signals on the serial communication, and thus requires that these are connected.
- **Software:** This setting requires that two databits; XON and XOFF are used to indicate that data can be sent.
- **None:** The data flow functionality is not used. This is the most common setting.

Data flow defined for NMEA communication is *None*. For more information, see:

→ [http://en.wikipedia.org/wiki/Flow\\_control](http://en.wikipedia.org/wiki/Flow_control)

**6 Parity**

Use this entry to specify the parity for the serial communication.

Standard parity defined for NMEA communication is *None*.

**7 Data bits**

Use this entry to specify the number of data bits for the serial communication.

Standard number of data bits defined for NMEA communication is *8*.

**8 Stop bits**

This parameter is used to indicate the end of the transmission. It is usually set to “1”.

Standard number of stop bits defined for NMEA communication is *1*.

**9 Lokal Port UDP**

Port name and port number.

**10 Previous**

Button used to display the previous port. Only applicable for drivers supporting more than one UDP port.

**11 Next**

Button used to display the next port. Only applicable for drivers supporting more than one UDP port.

**12 Enable Multicast**

Click to enable multicast. Multicast is the delivery of a message or information to a group of destination computers simultaneously in a single transmission from the source.

**13 Multicast Group IP**

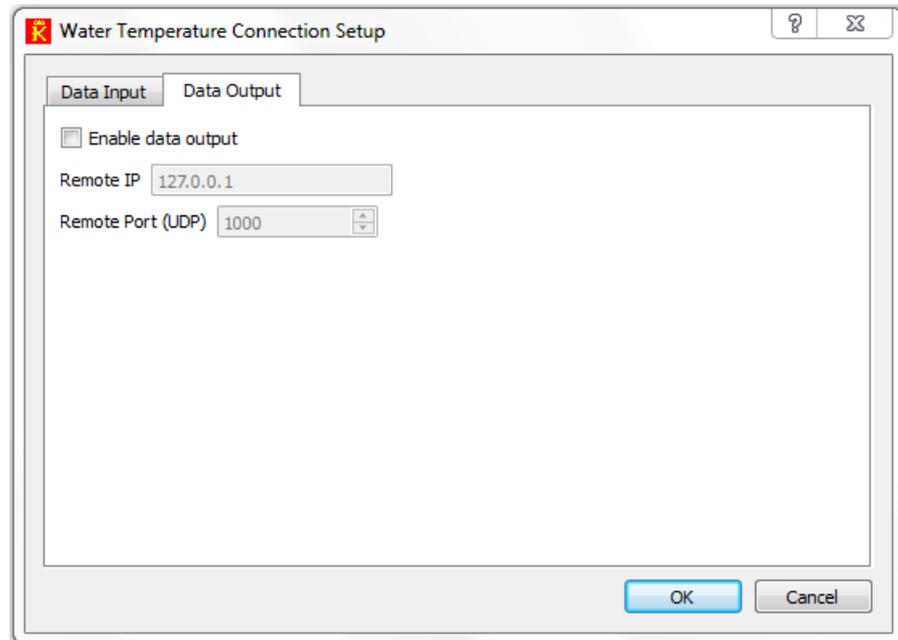
A multicast group IP address is used by sources and receivers to send and receive multicast messages. Sources use the group address as the IP destination address in their data packets. Receivers use this group address to inform the network that they are interested in receiving packets sent to that group.

**14 Timeout**

This parameter controls how long the MDM 500 will wait for information from the remote sensor before a “Timeout” message is provided.

Recommended setting for best practice is *3000 ms*.

## Connection Setup: Data Output



### Parameters

- 1 Enable data output**  
Click to enable repeat of data to an output.
- 2 Remote IP**  
IP address for the output.
- 3 Remote Port (UDP)**  
Port number for the output.

### Related topics

- *Client Manager* on page 82
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123

## SVP Editor application

The SVP Editor is used to load and edit the sound speed profiles. This is a utility program to SIS and holds a number of tools to assist in creating a good sound velocity profile, including manual editing. Functionality for MDM 500 is included.

### Note

---

*The SVP Manager has been replaced by SVP Editor from release 2.0 of MDM 500. The SVP Manager is still included but may be removed in future releases.*

---

The SVP Editor provides the following features:

- Handles several input formats
- Converts sound velocity profiles to several formats
- Automatic transfer of sound velocity profiles to remote recipients
- Handles several sources simultaneously
- Handles several remote recipients simultaneously
- Profile editing

The received profiles are converted to the desired formats before they are transferred to the remote recipients and optionally stored in the MDM 500 database.

You can edit any profile before it is distributed and/or saved in the database. The profiles can be saved on several file formats; \*.ASVP, \*.S00, \*.S10 and \*.SVP, even if the profile is not stored in the database.

### Topics

- *SVP Editor* on page 128

### Related topics

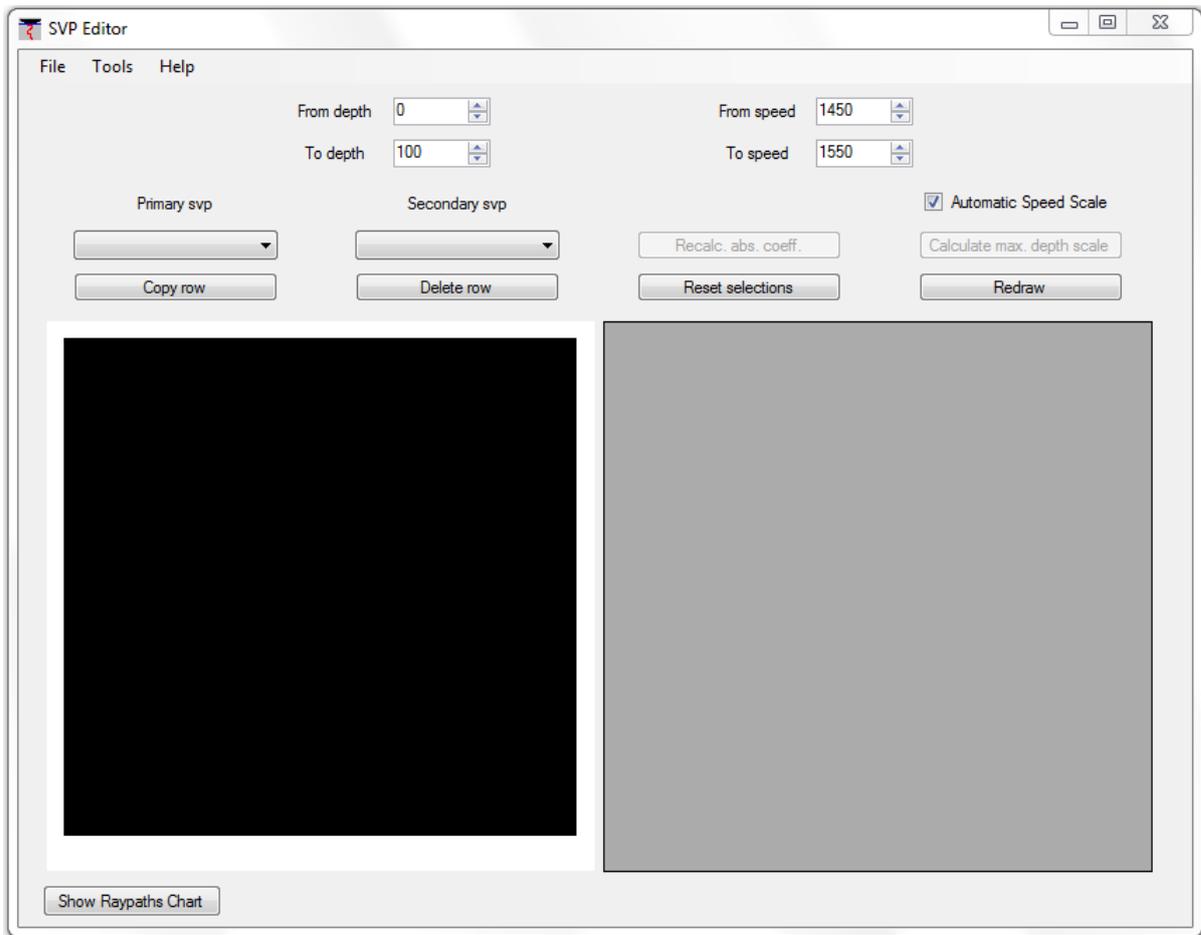
- *Sound velocity profile procedures* on page 61
- *SVP Manager application* on page 134
- *SVP Manager* on page 135

## SVP Editor

The **SVP Editor** dialog is opened when you start the SVP Editor application. It is the main dialog provided by the application.

### Purpose

The **SVP Editor** dialog allows you to receive and distribute information from sound velocity profile (SVP) and conductivity, temperature and depth (CTD) instruments.



## Description

The **SVP Editor** dialog is the main control interface for the SVP Editor application. The SVP Editor in the same application that is used in Seafloor Information System (SIS).

The dialog provides the following features:

- **File:** Opens the file menu.
- **Tools:** Opens the tools menu.
- **Help:** Opens the help menu.
- **From depth:**
- **To depth:**
- **From speed:**
- **To speed:**
- **Automatic Speed Scale:**
- **Primary svp:**
- **Copy row:**
- **Secondary svp:**
- **Delete row:**

- **Recalc abs. coeff.:**
- **reset selections:**
- **Calculate max depth scale:**
- **Redraw:**
- **Show Raypaths Chart:**

## **Menu system**

### **1 File**

- a Open**
- b Open in editor**
- c Save as**
- d Save primary svp**
- e Send primary svp to echosounder**
- f Close primary svp**
- g Close all**
- h Exit**

Click this option to close the application.

Note \_\_\_\_\_

*This will stop reception and transfer of SVP profiles to remote recipients.*

---

### **2 Tools**

- a Check profile**
- b Check profile automatic**
- c Extend profile**
- d Extend2**
- e Rreplace primary with data from secondary**
- f Thin profile**
- g MDM 500**  
Opens the MDM 500 Integration for the SVP Editor application.
- h Distribute primary profile**

### **3 Help**

This menu provides help options.

## **Related topics**

- *Add SVP Source* on page 138
- *Edit SVP Source* on page 140
- *Add SVP Receiver* on page 142
- *Edit SVP Receiver* on page 143
- *SVP Edit* on page 143

- *SVP Viewer* on page 145
- *Configure SVP Manager* on page 148

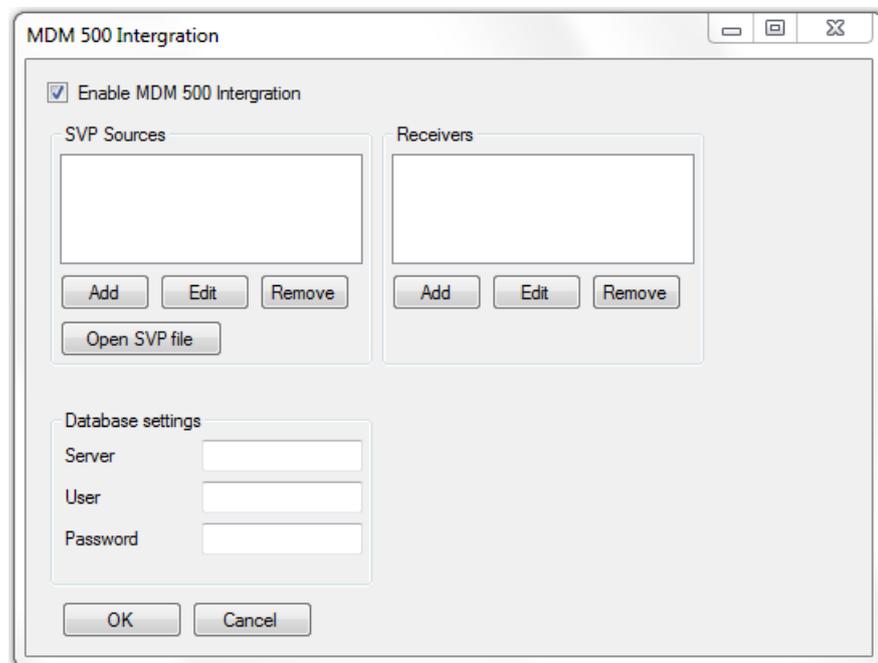
## SVP Editor MDM 500 Integration

The **SVP Editor MDM 500 Integration** dialog is opened when you click the **Tools → MDM 500** menu in the **SVP Editor** application.

### Purpose

The **SVP Editor MDM 500 Integration** dialog allows you to define MDM 500 specific information.

The functionality in this dialog is very similar to the previously used **SVP Manager**.



### Description

The **SVP Editor MDM 500 Integration** is a tool for receiving and distributing sound velocity profile (SVP) and conductivity, temperature and depth (CTD) data. It can receive these data from various sensors over a serial line, a network line, or from a file. Data can also be converted and distributed on various formats over the local network to remote recipients.

### Parameters

#### 1 Enable MDM 500 Integration

Click this to enable functions for MDM 500.

#### 2 SVP Sources

This text field controls the source information handled by the SVP Manager application. The field lists the currently active systems providing sound velocity profiles (SVP) and/or conductivity, temperature and depth (CTD) information.

**a Add**

Click this button to add a new source instrument. The **Add SVP Source** dialog opens.

Provided that the **Enable Storing** function is enabled in the **Configure SVP Manager** dialog, the SVP Manager will await information from any new sensor defined as a source. Once a sensor is connected and this information is received by the MDM 500, the data is automatically stored in the database.

→ *Add SVP Source* on page 138

**b Edit**

Click this button to edit the currently selected source instrument. The **Edit SVP Source** dialog opens. You can also double-click the source name in the text field to do this.

→ *Edit SVP Source* on page 140

**c Remove**

Click this button to delete the currently selected source instrument from the list.

**d Open SVP file**

Click this button to start transferring data that has been imported as a file.

**3 Receivers**

This list shows which instruments that can receive sound velocity profile (SVP) and/or conductivity, temperature and depth (CTD) information from the SVP Manager.

**a Add**

Click this button to add a receiver. The **Add SVP Receiver** dialog opens.

→ *Add SVP Receiver* on page 142

**b Edit**

Click this button to edit the configuration of the currently selected receiver. The **Edit SVP Receiver** dialog opens. You can also double-click the receiver name in the text field to do this.

→ *Edit SVP Receiver* on page 143

**c Remove**

Click this button to delete the currently selected receiver from the list.

**4 Database settings**

**a Server**

**b User**

**c Password**

**5 OK**

**6 Cancel**

**Related topics**

- *Sound velocity profile procedures* on page 61
- *Edit SVP Source* on page 140

- *Add SVP Source* on page 138
- *Edit SVP Receiver* on page 143
- *Add SVP Receiver* on page 142

## SVP Manager application

The SVP Manager is a tool for receiving and distributing sound velocity profile (SVP) and conductivity, temperature and depth (CTD) data. It can receive these data from various sensors over a serial line, a network line, or from a file. Data can also be converted and distributed on various formats over the local network to remote recipients.

Provided that the **Enable Storing** function is enabled in the **Configure SVP Manager** dialog, the data is automatically stored in the MDM 500 database once it is imported from the sensor.

### Note

---

*The SVP Manager has been replaced by SVP Editor from release 2.0 of MDM 500. The SVP Manager is still included but may be removed in future releases.*

---

The SVP Manager provides the following features:

- Handles several input formats
- Converts sound velocity profiles to several formats
- Automatic transfer of sound velocity profiles to remote recipients
- Handles several sources simultaneously
- Handles several remote recipients simultaneously
- Profile editing

The received profiles are converted to the desired formats before they are transferred to the remote recipients and optionally stored in the MDM 500 database.

You can edit any profile before it is distributed and/or saved in the database. The profiles can be saved on several file formats; \*.ASVP, \*.S00, \*.S10 and \*.SVP, even if the profile is not stored in the database.

### Topics

- *SVP Manager* on page 135
- *Add SVP Source* on page 138
- *Edit SVP Source* on page 140
- *Add SVP Receiver* on page 142
- *Edit SVP Receiver* on page 143
- *SVP Edit* on page 143
- *SVP Viewer* on page 145
- *Configure SVP Manager* on page 148

### Related topics

- *Introduction to SVP Manager* on page 30
- *Sound velocity profile procedures* on page 61
- *SVP Manager application* on page 134
- *SVP Manager* on page 135

## SVP Manager

The **SVP Manager** dialog is opened when you start the SVP Manager application. It is the main dialog provided by the application.

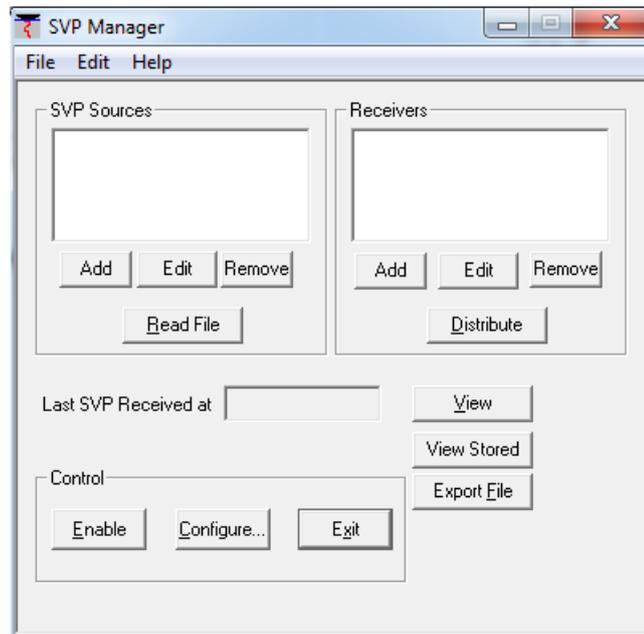
### Purpose

The **SVP Manager** dialog allows you to receive and distribute information from sound velocity profile (SVP) and conductivity, temperature and depth (CTD) instruments.

### Description

The **SVP Manager** dialog is the main control interface for the SVP Manager application. The dialog provides the following features:

- **SVP sources:** You can control from which source(s) you wish to retrieve sound velocity profile (SVP) and/or conductivity, temperature and depth (CTD) information.
- **Receivers:** You can control to which devices on the network the information is exported.
- **View:** You can view the current sound velocity profile file
- **Control:** You can control the overall operation of the SVP Manager application.



### Menu system

#### 1 File

##### a Open

Retrieves the user settings (sources, receivers etc.) that are previously saved.

##### b Save Settings

Saves the current SVP Manager user settings.

##### c Save As

Saves the current SVP Manager settings (sources, receivers etc.) in a new file.

##### d Exit

Click this option to close the SVP Manager application.

Note

---

*This will stop reception and transfer of SVP profiles to remote recipients.*

---

#### 2 Edit

This menu provides standard operating system options; Undo, Cut, Copy and Paste.

### 3 Help

This menu provides help options.

#### Parameters

##### 1 SVP Sources

This text field controls the source information handled by the SVP Manager application. The field lists the currently active systems providing sound velocity profiles (SVP) and/or conductivity, temperature and depth (CTD) information.

###### a Add

Click this button to add a new source instrument. The **Add SVP Source** dialog opens.

Provided that the **Enable Storing** function is enabled in the **Configure SVP Manager** dialog, the SVP Manager will await information from any new sensor defined as a source. Once a sensor is connected and this information is received by the MDM 500, the data is automatically stored in the database.

→ *Add SVP Source* on page 138

→ *Configure SVP Manager* on page 148

###### b Remove

Click this button to delete the currently selected source instrument from the list.

###### c Read File

Click this button to start transferring data that has been imported as a file.

###### d Edit

Click this button to edit the currently selected source instrument. The **Edit SVP Source** dialog opens. You can also double-click the source name in the text field to do this.

→ *Edit SVP Source* on page 140

##### 2 Receivers

This list shows which instruments that can receive sound velocity profile (SVP) and/or conductivity, temperature and depth (CTD) information from the SVP Manager.

###### a Add

Click this button to add a receiver. The **Add SVP Receiver** dialog opens.

→ *Add SVP Receiver* on page 142

###### b Remove

Click this button to delete the currently selected receiver from the list.

**c Distribute**

Click this button to manually transfer the last received profile to the selected instrument.

**d Edit**

Click this button to edit the configuration of the currently selected receiver. The **Edit SVP Receiver** dialog opens. You can also double-click the receiver name in the text field to do this.

→ *Edit SVP Receiver* on page 143

**3 Last SVP received at**

These parameters identify the latest received sound velocity profile (SVP) and/or conductivity, temperature and depth (CTD) information. The time of reception is displayed in the text field.

**a View**

Click this button to see the profile. The **SVP Edit** dialog opens.

→ *SVP Edit* on page 143

**b View Stored**

Click this button to view a stored profile. The **SVP Viewer** dialog opens.

→ *SVP Viewer* on page 145

**c Export**

Click this button to export a stored profile. The operating system's **Save As** dialog opens.

**4 Control**

These parameters control the overall operation of the SVP Manager application.

**a Enable**

Click this button to automatically receive and transfer sound velocity profiles and conductivity, temperature and depth information.

**b Configure**

Click this button to set up the operational parameters of the SVP Manager application. The **Configure SVP Manager** dialog opens.

→ *Configure SVP Manager* on page 148

**c Exit**

Click this option to close the SVP Manager application.

Note

---

*This will stop reception and transfer of SVP profiles to remote recipients.*

---

**Related topics**

- *Add SVP Source* on page 138
- *Edit SVP Source* on page 140
- *Add SVP Receiver* on page 142

- *Edit SVP Receiver* on page 143
- *SVP Edit* on page 143
- *SVP Viewer* on page 145
- *Configure SVP Manager* on page 148

## Add SVP Source

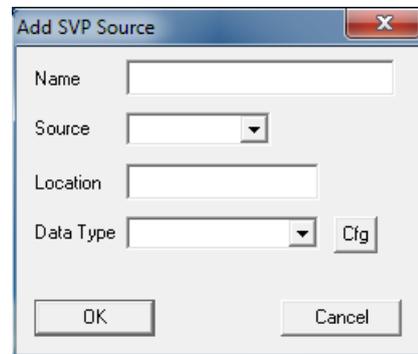
The **Add SVP Source** dialog is opened when you click the **Add** button under the **SVP Sources** field in the **SVP Manager** dialog.

### Purpose

The **Add SVP Source** dialog allows you to define the sensor and connection to provide sound velocity probe information.

### Description

The **Add SVP Source** dialog is used to define the name, source, location and data type for the sensor to be used.



### Parameters

#### 1 Name

Enter the name of the sensor in this text box. The name is only used to describe the instrument, and you can enter any name you want.

#### 2 Source

Set up the sensor to communicate over a serial line, by means of the network (UDP port), or to be read from a file.

#### 3 Location

Depending on the chosen source, enter a location code.

- a Serial line:** Enter the communication port settings as a text string as follows:

COMn ; bbbb ; db ; p ; sb

Field	Content	Example
COMn	Communication port	COM1
bbbb	Baud rate	4800
db	Data bits	8
p	Parity	0
sb	Stop bits	0

#### b Network

Enter the UDP port number

#### c File

Enter the folder location and file name.

#### 4 Data Type

Select the instrument's data from the list. If you need to define your own format, select *User defined*, and click **CFG**.

#### 5 CFG

Click this button if you need to define your own communication format. The **User Defined Format** dialog opens.

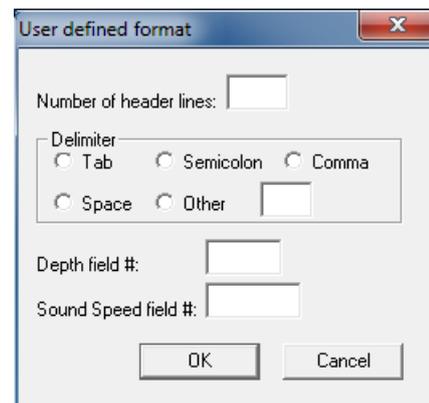
#### Related topics

- *Sound velocity profile procedures* on page 61
- *SVP Manager* on page 135
- *Edit SVP Source* on page 140
- *CFG – User defined format* on page 139

#### CFG – User defined format

The **User defined format** dialog opens when you click the **CFG** button in the **Add SVP Source** or **Edit SVP Source** dialogs.

The purpose of the dialog is to provide you with a tool to define your own communication format.



#### Parameters

##### 1 Number of header lines

This field is used to accept the number of header lines in the telegram format.

##### 2 Delimiter

Click to select which type delimiter (character) that is used between the individual fields in the telegram format.

##### 3 Depth field#

This parameter (an integer) defines in which field the depth information is located.

##### 4 Sound Speed field#

This parameter (an integer) defines in which field the sound speed information is located.

#### Example 12 Defining your own format for SVP profile input

A typical sensor will provide information on the following format:

```
CALC, 3123, 12-08-2000, 1, meters
AML SOUND VELOCITY PROFILER S/N:03123
DATE:85046 TIME:1218
DEPTH OFFSET (M):-0017.2
DEPTH (M) VELOCITY (M/S) TEMP (C)
  1.43 1535.90  22.38
  1.32 1536.05  22.38
  2.72 1536.05  22.39
```

*Example 12 Defining your own format for SVP profile input (cont'd.)*

In this example, the number of header lines is 5. The actual data starts on line 6, and the first field in each data line contains the depth value. A 'space' character is used as a delimiter before the sound velocity information follows in field 2. Field 3 contains the temperature, which is not interesting in this context.

In the **User defined format** dialog, the **Depth field#** must then be set to 1, and the **Sound Speed field#** must be set to 2.

**Related topics**

- *Sound velocity profile procedures* on page 61
- *SVP Manager* on page 135
- *Edit SVP Source* on page 140
- *CFG – User defined format* on page 139

**Edit SVP Source**

Once a SVP source is selected, the **Edit SVP Source** dialog is opened when you click the **Edit** button under the **SVP Sources** field in the **SVP Manager** dialog. You can also double-click on the chosen SVP source in the list.

**Purpose**

The **Edit SVP Source** dialog allows you to edit the sensor and connection used to provide sound velocity probe information.

**Description**

The **Add SVP Source** dialog is used to edit the name, source, location and data type for the sensor to be used. Note that dialog is identical to the **Add SVP Source** dialog.

**Parameters****1 Name**

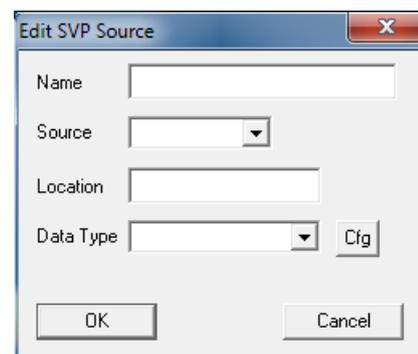
Enter the name of the sensor in this text box. The name is only used to describe the instrument, and you can enter any name you want.

**2 Source**

Set up the sensor to communicate over a serial line, by means of the network (UDP port), or to be read from a file.

**3 Location**

Depending on the chosen source, enter a location code.



**a Serial line:** Enter the communication port settings as a text string as follows:

COMn;bbbb;db;p;sb

Field	Content	Example
COMn	Communication port	COM1
bbbb	Baud rate	4800
db	Data bits	8
p	Parity	0
sb	Stop bits	0

**b Network**

Enter the UDP port number

**c File**

Enter the folder location and file name.

**4 Data Type**

Select the instrument’s data from the list. If you need to define your own format, select *User defined*, and click **CFG**.

**5 CFG**

Click this button if you need to define your own communication format. The **User Defined Format** dialog opens.

**Related topics**

- *Sound velocity profile procedures* on page 61
- *SVP Manager* on page 135
- *Edit SVP Source* on page 140
- *CFG – User defined format* on page 141

**CFG – User defined format**

The **User defined format** dialog opens when you click the **CFG** button in the **Add SVP Source** or **Edit SVP Source** dialogs.

The purpose of the dialog is to provide you with a tool to define your own communication format.

**Parameters**

**1 Number of header lines**

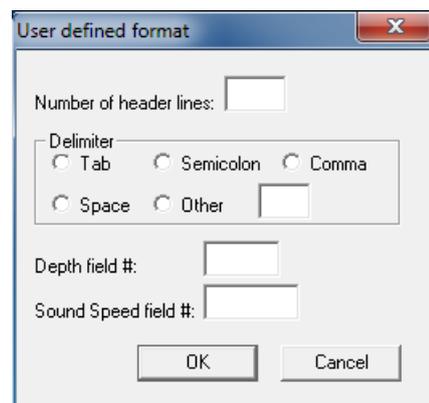
This field is used to accept the number of header lines in the telegram format.

**2 Delimiter**

Click to select which type delimiter (character) that is used between the individual fields in the telegram format.

**3 Depth field#**

This parameter (an integer) defines in which field the depth information is located.



#### 4 Sound Speed field#

This parameter (an integer) defines in which field the sound speed information is located.

#### Related topics

- *Sound velocity profile procedures* on page 61
- *SVP Manager* on page 135
- *Edit SVP Source* on page 140
- *CFG – User defined format* on page 141

## Add SVP Receiver

The **dd SVP Receiver** dialog is opened when you click the **Add** button under the **Receivers** field in the **SVP Manager** dialog.

#### Purpose

The **Add SVP Receiver** dialog allows you to define a remote computer to receive sound velocity profile information.

#### Description

The **Add SVP Receiver** dialog is used to define the name, IP address, port number and data type for the remote system to receive the sound velocity profile information.

#### Parameters

##### 1 Name

Enter the name of the recipient system in this text box. The name is only used to describe the system, and you can enter any text you want.

##### 2 IP Address

Enter the recipient system's IP address.

##### 3 Port No

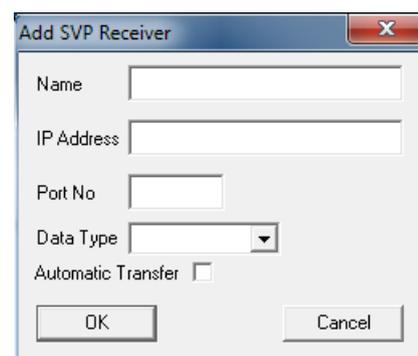
Enter the User Datagram Protocol (UDP) port number on the recipient system.

##### 4 Data Type

Select the data format the recipient system uses to accept sound velocity profiles. They profiles are automatically converted from the input format to the requested format prior to export.

##### 5 Automatic Transfer

Check this box if the sound velocity profiles shall be automatically transferred to the recipient system.



#### Related topics

- *Sound velocity profile procedures* on page 61
- *SVP Manager* on page 135

- *Edit SVP Receiver* on page 143

## Edit SVP Receiver

Once a SVP receiver is selected, the **Edit SVP Receiver** dialog is opened when you click the **Edit** button under the **Receivers** field in the **SVP Manager** dialog. You can also double-click on the chosen SVP receiver in the list.

### Purpose

The **Edit SVP Receiver** dialog allows you to edit the receiver parameter and the connection used to export sound velocity probe information to it.

### Description

The **Edit SVP Receiver** dialog is used to edit the name, IP address, port number and data type for an existing remote system receiving the sound velocity profile information.

### Parameters

#### 1 Name

Enter the name of the recipient system in this text box. The name is only used to describe the system, and you can enter any text you want.

#### 2 IP Address

Enter the recipient system's IP address.

#### 3 Port No

Enter the User Datagram Protocol (UDP) port number on the recipient system.

#### 4 Data Type

Select the data format the recipient system uses to accept sound velocity profiles. They profiles are automatically converted from the input format to the requested format prior to export.

#### 5 Automatic Transfer

Check this box if the sound velocity profiles shall be automatically transferred to the recipient system.

### Related topics

- *Sound velocity profile procedures* on page 61
- *SVP Manager* on page 135
- *Add SVP Receiver* on page 142

## SVP Edit

The **SVP Edit** dialog is opened when you click the **View** button in the **SVP Manager** dialog too observe the latest sound velocity profile.

## Purpose

The **SVP Edit** dialog allows you view and edit a sound velocity profile.

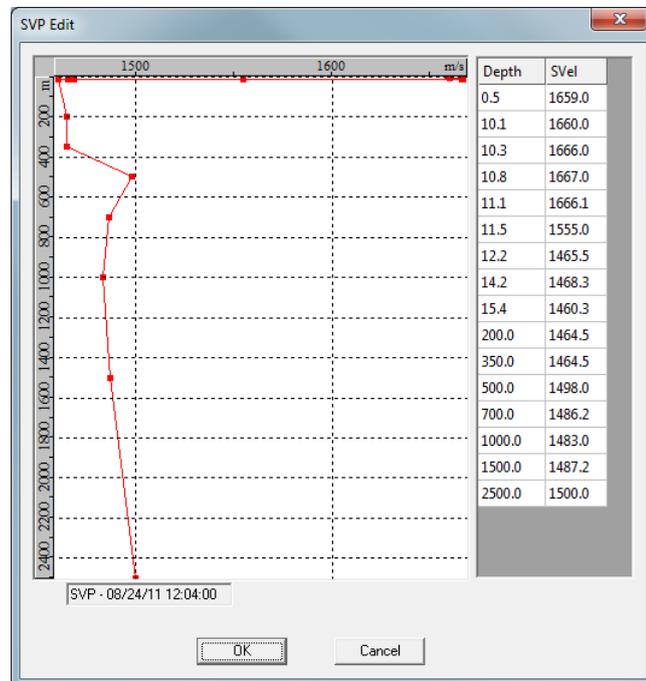
## Description

The **SVP Edit** dialog displays the latest received sound velocity profile.

Individual points in the profile can be edited by changing the values in the table. This feature can be used to remove obvious errors in the profile. Points cannot be removed, but changing the value of individual points in the profile equal to the previous or next value has the same effect as removing it.

If you right-click in the curve, a short-cut menu appears.

→ *SVP Edit short-cut menu* on page 145



## Tip

If you wish to edit your profiles before they are distributed to the receivers, you must disable the **Auto Enable** function in the **Configure SVP Manager** dialog. You can manually distribute your edited profile using the **Distribute** button.

## Parameters

### 1 Curve

The sound velocity curve is shown with depth on the Y-axis and temperature on the X-axis.

If you right-click in the curve, a short-cut menu appears.

### 2 Table

The table presents each and every measurements taken to create the sound velocity curve. One column provides the depths, while the other shows the sound velocity for each depth.

By placing the cursor in a table cell, you can manually changed the temperature value.

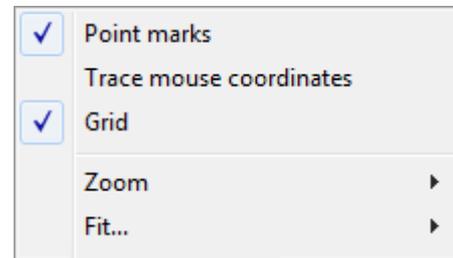
## Related topics

- *Sound velocity profile procedures* on page 61
- *SVP Manager* on page 135
- *SVP Viewer* on page 145
- *SVP Edit short-cut menu* on page 145

- *Configure SVP Manager* on page 148

### SVP Edit short-cut menu

This short-cut menu is accessed by right-clicking on the graphical presentation of the sound velocity profile. The menu allows you to alter the presentation properties.



#### 1 Point Marks

Specific points in the sound velocity profile are indicated by square point marks. This option toggles the point marks on and off.

#### 2 Trace mouse coordinates

When you move the mouse cursor over the graphic presentation, the mouse movements are traced by an on-screen element. This displays the location of the mouse relative to the x- and y-axis. This options toggles these mouse coordinates on or off.

#### 3 Grid

This option toggles the grid in the graphical presentation on or off.

#### 4 Zoom

This function offers a simple tool for zoom.

**a Zoom tool:** this option displays the zoom box in the graphical view. Drag the handles of the zoom box to set the area to be zoomed in.

**b Apply:** Zooms in the area set by the zoom box.

#### 5 Fit

This option makes the sound velocity curve fit to the size of the graphical presentation. Options are width, height or page.

### Related topics

- *Sound velocity profile procedures* on page 61
- *SVP Manager* on page 135
- *SVP Viewer* on page 145
- *SVP Edit short-cut menu* on page 145
- *Configure SVP Manager* on page 148

## SVP Viewer

The **SVP Viewer** dialog is opened when you click the **View Stored** button in the **SVP Manager** dialog to observe the stored sound velocity profile. If no stored profile exists, the dialog will not open.

## Purpose

The **SVP Viewer** dialog allows you view and edit a sound velocity profile. You can browse through the stored profiles, and export selected profiles to other applications and instruments.

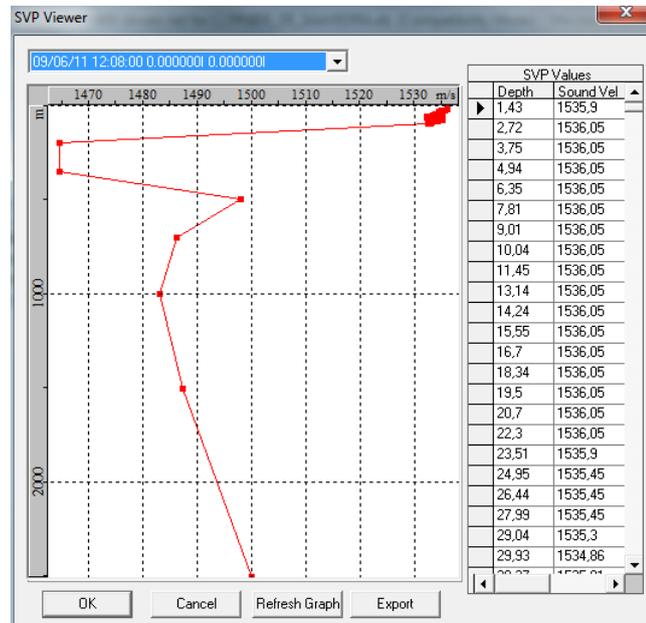
## Description

The **SVP Viewer** dialog displays the latest sound velocity profile stored in the database.

Individual points in the profile can be edited by changing the values in the table. This feature can be used to remove obvious errors in the profile. Points cannot be removed, but changing the value of individual points in the profile equal to the previous or next value has the same effect as removing it.

If you right-click in the curve, a short-cut menu appears.

→ *SVP Viewer short-cut menu* on page 147



## Parameters

### 1 Drop-down list

Use this list to select which profile to view. Click the **Refresh Graph** button when a new profile is selected.

### 2 Curve

The sound velocity curve is shown with depth on the Y-axis and temperature on the X-axis.

If you right-click in the curve, a short-cut menu appears.

### 3 Table

The table presents each and every measurements taken to create the sound velocity curve. One column provides the depths, while the other shows the sound velocity for each depth.

By placing the cursor in a table cell, you can manually changed the temperature value.

### 4 Refresh Graph

Click this button the refresh the graphic presentation. Use this button when you are opening a new profile, and when you are editing the table.

### 5 Export

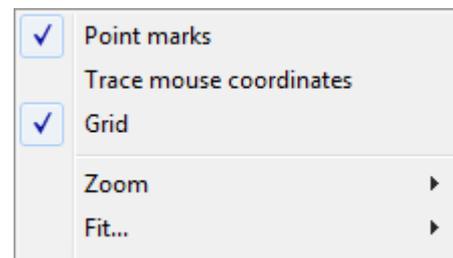
Click this button the export the current profile.

## Related topics

- *Sound velocity profile procedures* on page 61
- *SVP Manager* on page 135
- *SVP Edit* on page 143
- *SVP Viewer short-cut menu* on page 147
- *Configure SVP Manager* on page 148

## SVP Viewer short-cut menu

This short-cut menu is accessed by right-clicking on the graphical presentation of the sound velocity profile. The menu allows you to alter the presentation properties.



### 1 Point Marks

Specific points in the sound velocity profile are indicated by square point marks. This option toggles the point marks on and off.

### 2 Trace mouse coordinates

When you move the mouse cursor over the graphic presentation, the mouse movements are traced by an on-screen element. This displays the location of the mouse relative to the x- and y-axis. This options toggles these mouse coordinates on or off.

### 3 Grid

This option toggles the grid in the graphical presentation on or off.

### 4 Zoom

This function offers a simple tool for zoom.

- a Zoom tool:** this option displays the zoom box in the graphical view. Drag the handles of the zoom box to set the area to be zoomed in.
- b Apply:** Zooms in the area set by the zoom box.

### 5 Fit

This option makes the sound velocity curve fit to the size of the graphical presentation. Options are width, height or page.

## Related topics

- *Sound velocity profile procedures* on page 61
- *SVP Manager* on page 135
- *SVP Edit* on page 143
- *SVP Viewer short-cut menu* on page 147
- *Configure SVP Manager* on page 148

## Configure SVP Manager

The **Configure SVP Manager** dialog is opened when you click the **Configure** button in the **SVP Manager** dialog.

### Purpose

The **Configure SVP Manager** dialog allows you to set up the operational parameters for the SVP Manager application.

### Description

The **Configure SVP Manager** is used to set up the database variables in the SVP Manager application.

### Parameters

#### 1 Display New Profiles

Check this box to automatically display new profiles when they arrive. The **SVP Edit** dialog is then opened when a new profile is stored.

→ *SVP Edit* on page 143

#### 2 Auto Enable

Check this to automatically enable storing of file information in the database.

#### 3 Database settings

These parameters control the database used by the SVP Manager to store the sound velocity profile information.

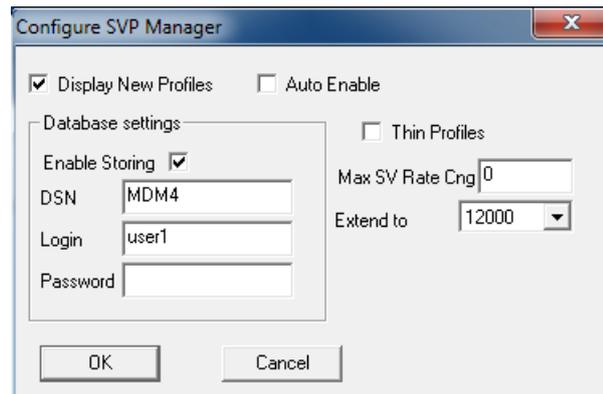
- a Enable Storing:** Check this box to enable or disable storing of file information in the database. This should be enabled by default.
- b DSN (Data Source Name):** This parameter is used to display which database to use. Default name is `mdm4`. Do not change this unless you have a non-standard MDM 500 installation.
- c Login:** If required, enter your user name to log into the MDM 500 database. Unless modified by the system administrator, the default user name is `user1`.
- d Password:** Enter your password. Unless modified by the system administrator, the default password is [blank].

#### 4 Thin Profiles

Check this box to reduce the number of depth/sound velocity elements in the converted profile. The amount of “thinning” is controlled by the **Max SV Rate Cng** parameter value. A larger number produces less points in the profile.

#### 5 Max SV Rate Cng

Use this parameter to define maximum change between two neighbouring values in the profile. If the change is larger than the value entered, it will be deleted.



**6 Extend to**

Select a depth from the list to automatically extend the profile to the selected depth. The hydrographic multibeam echo sounders provided by Kongsberg Maritime can measured down to 12.000 meters, but no sound velocity profilers can measure this deep. This function uses a fixed equation to add depth/sound velocity elements to the selected depth.

**Related topics**

- *Sound velocity profile procedures* on page 61
- *SVP Manager* on page 135
- *Add SVP Source* on page 138
- *Edit SVP Source* on page 140
- *Add SVP Receiver* on page 142
- *Edit SVP Receiver* on page 143
- *SVP Edit* on page 143
- *SVP Viewer* on page 145

## Report Manager application

The Report Manager allows you to run queries and print reports based on the stored data. You are also permitted to edit sensor names for the reports.

By means of the Report Manager it is easy to view the data recorded from any given sensor, from any two sensors combined, or from the Cruise Recorder. The data can be printed using the built-in report template, or you can create your own layout. The data can also be copied and pasted into other applications, such as office text editors and spreadsheets.

### Note

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*When the Report Manager is started, it is contained in a host application. The functions offered by this host program (Print, Print Preview, Zoom etc.) are used, but considered familiar to most users. For this reason, they are only briefly described in this manual.*

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### Topics

- *About reports and queries* on page 151
- *Host application functionality* on page 151
- *Report Manager* on page 152
- *Queries & Reports* on page 154
- *Queries & Reports 2* on page 157
- *Group Queries* on page 160
- *All Selected Values* on page 163
- *Cruise Recorder* on page 165
- *Data Values* on page 166
- *Installed Instruments* on page 168
- *Logging Groups* on page 170
- *Delete Data* on page 173

### Related topics

- *Introduction to Report Manager* on page 30
- *About reports and queries* on page 31
- *Report procedures* on page 52
- *Report Manager application* on page 150
- *Report Manager* on page 152

## About reports and queries

The Report Manager application provided with the MDM 500 system allows you to create numerous report types. All these reports are based on queries made in the Report Manager dialogs, and the reports can be provided on different formats.

### Related topics

- *About reports and queries* on page 31

### Standard reports

A standard report provides the actual recorded data in a tabular format. Each row in the table contains the information from one record with columns for time stamp, field name and value. You can generate these reports using the **Run Query** and **Preview Report** buttons in the applicable dialogs.

- The **Run Query** option outputs the report for on-screen view. This format can easily be exported to a suitable file format using the functionality in the Report Manager's host application.
- The **Preview Report** option outputs the report for printed output, and provides additional information in a report header. To start the printing, use the functionality in the Report Manager's host application.

### Cross tab reports

The **Run Cross Tab Query** and **Preview Cross Tab Report** buttons in the Report Manager dialogs allow you to output the sensor data in a contingency table.

In this table format, information that are common in multiple related records are grouped. You can generate these reports using the **Run Cross Tab Query** and **Preview Cross Tab Report** buttons in the applicable dialogs.

- The **Run Cross Tab Query** option outputs the report for on-screen view. This format can easily be exported to a suitable file format using the functionality in the Report Manager's host application.
- The **Preview Cross Tab Report** option outputs the report for printed output, and provides additional information in the report header. To start the printing, use the functionality in the Report Manager's host application.

## Host application functionality

The Report Manager is started in a host application designed by Microsoft®. This host application provides some important functionality in a dedicated tool bar.



As the majority of the functions provided are considered well known for most Windows® users, only a short descriptive list is provided. Note that several function are only available once a report is shown. From left, the following functions are provided:

- 1 **Exit**
- 2 **Export:** Allows you to export the current report on various formats
- 3 **Page setup:** Opens dedicated operating system dialog for page properties
- 4 **Print preview**
- 5 **Print**
- 6 **Zoom**
- 7 **Undo**
- 8 **Cut**
- 9 **Copy**
- 10 **Paste**
- 11 **Find**
- 12 **Find next**
- 13 **Sort ascending**
- 14 **Sort descending**
- 15 **Advanced filter/sort**
- 16 **Toggle filter**
- 17 **Remove filter/sort**
- 18 **Query:** Not used

## Report Manager

The **Report Manager** dialog is opened when you start the Report Manager application. It is the main dialog provided by the application.

### **Purpose**

The **Report Manager** dialog allows you to open and use all the functions provided by the Report Manager application.

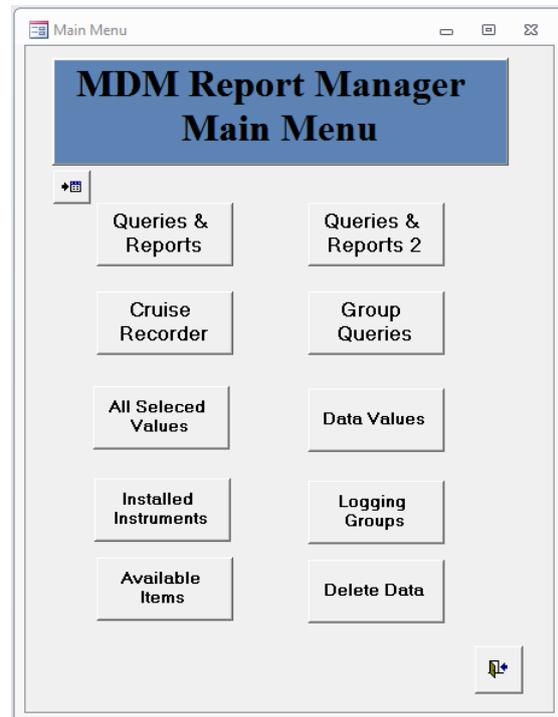
## Description

The **Report Manager** dialog acts as a “main menu” for the different functionality provided by the Report Manager application. The following report functions are available:

- Queries and reports
- Queries and reports 2
- Cruise Recorder
- Group Queries

The following parameter configuration functions are available:

- All Selected Values
- Installed Instruments
- Available Items
- Data Values
- Logging Groups
- Delete Data



## Parameters

### 1 Password

This is the iconic button on the top left side of the dialog. The function is rarely used, and will allow you to refresh your log-in connection to the database. It will only be required if someone changes the password for `user1` on the database.

### 2 Function buttons

Click any button to open the relevant dialog. To close each function use the operating system functionality provided within each dialog.

### 3 Exit

This is the iconic button on the bottom right corner of the dialog. Click this button to close the Report Manager application

## Related topics

- *Queries & Reports* on page 154
- *Queries & Reports 2* on page 157
- *Group Queries* on page 160
- *All Selected Values* on page 163
- *Cruise Recorder* on page 165
- *Data Values* on page 166
- *Installed Instruments* on page 168
- *Logging Groups* on page 170
- *Delete Data* on page 173

## Queries & Reports

The **Queries & Reports** dialog is opened when you click the **Queries & Reports** button in the Report Manager application's main dialog.

### Purpose

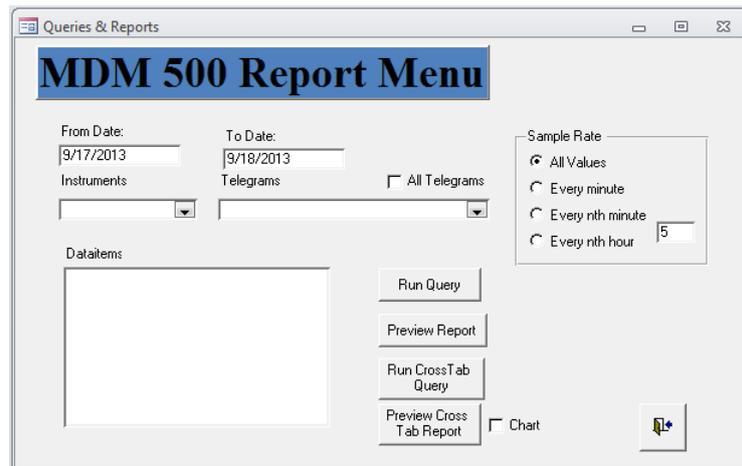
The **Queries & Reports** dialog allows you to run queries and print reports based on the collected data.

### Description

There are two different types of reports and two output formats for each of them.

- Regular tabular reports
- Cross tab reports with information groups

Check **Chart** to obtain a graphic version of the Cross Tab reports.



There are also four options available for report generation.

- The **Queries & Reports** option allows you to create reports based on data from a single sensor.
- The **Queries & Reports 2** option allows you to create reports based on data from two separate sensors.
- The **Group Queries** option allows you to create reports based on the four logical groups you defined when you set up the Server Manager application.
- The **All Selected Values** option allows you to create a report containing all the data in the database.

### Parameters

#### 1 From Date

This field allows you to enter the start date of the recorded data you wish to include in the report. Enter the date on the format defined in your operating system setup.

The date entered is inclusive, so all data recorded on the defined date will be included in the report.

#### 2 To Date

This field allows you to enter the end date of the recorded data you wish to include in the report. Enter the date on the format defined in your operating system setup.

The date entered is inclusive, so all data recorded on the defined date will be included in the report.

### 3 Instruments

This parameter allows you to choose which sensor your report shall include data from.

The list of available sensors is generated automatically based on the sensor registered in the database on the Server computer.

In this dialog, you are only permitted to retrieve data from one single sensor. If you need to create a report based on two sensors, you must use the **Query & Report 2** dialog.

### 4 Telegrams

This parameter allows you to choose which of the chosen sensor's telegram you wish to include data from.

### 5 Dataitem

Once the sensor (instrument) and telegram has been chosen, this list reflects the various information contained in the telegram.

Click on the data item(s) you wish to include in the report. To select more than one item, hold the shift or control key, and click several items. If no data items are selected, an error message will be provided when you try to generate the report.

#### *Example 13 The relation between Instrument, Telegram, and Data Items*

If you select a Depth sounder instrument (sensor), one telegram option is the **DBT** NMEA telegram. The data items (fields) offered by the **DBT** telegram are Depth from sounder, Depth from surface, Depth from keel, Depth and Offset. This telegram format thus provides five individual data items.

### 6 Sample Rate

You can choose if you wish to include all the chosen telegram(s) from the selected sensor, or if you wish to reduce the amount of data in the report.

- **All**: Include all recorded data
- **Every minute**: Include only data from every minute. If the database holds data that are collected more frequent than this, the Report Manager will calculate the mean value of all these.
- **Every nth minute**: Enter the sample value as an integer in the text field. If the database holds data that are collected more frequent than the chosen sample rate, the Report Manager will calculate the mean value of all these.
- **Every nth hour**: Enter the sample value as an integer in the text field. If the database holds data that are collected more frequent than the chosen sample rate, the Report Manager will calculate the mean value of all these.

Note

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*Consider the type of data before you choose to include mean values in your report. For example, mean depth values make sense, while mean positions do not.*

---

### 7 Run Query

Click this button to generate a standard tabular report primarily for screen view.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

## **8 Preview Report**

Click this button to generate a standard tabular report primarily intended for printed output. The output then includes a page header.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

## **9 Run CrossTab Query**

Click this button to generate a cross tab report primarily intended for screen view.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

## **10 Preview CrossTab Report**

Click this button to generate a cross tab report primarily intended for print. The output then includes a page header.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

## 11 Chart

Click to generate the crosstab report as a chart. The information is then presented in a graph. One vertical line is provided for each data item record with time on the x-axis and value on the y-axis.

This report is presented on the display. By means of the functionality provided by the Report Manager framework, you can save and print the graph.

### Related topics

- *Introduction to Report Manager* on page 30
- *About reports and queries* on page 31
- *Report procedures* on page 52
- *Report Manager application* on page 150
- *Report Manager* on page 152

## Queries & Reports 2

The **Queries & Reports 2** dialog is opened when you click the **Queries & Reports 2** button in the Report Manager application's main dialog.

### Purpose

The **Queries & Reports 2** dialog allows you to run queries and print reports based on the collected data from two separate sensors simultaneously.

### Description

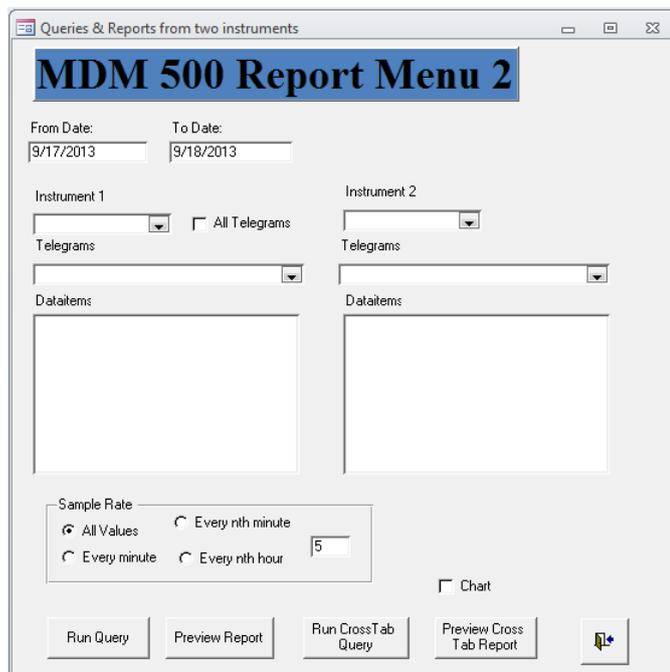
There are two different types of reports and two output formats for each of them.

- Regular tabular reports
- Cross tab reports with information groups

Check **Chart** to obtain a graphic version of the Cross Tab reports.

There are also four options available for report generation.

- The **Queries & Reports** option allows you to create reports based on data from a single sensor.
- The **Queries & Reports 2** option allows you to create reports based on data from two separate sensors.
- The **Group Queries** option allows you to create reports based on the four logical groups you defined when you set up the Server Manager application.
- The **All Selected Values** option allows you to create a report containing all the data in the database.



## Parameters

### 1 From Date

This field allows you to enter the start date of the recorded data you wish to include in the report. Enter the date on the format defined in your operating system setup.

The date entered is inclusive, so all data recorded on the defined date will be included in the report.

### 2 To Date

This field allows you to enter the end date of the recorded data you wish to include in the report. Enter the date on the format defined in your operating system setup.

The date entered is inclusive, so all data recorded on the defined date will be included in the report.

### 3 Instruments

This parameter allows you to choose which two instruments (sensors) your report shall include data from.

The list of available sensors is generated automatically based on the sensors registered in the database on the Server computer.

In this dialog, you are permitted to retrieve data from two sensors.

### 4 Telegrams

For each chosen sensor, this parameter allows you to specify which of the sensor's telegrams you wish to include data from.

#### *Example 14 The relation between Instrument, Telegram, and Data Items*

If you select a Depth sounder instrument (sensor), one telegram option is the **DBT** NMEA telegram. The data items (fields) offered by the **DBT** telegram are Depth from sounder, Depth from surface, Depth from keel, Depth and Offset. This telegram format thus provides five individual data items.

### 5 Dataitem

Once the two sensors (instruments) and telegram have been chosen, these lists reflect the various information contained in each telegram.

For each sensor, click on the data item(s) you wish to include in the report. To select more than one item, hold the shift or control key, and click several items. If no data items are selected, an error message will be provided when you try to generate the report.

### 6 Sample Rate

You can choose if you wish to include all the chosen telegram(s) from the selected sensor, or if you wish to reduce the amount of data in the report.

- **All:** Include all recorded data
- **Every minute:** Include only data from every minute. If the database holds data that are collected more frequent than this, the Report Manager will calculate the mean value of all these.

- **Every nth minute:** Enter the sample value as an integer in the text field. If the database holds data that are collected more frequent than the chosen sample rate, the Report Manager will calculate the mean value of all these.
- **Every nth hour:** Enter the sample value as an integer in the text field. If the database holds data that are collected more frequent than the chosen sample rate, the Report Manager will calculate the mean value of all these.

Note

---

*Consider the type of data before you choose to include mean values in your report. For example, mean depth values make sense, while mean positions do not.*

---

**7 Run Query**

Click this button to generate a standard tabular report primarily for screen view.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

**8 Preview Report**

Click this button to generate a standard tabular report primarily intended for printed output. The output then includes a page header.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

**9 Run CrossTab Query**

Click this button to generate a cross tab report primarily intended for screen view.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

**10 Preview CrossTab Report**

Click this button to generate a cross tab report primarily intended for print. The output then includes a page header.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

## 11 Chart

Click to generate the crosstab report as a chart. The information is then presented in a graph. One vertical line is provided for each data item record with time on the x-axis and value on the y-axis.

This report is presented on the display. By means of the functionality provided by the Report Manager framework, you can save and print the graph.

### Related topics

- *Introduction to Report Manager* on page 30
- *About reports and queries* on page 31
- *Report procedures* on page 52
- *Report Manager application* on page 150
- *Report Manager* on page 152

## Group Queries

The **Group Queries** dialog is opened when you click the **Group Queries** button in the Report Manager application's main dialog.

### Purpose

The **Group Queries** dialog allows you to run queries based on the four logical groups you created when you set up the recording parameters in the **View Configuration** dialog in the Server Manager application.

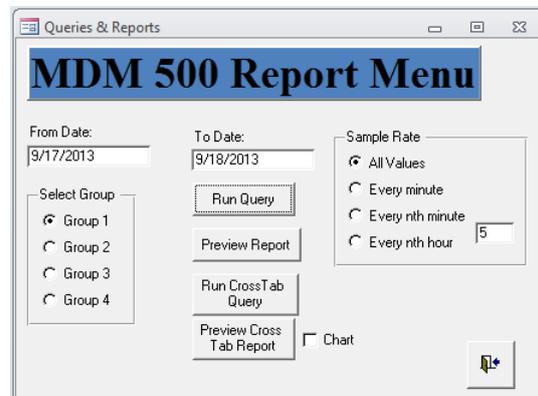
### Description

There are two different types of reports and two output formats for each of them.

- Regular tabular reports
  - Cross tab reports with information groups
- Check **Chart** to obtain a graphic version of the Cross Tab reports.

There are also four options available for report generation.

- The **Queries & Reports** option allows you to create reports based on data from a single sensor.



- The **Queries & Reports 2** option allows you to create reports based on data from two separate sensors.
- The **Group Queries** option allows you to create reports based on the four logical groups you defined when you set up the Server Manager application.
- The **All Selected Values** option allows you to create a report containing all the data in the database.

### Parameters

#### 1 From Date

This field allows you to enter the start date of the recorded data you wish to include in the report. Enter the date on the format defined in your operating system setup.

The date entered is inclusive, so all data recorded on the defined date will be included in the report.

#### 2 To Date

This field allows you to enter the end date of the recorded data you wish to include in the report. Enter the date on the format defined in your operating system setup.

The date entered is inclusive, so all data recorded on the defined date will be included in the report.

#### 3 Select Group

Select which of the four groups you wish to create the report from.

#### 4 Sample Rate

You can choose if you wish to include all the chosen telegram(s) from the selected sensor, or if you wish to reduce the amount of data in the report.

- **All:** Include all recorded data
- **Every minute:** Include only data from every minute. If the database holds data that are collected more frequent than this, the Report Manager will calculate the mean value of all these.
- **Every nth minute:** Enter the sample value as an integer in the text field. If the database holds data that are collected more frequent than the chosen sample rate, the Report Manager will calculate the mean value of all these.
- **Every nth hour:** Enter the sample value as an integer in the text field. If the database holds data that are collected more frequent than the chosen sample rate, the Report Manager will calculate the mean value of all these.

#### Note

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*Consider the type of data before you choose to include mean values in your report. For example, mean depth values make sense, while mean positions do not.*

---

#### 5 Run Query

Click this button to generate a standard tabular report primarily for screen view.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

## **6 Preview Report**

Click this button to generate a standard tabular report primarily intended for printed output. The output then includes a page header.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

## **7 Run CrossTab Query**

Click this button to generate a cross tab report primarily intended for screen view.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

## **8 Preview CrossTab Report**

Click this button to generate a cross tab report primarily intended for print. The output then includes a page header.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

## 9 Chart

Click to generate the crosstab report as a chart. The information is then presented in a graph. One vertical line is provided for each data item record with time on the x-axis and value on the y-axis.

This report is presented on the display. By means of the functionality provided by the Report Manager framework, you can save and print the graph.

### Related topics

- *Introduction to Report Manager* on page 30
- *About reports and queries* on page 31
- *Report procedures* on page 52
- *Report Manager application* on page 150
- *Report Manager* on page 152

## All Selected Values

The **All Selected Values** dialog is opened when you click the **All Selected Values** button in the Report Manager application's main dialog.

### Purpose

The **All Selected Values** dialog allows you to run a query to contains all the data in the database. This query will include the data from all the recorded sensors.

### Description

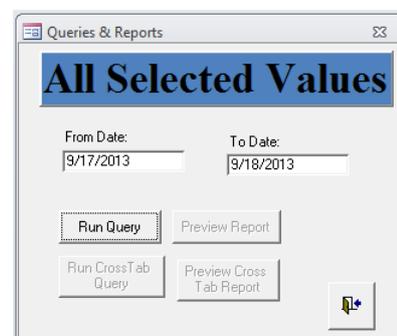
There are two different types of reports and two output formats for each of them.

- Regular tabular reports
- Cross tab reports with information groups

Check **Chart** to obtain a graphic version of the Cross Tab reports.

There are also four options available for report generation.

- The **Queries & Reports** option allows you to create reports based on data from a single sensor.
- The **Queries & Reports 2** option allows you to create reports based on data from two separate sensors.
- The **Group Queries** option allows you to created reports based on the four logical groups you defined when you set up the Server Manager application.
- The **All Selected Values** option allows you to created a report containing all the data in the database.



## Parameters

### 1 From Date

This field allows you to enter the start date of the recorded data you wish to include in the report. Enter the date on the format defined in your operating system setup.

The date entered is inclusive, so all data recorded on the defined date will be included in the report.

### 2 To Date

This field allows you to enter the end date of the recorded data you wish to include in the report. Enter the date on the format defined in your operating system setup.

The date entered is inclusive, so all data recorded on the defined date will be included in the report.

### 3 Run Query

Click this button to generate a standard tabular report primarily for screen view.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

### 4 Preview Report

Click this button to generate a standard tabular report primarily intended for printed output. The output then includes a page header.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

### 5 Run CrossTab Query

Click this button to generate a cross tab report primarily intended for screen view.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

## 6 Preview CrossTab Report

Click this button to generate a cross tab report primarily intended for print. The output then includes a page header.

The functionality provided by the Report Manager host application allows you to print the results, or to save it to various formats for text and spreadsheet editors.

→ *About reports and queries* on page 31

→ *Host application functionality* on page 151

Note that it may take a while before the result is made available, this depends on how much data you have selected for inclusion. If you wish the result to appear sooner, decrease the amount of data by changing the sample rate.

### Related topics

- *Introduction to Report Manager* on page 30
- *About reports and queries* on page 31
- *Report procedures* on page 52
- *Report Manager application* on page 150
- *Report Manager* on page 152

## Cruise Recorder

The **Cruise Recorder** dialog is opened when you click the **Cruise Recorder** button in the Report Manager application's main dialog.

### Purpose

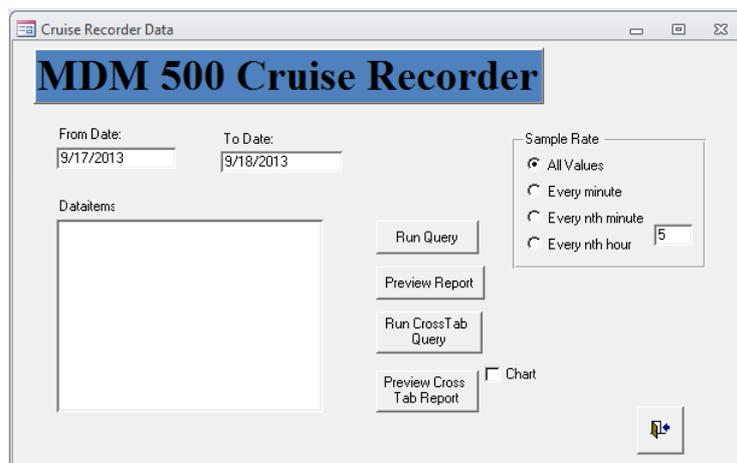
The **Cruise Recorder** dialog allows you to log data during the entire cruise, also when normal logging is not running.

### Description

Items suitable for logging with **Cruise Recorder** are for example weather information and navigation data. Please set a reasonable thinning interval to prevent the database from running full. An example can be to log data every 5 minutes (300 seconds).

### Parameters

- 1 **From Date**
- 2 **To Date**



- 3 **Sample Rate**
  - a All Values
  - b Every minute
  - c Every nth minute
  - d Every nth hour
- 4 **Run Query**
- 5 **Preview Report**
- 6 **Run Cross Tab Query**
- 7 **Preview Cross Tab Report**

### Related topics

- *Client Manager* on page 82
- *Serial Port Setup* on page 122
- *LAN Port Setup* on page 123

## Data Values

The **Data Values** dialog is opened when you click the **Data Values** button in the Report Manager application's main dialog.

### Purpose

The **Data Values** dialog allows you to view all data values recorded from a specific sensor.

### Description

The **Data Values** dialog allows you to retrieve, examine and modify data recorded by a defined sensor. The dialog allows you to click through the currently selected sensors, and provide all relevant information related to:

- Recorded data for each individual data item (part of telegram)
- Group belonging

### Parameters

#### 1 InstrName

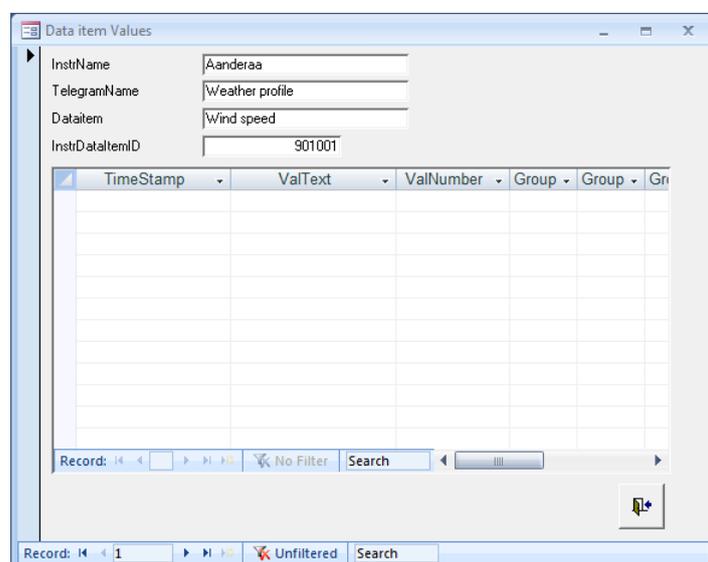
This is the name of the sensor that is currently providing the information in the table.

#### 2 TelegramName

This is the current telegram from the chosen sensor.

#### 3 Dataitem

This is the part of the telegram that is currently shown.



**4 InstrDataItemID**

This is the part of the telegram that is currently shown.

→ *Driver, sensor and data field identification numbers* on page 179

**5 Table**

The table provides the current data item information from the sensor. Each line in the table corresponds to a reading from the chosen sensor. Each reading is time stamped.

**a TimeStamp**

This is the time the recorded value for retrieved from the sensor

**b ValText**

This column includes logged text data values. These are only shown if the current sensor provides text information.

**c ValNumber**

This column includes the numerical data values provided by the sensor. These values can be changed manually.

Note

---

*If you change any value here, you will inflict a permanent change to the information in the database.*

---

**d Group**

This cell identifies the group of sensors the current sensor belongs to. These groups are defined in the **View Configuration** dialog in the Server Manager application.

If the cells shows **-1**, this means that the sensor belongs to the group. If the value **0** is shown, the sensor does not belong to the group. These values can be changed manually, and you can thus rearrange the group organization you have previously made in the **View Configuration** dialog in the Server Manager application.

→ *View Configuration* on page 77

**e Record**

This function allows you to leaf through the records in the database. Since this **Record** function is located inside the table, it allows you to step through the individual table rows.

**f Search**

This function allows you to search through the records in the database. Since this **Search** function is located inside the table, it allows you to search for information within the data currently provided in the table. Click in the search field, write the phrase, and then push **Enter**.

## 6 Record

This function allows you to leaf through the records in the database. Since this **Record** function is located at the bottom of the dialog and outside the table, it allows you to step through the individual sensors connected to the MDM 500 system. If you have very many sensors connected, you will need to click many times. You may then choose to use the Search function.

## 7 Search

This function allows you to search through the records in the database. Since this **Search** function is located at the bottom of the dialog and outside the table, it allows you search through the list of sensors connected to the MDM 500 system. Click in the search field, write the phrase, and then push **Enter**.

### Related topics

- *Introduction to Report Manager* on page 30
- *About reports and queries* on page 31
- *Report procedures* on page 52
- *Report Manager application* on page 150
- *Report Manager* on page 152

## Installed Instruments

The **Installed Instruments** dialog is opened when you click the **Installed Instruments** button in the Report Manager application's main dialog.

### Purpose

The **Installed Instruments** dialog allows you to view all the sensors currently providing information into your database.

### Description

The **Installed Instruments** dialog allows you to retrieve, examine and modify the information related to each sensor. The dialog allows you to click through the currently active sensors, and see and/or modify all relevant information related to:

- Sensor identification
- Sensor name
- Type of sensor
- Physical location of the sensor

### Parameters

#### 1 InstrID

This is the sensor's unique identification number.

→ *Driver, sensor and data field identification numbers* on page 179

**2 InstrName**

This is the name of the sensor.

**3 InstrType**

This field identifies the type of sensor. It is a standard text field, and you are permitted to edit the information.

**4 Location**

This field identifies the physical location of the sensor. It is a standard text field, and you are permitted to edit the information.

**5 Remarks**

This field allows you to enter any kind of remark related to the sensor. It is a standard text field.

**6 ProgID**

This field is not used on the MDM.

**7 New ID**

You may – in special circumstances – wish to provide a sensor with a new identification number. This may be useful if you for example install a new or updated driver with the same identification number as the old one. You must then change the identification number on the old sensor to prevent the data from being erased.

For an overview of the identification numbers, see chapter *Driver descriptions*.

→ *Driver descriptions* on page 178

Note \_\_\_\_\_

*This function must be used with care!*

---

**8 Record**

This function allows you to leaf through the records in the database. Since this **Record** function is located at the bottom of the dialog and outside the table, it allows you to step through the individual sensors connected to the MDM 500 system. If you have very many sensors connected, you will need to click many times. You may then choose to use the Search function.

**9 Search**

This function allows you to search through the records in the database. Since this **Search** function is located at the bottom of the dialog and outside the table, it allows you search through the list of sensors connected to the MDM 500 system. Click in the search field, write the phrase, and then push **Enter**.

**Related topics**

- *Introduction to Report Manager* on page 30
- *About reports and queries* on page 31
- *Report procedures* on page 52
- *Report Manager application* on page 150
- *Report Manager* on page 152

## Logging Groups

The **Logging Groups** dialog is opened when you click the **Logging Groups** button in the Report Manager application's main dialog.

### Purpose

The **Logging Groups** dialog allows you to view which sensors and data items that are recorded in each group.

### Description

The **View Configuration** dialog in the Server manager application allows you to record data from the sensors into four logging groups. This **Logging Groups** dialog provides you with a viewer to recall this information. You can recall any of the four groups, and see which sensors, telegrams and data items that are recorded into each group.

ItemID	Instr	Tgm	Dataitem	Mas	Thin M	Interval
4702001	Seapath	GGA	Clock	Yes	1	1000
4702002	Seapath	GGA	Latitude	No	0	
4702004	Seapath	GGA	Longitude	No	0	
4702006	Seapath	GGA	Quality	No	0	

→ *View Configuration* on page 77

### Parameters

#### 1 Group No

This field identifies the current group shown in the table.

#### 2 Group Items

The table provides the information about which sensor(s), telegrams and data items that are recorded in the specific group. The information in the table corresponds to the parameters that were defined in the **View Configuration** dialog in the Server Manager application.

→ *View Configuration* on page 77

The following columns are provided:

##### a ItemID

This column provides the unique identification provided to each data item (part of a telegram) from a sensor.

→ *Driver, sensor and data field identification numbers* on page 179

##### b Instr

This column identifies the sensor

##### c Tgm

This column identifies the telegram

**d DataItem**

This column identifies the data item (field).

**e Master**

This column identifies if the recording of this specific data item is established as a master for all the other data items in the same group.

**f Thin M**

This parameter controls how much of the data provided by the sensor that are saved to the database. It corresponds to the **Sampling** parameter in the **View Configuration** dialog

**g Interval**

This parameter controls interval between each saved data telegram.

**h Record**

This function allows you to leaf through the records in the database. Since this **Record** function is located inside the table, it allows you to step through the individual table rows.

**i Search**

This function allows you to search through the records in the database. Since this **Search** function is located inside the table, it allows you to search for information within the data currently provided in the table. Click in the search field, write the phrase, and then push **Enter**.

**3 Record**

This function allows you to leaf through the records in the database. Since this **Record** function is located at the bottom of the dialog and outside the table, it allows you to step through the individual sensors connected to the MDM 500 system. If you have very many sensors connected, you will need to click many times. You may then choose to use the Search function.

**4 Search**

This function allows you to search through the records in the database. Since this **Search** function is located at the bottom of the dialog and outside the table, it allows you search through the list of sensors connected to the MDM 500 system. Click in the search field, write the phrase, and then push **Enter**.

**Related topics**

- *Introduction to Report Manager* on page 30
- *About reports and queries* on page 31
- *Report procedures* on page 52
- *Report Manager application* on page 150
- *Report Manager* on page 152

**Available Items**

The **Available Items** dialog is opened when you click the **Available Items** button in the Report Manager application's main dialog.

## Purpose

The **Available Items** dialog allows you to view which information (telegrams and data items) that have been recorded from the various sensors.

## Description

The **View Configuration** dialog in the Server manager application allows you to record data from the sensors into four logical groups. This Logging Groups dialog provides you with a viewer to recall this information. You can recall any of the four groups, and see which sensors, telegrams and data items that are recorded.

→ *View Configuration* on page 77

## Parameters

### 1 InstrID

This is the sensor's unique identification number.

→ *Driver, sensor and data field identification numbers* on page 179

### 2 Telegram ID

This is an identification number, and identifies the telegram among the other telegrams from the same sensor. It is a part of the unique data item identification number.

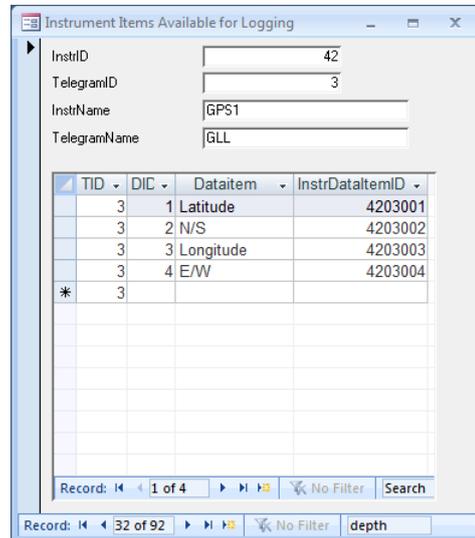
→ *Driver, sensor and data field identification numbers* on page 179

### 3 InstrName

This is the name of the sensor.

### 4 Telegram name

This is the abbreviated name of the telegram. The name is normally retrieved from the telegram header.



## 5 Table

The table holds the following columns:

- a TID:** This is the telegram ID
- b DIC:** This is the Data Item ID
- c Data Item:** This field identifies the name of the data item
- d InstrDataItemID:** This is the unique identification number.
- e Record**

This function allows you to leaf through the records in the database. Since this **Record** function is located inside the table, it allows you to step through the individual table rows.

- f Search**

This function allows you to search through the records in the database. Since this **Search** function is located inside the table, it allows you to search for information within the data currently provided in the table. Click in the search field, write the phrase, and then push **Enter**.

All the identification numbers provided are taken from the unique data item identification number.

→ *Driver, sensor and data field identification numbers* on page 179

## 6 Record

This function allows you to leaf through the records in the database. Since this **Record** function is located at the bottom of the dialog and outside the table, it allows you to step through the individual sensors connected to the MDM 500 system. If you have very many sensors connected, you will need to click many times. You may then choose to use the Search function.

## 7 Search

This function allows you to search through the records in the database. Since this **Search** function is located at the bottom of the dialog and outside the table, it allows you search through the list of sensors connected to the MDM 500 system. Click in the search field, write the phrase, and then push **Enter**.

### Related topics

- *Introduction to Report Manager* on page 30
- *About reports and queries* on page 31
- *Report procedures* on page 52
- *Report Manager application* on page 150
- *Report Manager* on page 152

## Delete Data

The **Delete Data** dialog is opened when you click the **Delete Data** button in the Report Manager application's main dialog.

## Purpose

The **Delete Data** dialog allows you to permanently delete the recorded sensor information from the database.

## Description

The data you delete from the database using the **Delete Data** dialog are permanently removed, unless you have previously made a backup with the data. This dialog must thus be used with extreme care.



You are only permitted to use a start date and an end date to select the data to be deleted. Both dates are inclusive. The recorded information from all sensors within the defined time period will be removed. You are not able to delete information for specific sensors.

## Parameters

### 1 Current Date

This field identifies the current date. The information is retrieved from the computer's operating system.

### 2 Start Date

Enter the start date of the defined time period. Enter the date on the format defined in your operating system setup.

The date entered is inclusive, so all data recorded on the defined start date will be deleted.

### 3 End Date

Enter the end date of the defined time period. Enter the date on the format defined in your operating system setup.

The date entered is inclusive, so all data recorded on the defined end date will be deleted.

### 4 Delete from Cruise Recorder

This function is not used.

### 5 Remove

Click this button to delete the data from the database.

## Related topics

- *Introduction to Report Manager* on page 30
- *About reports and queries* on page 31
- *Report procedures* on page 52
- *Report Manager application* on page 150
- *Report Manager* on page 152

## Watchdog application

The Watchdog application monitors the status of the Server Manager and the Client Manager with the Sensor Drivers. It will provide you with a warning if there is anything wrong with the MDM 500 system.

You can install the Watchdog on any computer in the in the MDM 500 system, and it may run on several computers simultaneously. Since the MDM 500 system is designed to operate without any user interventions, you may choose to install the Watchdog application on computers that are being monitored more frequently.

The Watchdog receives event messages from the Server Manager, and displays them in a list. If no message have been received for 180 seconds, an error message is provided. A list of which Sensor Drivers that are active is also displayed and maintained in real time.

### Topics

- *Watchdog* on page 175

### Related topics

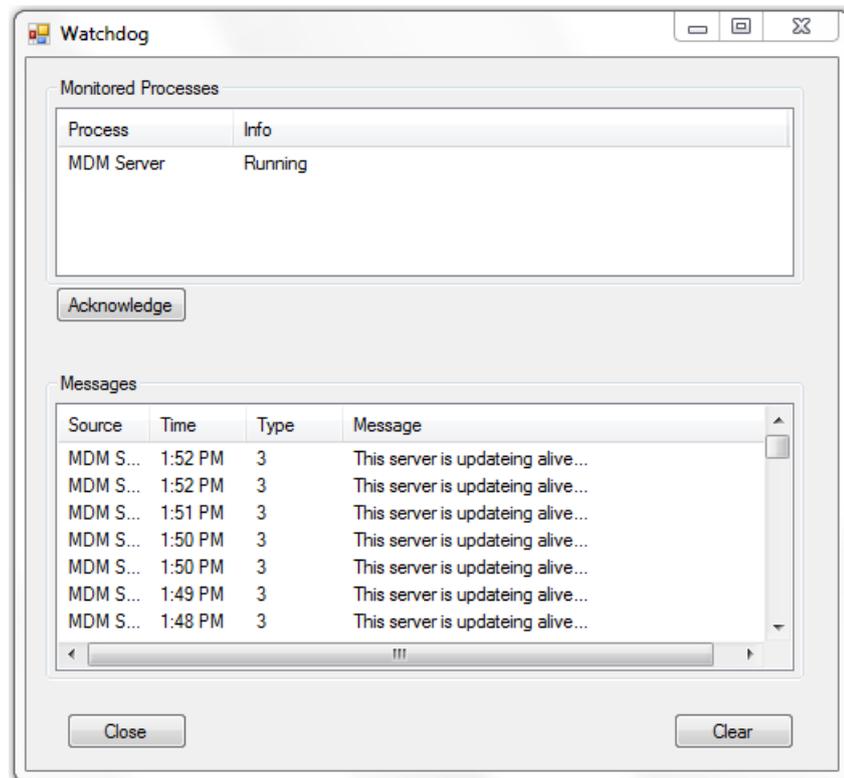
- *Introduction to Watchdog* on page 30
- *About the message system* on page 32
- *Watchdog application* on page 175
- *Watchdog* on page 175

## Watchdog

The **Watchdog** dialog is opened when you start the Watchdog application. It is the main dialog provided by the application.

### Purpose

The **Watchdog** dialog allows you to monitor the operation of the MDM 500 system.



## Description

The **Watchdog** dialog provides information about the MDM 500 system. Text fields are used to offer information about the current operation. The following information is provided:

- Logging status.
- Which peripheral sensors that are connected to the MDM 500 system, and that are currently active.
- All messages generated by the Server Manager and Client Manager applications running on all computers connected to the MDM 500 system.

## Parameters

### 1 Monitored Processes

This text field lists all currently monitored processes, and their status. The list is updated in real time. This means that if a sensor is disconnected, it will be deleted from this list.

### 2 Acknowledge

This button will confirm that important messages are red.

### 3 Messages

This text field lists all messages issued by the Server Manager and Client Manager applications. If an important message is posted, the frame around the text field changes colour to red.

**4 Clear**

This button clears all messages from the **Message** field.

**5 Close**

This button will close the Watchdog application.

# Driver descriptions

A large number of Sensor Drivers have and will be created for the MDM 500 system. All are described in this chapter.

The following information is provided for each Sensor Driver:

- a** ID
- b** Supported products (when applicable)
- c** Supported telegram formats
- d** Database items

## Topics

- *Driver, sensor and data field identification numbers* on page 179
- *Echo sounder and depth drivers* on page 180
- *Speed and course drivers* on page 184
- *Navigational data drivers* on page 187
- *Ambient conditions data drivers* on page 195
- *Trawl instrument drivers* on page 199

## Driver, sensor and data field identification numbers

Each Sensor Driver – and thus sensor – is provided with a unique number. This number is used as a base to provide each and every piece of information with its unique identification.

### Identification system

Based on the unique sensor driver number, each data field in the supported telegram formats is identified with a unique seven digit number.

**AA**bb**CCC**

where:

- **AA** = the unique Sensor Driver (sensor) number
- **bb** = the telegram supported by the Sensor Driver. Each driver may support more than one telegram format, each format is given a unique number.
- **CCC** = any unique data field within the telegram. Each telegram format may contain more than one data fields. In some cases, the Sensor Driver does not support all these fields.

#### *Example 15 Identification system*

ID = 3704001

Sensor Driver no. 37 is the Depth Sounder driver. Telegram 04 is the “DPT” NMEA telegram, while data field 001 is “water depth, in meters, relative to the transducer”.

## List of unique Sensor Driver numbers

*Table 1 Unique Sensor Driver numbers*

Number	Sensor Driver (and page reference)
02	<i>Single beam driver on page 180</i>
09	<i>Aanderaa driver on page 195</i>
15	<i>EK 60 echo sounder on page 182</i>
19	<i>Single beam driver on page 180</i>
26	<i>APOS driver on page 192</i>
29	<i>VmDAS ADCP on page 184</i>
35	<i>Speed Log driver on page 185</i>
36	<i>Gyro Compass driver on page 186</i>
37	<i>Depth Sounder driver on page 181</i>
38	<i>Water Temperature on page 199</i>
41	<i>Multibeam Depth driver on page 182</i>

*Table 1 Unique Sensor Driver numbers (cont'd.)*

<b>Number</b>	<b>Sensor Driver (and page reference)</b>
42	<i>GPS driver on page 187</i>
43	<i>GPS driver on page 187</i>
46	<i>WeatherPAK on page 198</i>
47	<i>Seapath driver on page 189</i>
48	<i>Bridgemaster radar on page 193</i>
53	<i>Gyro Compass driver on page 186</i>
56	<i>DESO25 on page 184</i>
57	<i>ITI driver on page 199</i>
58	<i>SmartSV on page 197</i>
60	<i>SeapathNav driver on page 191</i>
61	<i>Wind sensor driver on page 198</i>
63	<i>Scanmar driver on page 203</i>
64	<i>Simrad FS2X driver on page 202</i>
65	<i>ThermoFluor on page 196</i>
67	<i>MRU on page 186</i>
68	<i>Vaisala driver on page 196</i>
69	<i>Multibeam Depth driver on page 182</i>
70	<i>AIS driver on page 194</i>
90	Generic driver

## Echo sounder and depth drivers

### Topics

- *Single beam driver on page 180*
- *Depth Sounder driver on page 181*
- *Multibeam Depth driver on page 182*
- *EK 60 echo sounder on page 182*
- *DESO25 on page 184*

### Single beam driver

Sensor identification: **2** and **19**.

The single beam driver allows the MDM 500 to receive information from the following single beam hydrographic echo sounders:

- EA 500
- EA 400

- EA 600

In order to permit two echo sounders to be simultaneously connected to the MDM 500 system, two drivers are running in parallel.

The following proprietary telegram formats are supported:

- Simrad PE Parameter Enter
- Simrad CS Comment String
- Simrad ST Status
- Simrad Dn Deteced depth
- Simrad MS Motion sensor

*Table 2 Database items, Single beam driver*

Telegram	Information	ID
Simrad PE	Time	201001
	Text	201002
Simrad CS	Time	202001
	Text	202002
Simrad ST	Time	203001
	Text	203002
Simrad Dn	Depth 1	204001
	Bottom SS	204002
	Athwartships bottom slope	204003
	Depth 2	205001
	Bottom SS	205002
	Athwartships bottom slope	205003
	Depth 3	206001
	Bottom SS	206002
	Athwartships bottom slope	206003
Simrad MS	Time	207001
	Heave	207002
	Roll	207003
	Pitch	207004

## Depth Sounder driver

Sensor identification: **37**.

The Depth Sounder driver allows the MDM 500 to receive depth information from most single beam navigational (and other) depth sounders. Data is received on NMEA 0183 format on a serial line. The following NMEA telegram formats are supported:

- *DBK Depth below keel* on page 208

- *DBS Depth below surface* on page 208
- *DBT Depth below transducer* on page 209
- *DPT Depth* on page 209

*Table 3 Database items, Depth Sounder driver*

Telegram	Information	ID
DBT	water depth below transducer in meters	3701001
DBS	depth below surface in meters	3702001
DBK	depth below keel in meters	3703001
DPT	water depth, in meters, relative to the transducer	3704001
	offset, in meters, from the transducer	3704002

## Multibeam Depth driver

Sensor identification: **41** and **69**.

The Multibeam Depth driver allows the MDM 500 to receive the depth information measured by the centre beam on a hydrographic multibeam echo sounder. Data is received on NMEA 0183 format on a serial line. Two identical drivers with different sensor identification are provided to allow for two echo sounders.

The following NMEA telegram formats are supported:

- *DPT Depth* on page 209

*Table 4 Database items, Multibeam Depth driver*

Telegram	Information	ID
DPT	water depth, in meters, relative to the transducer	4104001
	offset, in meters, from the transducer	4104002

*Table 5 Database items, Multibeam Depth2 driver*

Telegram	Information	ID
DPT	water depth, in meters, relative to the transducer	6904001
	offset, in meters, from the transducer	6904002

## EK 60 echo sounder

Sensor identification: **15**.

The EK 60 driver allows the MDM 500 to receive information from the Simrad EK 60 echo sounder. Data is received on Simrad binary format on LAN. The following proprietary telegram formats are supported:

- Simrad PE parameter

- Simrad CS Comment
- Simrad ST Status
- Simrad D Depth
- Simrad MS Motion
- Simrad E Echo Trace

*Table 6 Database items, EK 60 driver*

Telegram	Information	ID
Parameter	Time	1501001
	Text	1501002
Comment	Time	1502001
	Text	1502002
Status	Time	1503001
	Text	1503002
Sounder depth	Time	1504001
	Head number	1504002
	Depth	1504003
	Bottom surface backscattering strength	1504004
	Transducer number	1504005
	Athwartships bottom slope	1504006
Motion sensor	Time	1505001
	Heave	1505002
	Roll	1505003
	Pitch	1505004
Echo Trace1	Time	1506001
	Traces	1506002
	Depth	1506003
	CompTS	1506004
	UncompTS	1506005
	AlongShip	1506006
	AthwartShip	1506007
Echo Trace2	Time	1507001
	Traces	1507002
	Depth	1507003
	CompTS	1507004
	UncompTS	1507005
	AlongShip	1507006
	AthwartShip	1507007

Table 6 Database items, EK 60 driver (cont'd.)

Telegram	Information	ID
Echo Trace3	Time	1508001
	Traces	1508002
	Depth	1508003
	CompTS	1508004
	UncompTS	1508005
	AlongShip	1508006
	AthwartShip	1508007

## DESO25

Sensor identification: **56**.

The DESO25 driver allows the MDM 500 to receive information from a DESO 25 single beam hydrographic echo sounders from Atlas Hydrographic GmbH.

Table 7 Database items, Single beam driver

Telegram	Information	ID
DESO25	Channel A	5601001
	Channel B	5602001

## Speed and course drivers

### Topics

- *VmDAS ADCP* on page 184
- *Speed Log driver* on page 185
- *Gyro Compass driver* on page 186
- *MRU* on page 186

### VmDAS ADCP

Sensor identification: **29**.

The VmDAS ADCP driver allows the MDM 500 to receive information from a RDI Acoustic Doppler Current Profiler (ADCP). Data is received on NMEA 0183 format on a serial line. The following NMEA telegram formats are supported:

- *DBT Depth below transducer* on page 209
- *HDT Heading, true* on page 211
- *VBW Dual ground and water speed* on page 215

Table 8 Database items, VmDAS ADCP driver

Telegram	Information	ID
DBT	Depth Feet	2901001
	Depth Meters	2901002
	Depth Fathoms	2901003
HDT	True heading, degrees	2902001
VBW	Long. Water Speed, m/s	2903001
	Lat. Water Speed, m/s	2903002
	Long. Ground Speed, m/s	2903003
	Lat. Ground Speed, m/s	2903004

## Speed Log driver

Sensor identification: **35**.

The Speed Log driver allows the MDM 500 to receive information from most commercial speed log instruments. Data is received on NMEA 0183 format on a serial line. The following NMEA telegram formats are supported:

- *VBW Dual ground and water speed* on page 215
- *VHW Water speed and heading* on page 217
- *VLW Dual ground/water distance* on page 218
- *VDS Speed log* on page 227

Table 9 Database items, Speed Log driver

Telegram	Information	ID
VLW	total cumulative water distance	3501001
	water distance since reset	3501002
VHW	heading, degrees true	3502001
	heading, degrees magnetic	3502002
	speed relative to water, knots, resolution 0.1	3502003
	speed relative to water, km/hr, resolution 0.1	3502004
VBW	longitude water speed, knots	3603001
	transverse water speed, knots	3603002
	longitudinal ground speed, knots	3603003
	transverse ground speed, knots	3603004
VDS	longitude water speed, knots	3504001
	transverse water speed, knots	3504002

## Gyro Compass driver

Sensor identification: **36** and **53**.

The Gyro Compass driver allows the MDM 500 to receive course information from most commercial compass instruments. Data is received on NMEA 0183 format on a serial line. Two identical drivers with different sensor identification are provided to allow for two compasses.

The following NMEA telegram formats are supported:

- *HDT Heading, true* on page 211
- *ROT Rate of turn* on page 213

*Table 10 Database items, Gyro Compass driver*

Telegram	Information	ID
HDT	heading, degrees true	3601001
ROT	rate of turn, degrees/minute	3602001

*Table 11 Database items, Gyro2 Compass driver*

Telegram	Information	ID
HDT	heading, degrees true	5301001
ROT	rate of turn, degrees/minute	5302001

## MRU

Sensor identification: **67**.

The MRU driver allows the MDM 500 to receive information from Motion Reference Units (MRU). Data is received on a serial line in binary EM 3000 format. Data is down sampled from 100 Hz to 1 Hz. The following telegram formats are supported:

- *EM Attitude* on page 220

*Table 12 Database items, MRU driver*

Telegram	Information	ID
MRU	Pitch	6701001
	Roll	6701002
	Heave	6701003
	Heading	6701004

## Navigational data drivers

### Topics

- *GPS driver* on page 187
- *Seapath driver* on page 189
- *SeapathNav driver* on page 191
- *APOS driver* on page 192
- *Bridgemaster radar* on page 193
- *AIS driver* on page 194

### GPS driver

Sensor identification: **42** and **43**.

The GPS driver allows the MDM 500 to receive information from most commercial global positioning systems. Two identical drivers with different sensor identification are provided to allow for redundant GPS systems. Data is received on NMEA 0183 format on a serial line.

The following NMEA telegram formats are supported by the GPS1 driver:

- *GGA Global positioning system fix data* on page 209
- *GLL Geographical position latitude/longitude* on page 210
- *GST GNSS Pseudorange error statistics* on page 211
- *HDT Heading, true* on page 211
- *VTG Course over ground & ground speed* on page 218
- *ZDA Time and date* on page 219

*Table 13 Database items, GPS1 driver*

Telegram	Information	ID
ZDA	universal time code (UTC), hours minutes, seconds and tenth of seconds day, 01 to 31 (part of UTC) month, 01 to 12 (part of UTC) year (part of UTC)	4201001
	local zone hours, 00 to $\pm 13$ local zone minutes, 00 to $\pm 59$	4201002
HDT	heading, degrees true	4202001
GLL	latitude north/south, position in degrees, minutes and hundredths	4203001
	north/south	4203002
	longitude east/west, position in degrees, minutes and hundredths	4203003
	west/east	4203004

Table 13 Database items, GPS1 driver (cont'd.)

Telegram	Information	ID
GGA	coordinated universal time (UTC) of position	4204001
	latitude north/south, position in degrees, minutes and hundredths	4204002
	north/south	4204003
	longitude east/west, position in degrees, minutes and hundredths	4204004
	west/east	4204005
	GPS quality indicator	4204006
VTG	course over ground, degrees true	4205001
	course over ground, degrees magnetic	4205002
	speed over ground, knots, resolution 0.1	4205003
GST	universal time code (UTC) time of the GGA or GNS fix associated with this sentence	4206001
	RMS value of the standard deviation	4206002
	Standard deviation of semi-major axis of error ellipse in meters	4206003
	Standard deviation of semi-minor axis of error ellipse in meters	4206004
	Orientation of semi-major axis of error ellipse in degrees from true north	4206005
	Standard deviation of latitude error in meters	4206006
	Standard deviation of longitude error in meters	4206007
	Standard deviation of altitude error in meters	4206008

Table 14 Database items, GPS2 driver

Telegram	Information	ID
ZDA	universal time code (UTC), hours minutes, seconds and tenth of seconds day, 01 to 31 (part of UTC) month, 01 to 12 (part of UTC) year (part of UTC)	4301001
	local zone hours, 00 to $\pm 13$ local zone minutes, 00 to $\pm 59$	4301002
HDT	heading, degrees true	4302001
GLL	latitude north/south, position in degrees, minutes and hundredths	4303001
	north/south	4303002
	longitude east/west, position in degrees, minutes and hundredths	4303003
	west/east	4303004

Table 14 Database items, GPS2 driver (cont'd.)

Telegram	Information	ID
GGA	coordinated universal time (UTC) of position	4304001
	latitude north/south, position in degrees, minutes and hundredths	4304002
	north/south	4304003
	longitude east/west, position in degrees, minutes and hundredths	4304004
	west/east	4304005
	GPS quality indicator	4304006
VTG	course over ground, degrees true	4305001
	course over ground, degrees magnetic	4305002
	speed over ground, knots, resolution 0.1	4305003
GST	universal time code (UTC) time of the GGA or GNS fix associated with this sentence	4306001
	RMS value of the standard deviation	4306002
	Standard deviation of semi-major axis of error ellipse in meters	4306003
	Standard deviation of semi-minor axis of error ellipse in meters	4306004
	Orientation of semi-major axis of error ellipse in degrees from true north	4306005
	Standard deviation of latitude error in meters	4306006
	Standard deviation of longitude error in meters	4306007
	Standard deviation of altitude error in meters	4306008

## Seapath driver

Sensor identification: **47**.

The Seapath driver is capable of receiving data from Seapath 100, 200, 200 RTK, 300, 320 and 330.

The following telegram formats are supported by the Seapath driver:

- *GGA Global positioning system fix data* on page 209
- *GLL Geographical position latitude/longitude* on page 210
- *GST GNSS Pseudorange error statistics* on page 211
- *HDT Heading, true* on page 211
- *VTG Course over ground & ground speed* on page 218
- *ZDA Time and date* on page 219
- *PSXN20 Position, motion and velocity quality* on page 223
- *PSXN23 Position, motion and velocity* on page 224

Table 15 Database items, Seapath driver

Telegram	Information	ID
ZDA	universal time code (UTC), hours minutes, seconds and tenth of seconds day, 01 to 31 (part of UTC) month, 01 to 12 (part of UTC) year (part of UTC)	42701001
	local zone hours, 00 to $\pm 13$ local zone minutes, 00 to $\pm 59$	4701002
GGA	coordinated universal time (UTC) of position	4702001
	latitude north/south, position in degrees, minutes and hundredths	4702002
	north/south	4702003
	longitude east/west, position in degrees, minutes and hundredths	4702004
	west/east	4702005
	GPS quality indicator	4702006
	Number of satellites	4702007
GLL	latitude north/south, position in degrees, minutes and hundredths	4703001
	north/south	4703002
	longitude east/west, position in degrees, minutes and hundredths	4703003
	west/east	4703004
VTG	course over ground, degrees true	4704001
	course over ground, degrees magnetic	4704002
	speed over ground, knots, resolution 0.1	4704003
HDT	heading, degrees true	4705001
GST	universal time code (UTC) time of the GGA or GNS fix associated with this sentence	4706001
	RMS value of the standard deviation	4706002
	Standard deviation of semi-major axis of error ellipse in meters	4706003
	Standard deviation of semi-minor axis of error ellipse in meters	4706004
	Orientation of semi-major axis of error ellipse in degrees from true north	4706005
	Standard deviation of latitude error in meters	4706006
	Standard deviation of longitude error in meters	4706007
	Standard deviation of altitude error in meters	4706008
SXN23	Pitch	4707001
	Roll	4707002
	Heading	4707003
	Heave	4707004
SXN20	Horizontal quality	4708001
	Height quality	4708002
	Heading quality	4708003
	Roll and pitch quality	4708004

## SeapathNav driver

Sensor identification: **60**.

The SeapathNav driver is capable of receiving data from Seapath Nav 20 and similar devices. Data is received on NMEA 0183 format on UDP.

The following NMEA telegram formats are supported by the SeapathNav driver:

- *ZDA Time and date* on page 219
- *GGA Global positioning system fix data* on page 209
- *GLL Geographical position latitude/longitude* on page 210
- *VTG Course over ground & ground speed* on page 218
- *HDT Heading, true* on page 211
- *GST GNSS Pseudorange error statistics* on page 211

*Table 16 Database items, SeapathNav driver*

Telegram	Information	ID
ZDA	universal time code (UTC), hours minutes, seconds and tenth of seconds day, 01 to 31 (part of UTC) month, 01 to 12 (part of UTC) year (part of UTC)	6001001
	local zone hours, 00 to $\pm 13$ local zone minutes, 00 to $\pm 59$	6001002
GGA	coordinated universal time (UTC) of position	6002001
	latitude north/south, position in degrees, minutes and hundredths	6002002
	north/south	6002003
	longitude east/west, position in degrees, minutes and hundredths	6002004
	west/east	6002005
	GPS quality indicator	6002006
	Number of satellites	6002007
GLL	latitude north/south, position in degrees, minutes and hundredths	6003001
	north/south	6003002
	longitude east/west, position in degrees, minutes and hundredths	6003003
	west/east	6003004
VTG	course over ground, degrees true	6004001
	course over ground, degrees magnetic	6004002
	speed over ground, knots, resolution 0.1	6004003
HDT	heading, degrees true	6005001

Table 16 Database items, SeapathNav driver (cont'd.)

Telegram	Information	ID
GST	universal time code (UTC) time of the GGA or GNS fix associated with this sentence	6006001
	RMS value of the standard deviation	6006002
	Standard deviation of semi-major axis of error ellipse in meters	6006003
	Standard deviation of semi-minor axis of error ellipse in meters	6006004
	Orientation of semi-major axis of error eclipse in degrees from true north	6006005
	Standard deviation of latitude error in meters	6006006
	Standard deviation of longitude error in meters	6006007
	Standard deviation of altitude error in meters	6006008

## APOS driver

Sensor identification: **26**.

The APOS driver is capable of receiving data from a Kongsberg HPR or a HiPAP system via a serial line or LAN.

The following telegram formats are supported by the APOS driver:

- *SNS sensor values* on page 225
- *SSB SSBL position* on page 225
- *LBP LBL position* on page 222

Table 17 Database items, APOS driver

Telegram	Information	ID
SNS	Clock	2601001
	Pos item	2601002
	Transceiver	2601003
	Transducer	2601004
	Roll	2601005
	Pitch	2601006
	Heave	2601007
	Heading	2601008

Table 17 Database items, APOS driver (cont'd.)

Telegram	Information	ID
SSB	Time	2602001
	TP code	2602002
	Status	2602003
	Error code	2602004
	Coordinate sys	2602005
	Orientation	2602006
	SW filter	2602007
	X coordinate	2602008
	Y coordinate	2602009
	Depth	2602010
	Expected accuracy	2602011
	Additional information	2602012
	First additional information	2602013
	Second additional information	2602014
LBP	Clock	2603001
	TP array	2603002
	Type	2603003
	Status	2603004
	Coordinates	2603005
	X coordinate	2603006
	Y coordinate	2603007
	Depth	2603008
	Major	2603009
	Minor	2603010
	Direction	2603011
	Res RMS	2603012

## Bridgemaster radar

Sensor identification: **48**.

The Bridgemaster radar driver is capable of receiving data from Bridge Master E series of radars and other radar systems. Data is received on NMEA 0183 format on a serial line.

The following NMEA telegram formats are supported by the Bridgemaster radar driver:

- *OSD Own ship data* on page 213
- *RSD Radar system data* on page 214
- *TTM Tracked target message* on page 215

Table 18 Database items, Bridgemaster radar driver

Telegram	Information	ID
OSD	True heading	4801001
	Heading status	4801002
	True course	4801003
	Course reference	4801004
	Speed	4801005
	Speed reference	4801006
	Drift	4801007
RSD	Origin 1 range	4802001
	Origin 1 bearing	4802002
	VRM1 range	4802003
	EBL1	4802004
	Origin 2 range	4802005
	Origin 2 bearing	4802006
	VRM2 range	4802007
	EBL2	4802008
	Cursor range	4802009
	Cursor bearing	4802010
TTM	Target number	4803001
	Distance from ref.	4803002
	Bearing from ref.	4803003
	Target speed	4803004
	Target course	4803005
	Distance of CPA	4803006
	Time to CPA	4803007
	Target name	4803008
	Target status	4803009
	Time of data	4803010

## AIS driver

Sensor identification: **70**.

The AIS driver allows the MDM 500 to receive information from an Automatic Identification System (AIS). Data is received on NMEA 0183 format on a serial line.

The following NMEA telegram formats are supported by the AIS driver:

- *VDM AIS VHF data-link telegram* on page 217
- *KMVDM AIS VHF data-link repeat* on page 221

The binary NMEA telegram VDM is converted to the ASCII NMEA compatible telegram KMVDM and transmitted on the network.

*Table 19 Database items, AIS driver*

Telegram	Information	ID
VDM	Maritime Mobile Service Identifier (MMSI)	7001001
	Latitude	7001002
	Longitude	7001003
	Speed over ground (SOG)	7001004
	Heading	7001005
	Course over ground (SOG)	7001006
	Nav status	7001007

## Ambient conditions data drivers

### Topics

- *Aanderaa driver* on page 195
- *Vaisala driver* on page 196
- *ThermoFluor* on page 196
- *SmartSV* on page 197
- *Wind sensor driver* on page 198
- *WeatherPAK* on page 198
- *Water Temperature* on page 199

### Aanderaa driver

Sensor identification: **9**.

The Aanderaa driver allows the MDM 500 to receive information from Aanderaa weather stations. Data is received on a serial line.

The following telegram formats are supported by the Aanderaa driver:

- Aanderaa

Table 20 Database items, Aanderaa driver

Telegram	Information	ID
Aanderaa	Wind speed	901001
	Wind gust	901002
	Wind direction	901003
	Air temperature	901004
	Relative humidity	901005
	Solar radiation	901006
	Water temperature	901007

## Vaisala driver

Sensor identification: **68**.

The Vaisala driver allows the MDM 500 to receive information from Vaisala weather stations. Data is received on NMEA 0183 format on multicast UDP or serial line.

The following NMEA telegram formats are supported by the Vaisala driver:

- *MWV Wind speed and angle* on page 212
- *XDR Transducer measurements* on page 218

Table 21 Database items, Vaisala driver

Telegram	Information	ID
MWV	Wind angle	6801001
	Wind speed	6801002
	Relative/True	6801003
XDR	Sensor 1	6802001
	Sensor 2	6802002
	Sensor 3	6802003
	Sensor 4	6802004
	Sensor 5	6802005
	Sensor 6	6802006

## ThermoFluor

Sensor identification: **65**.

The ThermoFluor driver allows the MDM 500 to receive information from a SeaBird SeaSave . The SeaSave Tab delimited format is supported and data is received on a serial line.

The following telegram formats are supported by the ThermoFluor driver:

- ThermoFlour

Table 22 Database items, ThermoFluor driver

Telegram	Information	ID
ThermoFlour	Temperature1	6501001
	Temperature2	6501002
	Salinity	6501003
	Fluorescence	6501004

## SmartSV

Sensor identification: **58**.

The SmartSV driver allows the MDM 500 to receive sound velocity, temperature and pressure from AML's MicroSV, SV+P SV+T and SV+P+T probes. Data is received on a serial line.

The following telegram formats are supported by the SmartSV driver:

- MicroSV
- MicroSV+P
- MicroSV+T
- MicroSV+P+T

Table 23 Database items, SmartSV driver

Telegram	Information	ID
SmartSV	Sound speed	5801001
	Temperature	5801002
	Pressure	5801003

The driver can be set up to convert data to KSSIS80 telegram format and send it to 1 or 2 computers running SIS. The sensor driver has to be set up to send the data on the network, this is done in the driver's ini file. To find the ini file type %appdata%\mdm 500 in the search field in the Windows® start menu. The file for this driver is named SmartSV.ini.

*Example 16 Setting up the SmartSV driver to send data to 2 computers running SIS*

Open the SmartSV.ini file and enter the following information:

```
KSSIS80=1
SSV_IP1=192.168.1.10
SSV_PORT1=4002
SSV_IP2=192.168.1.11
SSV_PORT2=4002
```

- KSSIS80=1: enables sending of data on the network
- SSV\_IP1=192.168.1.10: IP address for SIS computer 1
- SSV\_PORT1=4002: Port number on SIS computer 1
- SSV\_IP2=192.168.1.11: IP address for SIS computer 2
- SSV\_PORT2=4002: Port number on SIS computer 2

## Wind sensor driver

Sensor identification: **61**.

The Wind sensor driver allows the MDM 500 to receive wind speed and angle from wind sensors. Data is received on NMEA 0183 format on a serial line.

To be able to calculate true wind speed and direction the driver requires the vessels heading and speed. This information is received from a GPS system via the network.

The following NMEA telegram formats are supported by the Wind sensor driver:

- *MWV Wind speed and angle* on page 212

*Table 24 Database items, Wind sensor driver*

Telegram	Information	ID
MWV	Relative wind direction	6101001
	Relative wind speed	6101002
	Wind direction	6101003
	Wind speed	6101004

## WeatherPAK

Sensor identification: **46**.

The Weather PAK driver allows the MDM 500 to receive information from Coastal Environment WeatherPak 2000 weather stations. Data is received on a serial line.

Table 25 Database items, WeatherPAK driver

Telegram	Information	ID
Weather	Latitude	4601001
	Longitude	4601002
	Speed over ground (SOG)	4601003
	Course over ground (COG)	4601004
	Wind speed	4601005
	Wind direction	4601006
	Sigma-theta (standard deviation of wind direction)	4601007
	Air temperature	4601008
	Relative humidity	4601009
	Barometric pressure	4601010
	Water temperature	4601011
	Volt battery	4601012

## Water Temperature

Sensor identification: **38**.

The Water Temperature driver allows the MDM 500 to receive information from temperature sensors. Data is received on NMEA 0183 format on multicast UDP or serial line.

The following NMEA telegram formats are supported by the Water Temperature driver:

- *MTW Water temperature* on page 212

Table 26 Database items, Water Temperature driver

Telegram	Information	ID
MTW	Water Temperature	3801001

## Trawl instrument drivers

### Topics

- *ITI driver* on page 199
- *Simrad FS2X driver* on page 202
- *Scanmar driver* on page 203

### ITI driver

Sensor identification: **57**.

The ITI driver allows the MDM 500 to receive information from a Simrad ITI catch monitoring system. Data is received on a serial line.

The following telegram formats are supported by the ITI driver:

- IIGLL Geographical position of trawl
- IITPT Trawl position true vessel
- IIMTV Water temperature at the trawl
- IIHFB Distance trawl headrope to footrope and bottom, Height Sensor 2
- PSIMTH Distance trawl headrope to footrope and bottom, Trawl Eye, Height Sensor 1
- IIHB2 Height 2
- IITDS +IITS2 Trawl door spread Sensor1 and Sensor2
- PSIMS1 + PSIMS2 Range, bearing and distance Spread 1 and Spread 2
- IITFI Trawl filling
- IITPC Trawl position in Cartesian coordinates
- IITTS Trawl to shoal distance
- IIDBS Depth of trawl below surface
- IIDAD Depth Ascend/Descend
- SDDBS Sounder depth below surface
- PSIMTE Trawl Eye, echo readings and sensor setup
- PSIMMV Range, bearing, signed deviation and status Middle weight

*Table 27 Database items, ITI driver*

<b>Telegram</b>	<b>Information</b>	<b>ID</b>
IITPT	HorizRange	5701001
	TrueBrng	5701002
	DepthTrawl	5701003
IITPC	DistX	5702001
	DistY	5702002
	DepthZ	5702003
IIGLL	Lat	5703001
	Lon	5703002
	Clock	5703003
IIDBS	Depth Trawl	5704001
IIMTV	Temperature	5705001
IIHFB	DistHeadFoot1	5706001
	DistHeadBottom1	5706002
PSIMTH	DistHeadFoot1	5707001
	DistHeadBottom1	5707001

Table 27 Database items, ITI driver (cont'd.)

Telegram	Information	ID
PSIMTE	PSTr1	5708001
	Avg1	5708002
	PSTr2	5708003
	Avg2	5708004
	PSTr3	5708005
	Avg3	5708006
	PSTr4	5708007
	Avg4	5708008
	PSTr5	5708009
	Avg5	5708010
	PSTr6	5708011
	Avg6	5708012
	PSTr7	5708013
	Avg7	5708014
	PSTr8	5708015
	Avg8	5708016
	PSTr9	5708017
	Avg9	5708018
	PSTr10	5708019
	Avg10	5708020
	BottPela	5708021
	TotRange	5708022
	GainCoarse	5708023
	GainFine	5708024
	SWVer	5708025
IIHB2	DistHeadFoot2	5709001
	DistHeadBottom2	5709002
IITDS	SpreadDist1	5710001
PSIMS1	SlantRng1	5711001
	HorizRng1	5711002
	TrueBrng1	5711003
	SpreadMeas1	5711004
	Clock1	5711005
IITS2	SpreadDist2	5712001

Table 27 Database items, ITI driver (cont'd.)

Telegram	Information	ID
PSIMS2	SlantRng2	5713001
	HorizRng2	5713002
	TrueBrng2	5713003
	SpreadMeas2	5713004
	Clock2	5713005
PSIMMW	SlantRngMid	5714001
	HorizRngMid	5714002
	TrueBrngMid	5714003
	Deviation	5714004
	Status	5714005
	Clock	5714006
IITFI	Catch1	5715001
	Catch2	5715002
	Catch3	5715003
IITTS	Dist1	5716001
	Dist2	5716002
	Dist3	5716003
IIDAD	DepthTrawl	5717001
	DepthChange	5717002
IIZDL	Clock	5718001
	Dist	5718002
	TypePnt	5718003

## Simrad FS2X driver

Sensor identification: **64**.

The Simrad FS2X driver allows the MDM 500 to receive information from the Simrad FS20 and FS25 vertical trawl sonars. Data is received on NMEA 0183 format on a serial line.

The following NMEA telegram formats are supported by the Simrad FS2X driver:

- *DBS Depth below surface* on page 208
- *MTW Water temperature* on page 212

Table 28 Database items, Simrad FS2X driver

Telegram	Information	ID
DBS	Depth from surface	6401001
MTW	Water temperature	6402001

## Scanmar driver

Sensor identification: **63**.

The Simrad Scanmar driver allows the MDM 500 to receive information from the Scanmar ScanBas system. Data is received on a serial line.

The following NMEA compliant telegram formats are supported by the Scanmar driver:

- PSCMSM2 — SM2
- PSCMGLL – *GLL Geographical position latitude/longitude* on page 210
- PSCMVTG - *VTG Course over ground & ground speed* on page 218
- PSCMZDA – *ZDA Time and date* on page 219
- PSCMDBS – *DBS Depth below surface* on page 208

*Table 29 Database items, ScanMar driver*

Telegram	Information	ID
PSCMZDA	Time	6301001
	Timezone	6301002
PSCMGLL	Latitude	6302001
	N/S	6302002
	Longitude	6302003
	E/W	6302004
PSCMVTG	True heading	6303001
	Magnetic heading	6303002
	Ground speed	6303003
PSCSM2	Time	6304001
	Status	6304002
	Sensor type	6304003
	Sensor ID	6304004
	Meas ID	6304005
	Meas Value	6304006
	QA Factor	6304007
PSCMDBS	Water depth, feet	6305001
	Water depth, meters	6305002
	Water depth, fathoms	6305003

# Telegram formats

This chapter details the standard NMEA, third party and proprietary Kongsberg telegrams, as well as – if applicable – dedicated file formats for data transfer.

According to their web site, the *National Marine Electronics Association (NMEA)* is the unifying force behind the entire marine electronics industry, bringing together all aspects of the industry for the betterment of all in our business.

All NMEA, third party and proprietary telegrams available are not described here, only those used by the MDM 500. If the specifications here differ from the original specifications published by NMEA, the specifications issued by NMEA must be regarded as the correct version.

## Topics

- *About the NMEA telegram format* on page 205
- *Specification of NMEA telegrams* on page 207
- *Proprietary telegrams and formats* on page 220
- *Third party telegram formats* on page 227

## Related topics

- <http://www.nmea.org>.

## About the NMEA telegram format

The Kongsberg MDM 500 can send and receive information to and from several different peripherals. All transmissions take place as **telegrams** with data sentences. Each telegram has a defined format and length.

The **NMEA 0183** standard is the most common protocol used to receive and transmit data to and from peripheral sensors. A parametric sentence structure is used for all NMEA data. The sentence start with a “\$” delimiter, and represent the majority of approved sentences defined by the standard. This sentence structure, with delimited and defined data files, is the preferred method for conveying information.

For more information about the NMEA standard, the format and the data sentences, refer to their official publications. Their document *NMEA 1083 - Standard for interfacing marine electronic devices* explains the formats in detail. The document can be obtained from <http://www.nmea.org>.

### Topics

- *National Marine Electronics Association (NMEA)* on page 205
- *NMEA telegram principles* on page 205
- *Standard NMEA 0183 communication parameters* on page 206
- *NMEA sentence structure* on page 206

## National Marine Electronics Association (NMEA)

The *National Marine Electronics Association (NMEA)* has defined communication standards for maritime electronic equipment, and the MDM 500 echo sounder conforms to these standards. The most common standard is *NMEA 0183*, and the National Marine Electronics Association describes it as follows:

The NMEA 0183 Interface Standard defines electrical signal requirements, data transmission protocol and time, and specific sentence formats for a 4800 baud serial data bus. Each bus may have only one talker but many listeners.

— *National Marine Electronics Association*

For more information about the National Marine Electronics Association and the NMEA 0183 standard, refer to the organization's web site at <http://www.nmea.org>.

## NMEA telegram principles

To move information between two electronic units, the data are collected in **telegrams**. The content (protocol) of each telegram is defined by the NMEA standard, and several telegram types exist to allow different type of data to be distributed.

The phrase **datagram** is also frequently used about this communication method.

Unless you wish to write your own software, you do not need to know how these telegrams are designed. However, whenever you set up equipment interfaces, you need to ensure that each system on your communication line is set up to send and receive the same telegram. The standard allows one system to send data (a “talker”) and several

others to receive data simultaneously ("listeners") on the same line. Therefore, you must ensure that all products receiving data on a communication line is set up to receive the same telegram(s) that the transmitting product provides.

## Standard NMEA 0183 communication parameters

The communication parameters defined for **NMEA 0183** are:

- **Baudrate:** 4800 bits per second
- **Data bits:** 8
- **Parity:** None
- **Stop bits:** One

Some instruments will also offer other parameters and/or choices.

## NMEA sentence structure

The following provides a summary explanation of the approved parametric sentence structure.

`$aacc,c-c*hh<CR><LF>`

- 1 **"\$"**: *Start of sentence* (Hex: 24).
- 2 **aacc**: *Address field*. The first two characters (**aa**) identifies the *Talker ID*, while the last three characters are the *Sentence formatter* mnemonic code identifying the data type and the string format of the successive fields.
- 3 **,"**: *Field delimiter* (Hex: 2C). This character starts each field except the address and checksum fields. If it is followed by a null field, it is all that remains to indicate no data in the field.
- 4 **c—c**: *Data sentence block*. This is a series of data fields containing all the data to be transmitted. The data field sentence is fixed and identified by the *Sentence formatter* in the address field. Data fields may be of variable lengths, and they are preceded by the *Field delimiter*.
- 5 **“\*”**: *Checksum delimiter* (Hex: 2A). This delimiter follows the last field of the sentence, and indicates that the following two alphanumerical characters contain the checksum.
- 6 **hh**: *Checksum*
- 7 **<CR><LF>**: *Terminates sentence*

## Proprietary telegrams

In some proprietary telegrams received from other Kongsberg Maritime equipment, the **\$** character is replaced by the **@** character. The checksum field may then not be in use.

## Specification of NMEA telegrams

These are the standard NMEA telegrams supported by the MDM 500. The telegrams are listed in alphabetical order.

### Topics

- *DBK Depth below keel* on page 208
- *DBS Depth below surface* on page 208
- *DBT Depth below transducer* on page 209
- *DPT Depth* on page 209
- *GGA Global positioning system fix data* on page 209
- *GLL Geographical position latitude/longitude* on page 210
- *GST GNSS Pseudorange error statistics* on page 211
- *HDT Heading, true* on page 211
- *MTW Water temperature* on page 212
- *MWV Wind speed and angle* on page 212
- *OSD Own ship data* on page 213
- *ROT Rate of turn* on page 213
- *RSD Radar system data* on page 214
- *TTM Tracked target message* on page 215
- *VBW Dual ground and water speed* on page 215
- *VDM AIS VHF data-link telegram* on page 217
- *VHW Water speed and heading* on page 217
- *VLW Dual ground/water distance* on page 218
- *VTG Course over ground & ground speed* on page 218
- *XDR Transducer measurements* on page 218
- *ZDA Time and date* on page 219

## DBK Depth below keel

This telegram contains vessel heading in degrees magnetic. The telegram is no longer recommended for use in new designs.

It is often replaced by the **DPT** telegram.

### Format

\$--DBK, x.x, f, y.y, M, z.z, F\*hh<CR><LF>

### Format description

- 1 -- = talker identifier
- 2 **DBK** = telegram identifier
- 3 **x.x,f** = depth below keel in feet
- 4 **y.y,M** = depth below keel in meters
- 5 **z.z,F** = depth below keel in fathoms

## DBS Depth below surface

This telegram provides the current depth from the surface. The telegram is no longer recommended for use in new designs.

It is often replaced by the **DPT** telegram.

### Format

\$--DBS, x.x, f, y.y, M, z.z, F\*hh<CR><LF>

### Format description

- 1 -- = talker identifier
- 2 **DBS** = telegram identifier
- 3 **x.x,f** = depth below surface in feet
- 4 **y.y,M** = depth below surface in meters
- 5 **z.z,F** = depth below surface in fathoms

## DBT Depth below transducer

This telegram provides the water depth referenced to the transducer.

### Format

```
$--DBT,x.x,f,y.y,M,z.z,F*hh<CR><LF>
```

### Format description

- 1 -- = talker identifier
- 2 DBT = telegram identifier
- 3 x.x,f = water depth below transducer in feet
- 4 y.y,M = water depth below transducer in meters
- 5 z.z,F = water depth below transducer in fathoms

## DPT Depth

This telegram contains water depth relative to the transducer and offset of the measuring transducer. Positive offset numbers provide the distance from the transducer to the water line. Negative offset numbers provide the distance from the transducer to the part of the keel of interest.

For additional details, refer to the NMEA standard.

### Format

```
$--DPT,x.x,y.y,z.z*hh<CR><LF>
```

### Format description

- 1 -- = talker identifier
- 2 DPT = telegram identifier
- 3 x.x = water depth, in meters, relative to the transducer
- 4 y.y = offset, in meters, from the transducer
- 5 z.z = maximum range scale in use

## GGA Global positioning system fix data

This telegram contains time, position and fix related data from a global positioning system (GPS).

### Format

```
$--GGA,hhmmss.ss,llll.ll,a,yyyy.yy,a,  
x,zz,d.d,a.a,M,g.g,M,r.r,cccc*hh<CR><LF>
```

### Format description

- 1 -- = talker identifier
- 2 GGA = telegram identifier

- 3 **hhmmss.ss** = coordinated universal time (UTC) of position
- 4 **lll.ll** = latitude north/south, position in degrees, minutes and hundredths.
- 5 **a** = North/South. Characters **N** (North) or **S** (South) identifies the bearing.
- 6 **yyyy.yy** = longitude east/west, position in degrees, minutes and hundredths.
- 7 **a** = West/East. Characters **W** (West) or **E** (East) identifies the bearing.
- 8 **x** = GPS quality indicator (refer to the NMEA standard for further details)
- 9 **zz** = number of satellites in use, 00 to 12, may be different from the number in view
- 10 **d.d** = horizontal dilution of precision
- 11 **a.a,M** = altitude related to mean sea level (geoid) in meters
- 12 **g.g,M** = geoidal separation in meters
- 13 **r.r** = age of differential GPS data
- 14 **cccc** = differential reference station identification, 0000 to 1023

## GLL Geographical position latitude/longitude

This telegram is used to transfer latitude and longitude of vessel position, time of position fix and status from a global positioning system (GPS).

### Format

\$--GLL,l1111.l1,a,yyyyy.yy,a,hhmmss.ss,A,a\*hh<CR><LF>

### Format description

- 1 -- = talker identifier
- 2 **GLL** = telegram identifier.
- 3 **lll.ll** = latitude north/south, position in degrees, minutes and hundredths. Characters **N** (North) or **S** (South) identifies the bearing.
- 4 **a** = North/South. Characters **N** (North) or **S** (South) identifies the bearing.
- 5 **yyyy.yy,a** = longitude east/west, position in degrees, minutes and hundredths.
- 6 **a** = West/East. Characters **W** (West) or **E** (East) identifies the bearing.
- 7 **hhmmss.ss** = coordinated universal time (UTC) of position.
- 8 **A** = status, characters **A** (data valid) or **V** (data not valid) are used.
- 9 **a** = mode indicator.

## GST GNSS Pseudorange error statistics

This sentence is used to support receiver autonomous integrity monitoring.

For further details, refer to the NMEA standard.

### Format

```
$--GST,hhmmss.ss,x.x,y.y,z.z,o.o,l.l,n.n,a.a**hh<CR><LF>
```

### Format description

- 1 -- = talker identifier
- 2 ZDA = telegram identifier
- 3 hhmmss.ss = universal time code (UTC) time of the GGA or GNS fix associated with this sentence.
- 4 x.x = RMS value of the standard deviation of the range inputs to the navigation process. Range inputs include pseudorange & DGNSS corrections.
- 5 y.y = Standard deviation of semi-major axis of error ellipse in meters
- 6 z.z = Standard deviation of semi-minor axis of error ellipse in meters
- 7 o.oo = Orientation of semi-major axis of error ellipse in degrees from true north
- 8 l.l = Standard deviation of latitude error in meters
- 9 n.n = Standard deviation of longitude error in meters
- 10 a.a = Standard deviation of altitude error in meters

## HDT Heading, true

This telegram is used to transfer heading information from a gyro.

### Format

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

### Format description

- 1 -- = talker identifier
- 2 HDT = telegram identifier
- 3 x.x,T = heading, degrees true

## MTW Water temperature

This telegram provides the water temperature.

### Format

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

### Format description

- 1 -- = talker identifier
- 2 MTW = telegram identifier
- 3 x.x = temperature
- 4 C = degrees Celcius

## MWV Wind speed and angle

This telegram provides the direction from which the wind blows relative to the moving vessel's centre line.

For more information about this telegram format, refer to the NMEA standard.

### Format

\$--MWV, x.x, a, y.y, b\*hh<CR><LF>

### Format description

- 1 -- = talker identifier
- 2 MWV = telegram identifier
- 3 x.x = Wind angle, 0 to 359 degrees
- 4 a = Reference: R = Relative, T = Theoretical
- 5 y.y = Wind speed
- 6 b = wind speed unit: K/M/N/S

## OSD Own ship data

This telegram contains heading, course, speed, set and drift summary. It is useful for, but not limited to radar and radar plotting applications. OSD gives the movement vector of the ship based on the sensors and parameters in use.

For additional details, refer to the NMEA standard

### Format

```
$--OSD,x.x,A,x.x,a,x.x,a,x.x,x.x,a,*hh<CR><LF>
```

### Format description

- 1 -- = talker identifier
- 2 **OSD** = telegram identifier
- 3 **x.x**, = heading, degrees true
- 4 **A** = heading status: A = data valid, V = data invalid
- 5 **x.x** = vessel course, degrees true
- 6 **a** = course reference, B/M/W/R/P
  - B = bottom tracking log
  - M = manually entered
  - W = water referenced
  - R = radar tracking (of fixed target)
  - P = positioning system ground reference
- 7 **x.x** = vessel speed
- 8 **a** = Speed reference, B/M/W/R/P
  - B = bottom tracking log
  - M = manually entered
  - W = water referenced
  - R = radar tracking (of fixed target)
  - P = positioning system ground reference
- 9 **x.x** = Vessel set, degrees True Manually entered
- 10 **x.x** = Vessel drift (speed) Manually entered
- 11 **a** = Speed units, K/N/S

## ROT Rate of turn

This telegram provides information of the vessel's rate of turn and the direction of turn.

For further details, refer to the NMEA standard.

### Format

```
$--ROT,x.x,A*hh<CR><LF>
```

### Format description

- 1 -- = talker identifier
- 2 ZDA = telegram identifier
- 3 x.x = rate of turn, degrees/minute, “-”=bow turns to port
- 4 A = status, A = data valid, V = data invalid

## RSD Radar system data

Radar display setting data

For additional details, refer to the NMEA standard

### Format

\$--OSD,x.x,x.x,x.x,x.x,x.x,x.x,x.x,x.x,x.x,x.x,x.x,a,a\*hh<CR><LF>

### Format description

- 1 -- = talker identifier
- 2 OSD = telegram identifier
- 3 x.x, = origin 1 range, from own ship. Origin 1 and Origin 2 are located at the stated range and bearing from own ship and provide for two independent sets of variable range markers (VRM) and electronic bearing lines (EBL) originating away from own ship position.
- 4 x.x = origin 1 bearing, degrees from 0. Origin 1 and Origin 2 are located at the stated range and bearing from own ship and provide for two independent sets of variable range markers (VRM) and electronic bearing lines (EBL) originating away from own ship position.
- 5 x.x = variable range marker 1 (VRM1), range
- 6 x.x = bearing line 1 (EBL1), degrees from 0
- 7 x.x = origin 2 range. Origin 1 and Origin 2 are located at the stated range and bearing from own ship and provide for two independent sets of variable range markers (VRM) and electronic bearing lines (EBL) originating away from own ship position.
- 8 x.x = origin 2 bearing. Origin 1 and Origin 2 are located at the stated range and bearing from own ship and provide for two independent sets of variable range markers (VRM) and electronic bearing lines (EBL) originating away from own ship position.
- 9 x.x = VRM2, range
- 10 x.x = EBL2, degrees
- 11 x.x = cursor range, from own ship
- 12 x.x = cursor bearing, degrees clockwise from 0
- 13 x.x = range scale in use
- 14 a = range units, K/N/S
- 15 a = display rotation:
  - C = course-up, course-over-ground up, degrees true

- H = head-up, ship's heading (centerline) 0 degrees up
- N = north-up, true north is 0 degrees up

## TTM Tracked target message

This telegram provides data associated with a tracked target relative to the ship's own position.

### Format

\$--TTM, xx, y.y, z.z, T, s.s, c.c, T, d.d, t.t, K, c--c, S, R, hhmmss.ss, A\*hh<CR><LF>

### Format description

- 1 -- = talker identifier
- 2 TTM = telegram identifier
- 3 xx = target number, 00 to 99
- 4 y.y = target distance from own ship
- 5 z.z, T = bearing from own ship, degrees true or relative (T/R)
- 6 s.s = target speed
- 7 c.c, T = target course, degrees true or relative (T/R)
- 8 d.d = distance to closest point of approach
- 9 t.t = time to closest point of approach, in minutes, "-" = increasing
- 10 K = Speed/distance units, K/N/S
- 11 c--c = target name
- 12 S = target status
  - L = lost
  - Q = query, target in the process of acquisition
  - T = tracking
- 13 R = reference target, set to R if a target is a reference used to determine own ship position or velocity, null otherwise
- 14 hhmmss.ss = universal time code (UTC), hours minutes, seconds and tenth of seconds
- 15 A = type of acquisition
  - A = auto
  - M = manual
  - R = reported

## VBW Dual ground and water speed

This telegram contains water referenced and ground referenced speed data.

### Format

\$--VBW, x.x, z.z, A, r.r, q.q, A, p.p, A,  
c.c, A\*hh<CR><LF>

### Format description

- 1 -- = talker identifier
- 2 VBW = telegram identifier
- 3 x.x = longitude water speed, knots
- 4 z.z = transverse water speed, knots
- 5 A = status, water speed, characters A (data valid) or V (data not valid) are used.
- 6 r.r = longitudinal ground speed, knots
- 7 q.q = transverse ground speed, knots
- 8 A = status, ground speed, characters A (data valid) or V (data not valid) are used.
- 9 p.p = stern transverse water speed, knots
- 10 A = status, stern water speed, characters A (data valid) or V (data not valid) are used.
- 11 c.c = stern transverse ground speed, knots
- 12 A = status, stern ground speed, characters A (data valid) or V (data not valid) are used.

## VDM AIS VHF data-link telegram

This sentence is used to transfer the contents of a received Automatic Identification System (AIS) message packet, as defined in ITUR M.1371 and as received on the VHF Data Link (VDL), using the "Six Bit" field type. The structure provides for the transfer of long binary messages by using multiple sentences.

For additional details, refer to the NMEA standard

### Format

```
$--VDM, x, x, x, a, s--s, x*hh<CR><LF>
```

### Format description

- 1 -- = talker identifier
- 2 VDM = telegram identifier
- 3 x = total number of sentences needed to transfer the message, 1 to 9
- 4 x = sentence number, 1 to 9
- 5 x = sequential message identifier, 0 to 9
- 6 a = AIS Channel. The AIS channel is indicated as either A or B. This channel indication is relative to the operating conditions of the transponder when the packet is received. This shall be a null field when the channel identification is not provided.
- 7 s--s = encapsulated ITU-R M.1371 radio message. This field supports a maximum of 62 valid characters for messages transferred using multiple sentences, and 63 valid characters for messages using a single sentence.
- 8 x = Number of fill-bits, 0 to 5

## VHW Water speed and heading

This telegram contains the compass heading to which the vessel points and the speed of the vessel relative to the water.

### Format

```
$--VHW, x.x, T, x.x, M, x.x, N, x.x, K*hh<CR><LF>
```

### Format description

- 1 -- = talker identifier
- 2 VHW = telegram identifier
- 3 x.x,T = heading, degrees true
- 4 x.x,M = heading, degrees magnetic
- 5 x.x,N = speed relative to water, knots, resolution 0.1
- 6 x.x,K = speed relative to water, km/hr, resolution 0.1

## VLW Dual ground/water distance

This telegram contains the distance travelled relative to the water and over the ground.

### Format

\$--VLW, x.x, N, y.y, N, z.z, N, g.g, N\*hh<CR><LF>

### Format description

- 1 -- = talker identifier
- 2 VLW = telegram identifier
- 3 x.x, N = total cumulative water distance, nautical miles.
- 4 y.y, N = water distance since reset, nautical miles.
- 5 z.z, N = total cumulative ground distance, nautical miles.
- 6 g.g, N = ground distance since reset, nautical miles.

## VTG Course over ground & ground speed

This telegram contains the actual course and speed relative to the ground.

### Format

\$--VTG, x.x, T, y.y, M, z.z, N, g.g, K, a\*hh<CR><LF>

### Format description

- 1 -- = talker identifier
- 2 VTG = telegram identifier
- 3 x.x, T = course over ground, degrees true
- 4 y.y, M = course over ground, degrees magnetic
- 5 z.z, N = speed over ground, knots, resolution 0.1
- 6 g.g, K = speed over ground, km/hr, resolution 0.1
- 7 a = mode indicator

## XDR Transducer measurements

Measurement data from transducers that measure physical quantities such as temperature, force, pressure, frequency, angular or linear displacement, etc. Sets of the four fields 'Type-Data-Units-ID' are allowed for an undefined number of transducers. Up to 'n' transducer may be included within the limits of allowed sentence length.

For further details, refer to the NMEA standard.

### Format

\$--XDR, a, x.x, a, c--c, .....a, x.x, c--c\*hh<CR><LF>

**Format description**

- 1 -- = talker identifier
- 2 **XDR** = telegram identifier
- 3 **a** = transducer type, transducer #1
- 4 **x.x** = measurement data, transducer #1
- 5 **a** = units of measure, transducer #1
- 6 **c—c** = transducer #1 ID
- 7 ..... = data for variable # of transducers
- 8 **a** = transducer type, transducer #n
- 9 **x.x** = measurement data, transducer #n
- 10 **a** = units of measure, transducer #n
- 11 **c—c** = transducer #n ID

**ZDA Time and date**

This telegram contains the universal time code (UTC), day, month, year and local timer zone.

For further details, refer to the NMEA standard.

**Format**

\$--ZDA, hhmmss.ss, xx, yy, zzzz, hh, mm\*hh<CR><LF>

**Format description**

- 1 -- = talker identifier
- 2 **ZDA** = telegram identifier
- 3 **hhmmss.ss** = universal time code (UTC), hours minutes, seconds and tenth of seconds
- 4 **xx** = day, 01 to 31 (part of UTC)
- 5 **yy** = month, 01 to 12 (part of UTC)
- 6 **zzzz** = year (part of UTC)
- 7 **hh** = local zone hours, 00 to ±13
- 8 **mm** = local zone minutes, 00 to ±59

**Remark**

- 1 Local zone time is not used. An offset time may be entered by the operator to get the system clock to show a different time than UTC.
- 2 Trimble UTC format is also supported.

## Proprietary telegrams and formats

These are the proprietary telegrams supported by the MDM 500. These telegram formats have all been defined by Kongsberg. The telegrams are listed in alphabetical order.

### Topics

- *EM Attitude* on page 220
- *KMVDM AIS VHF data-link repeat* on page 221
- *LBP LBL position* on page 222
- *PSXN20 Position, motion and velocity quality* on page 223
- *PSXN23 Position, motion and velocity* on page 224
- *SNS sensor values* on page 225
- *SSB SSBL position* on page 225

### EM Attitude

This is a proprietary telegram defined by Kongsberg Maritime for use with digital motion sensors. It holds roll, pitch heave and heading. The EM Attitude format is a 10 bytes long binary message.

All data are in 2's complement binary, with  $0.01^\circ$  resolution for roll, pitch and heading, and 1 cm resolution for heave.

- Roll is positive with port side up with  $\pm 179.99^\circ$  valid range
- Pitch is positive with bow up with  $\pm 179.99^\circ$  valid range
- Heave is positive up with  $\pm 9.99$  m valid range
- Heading is positive clockwise with 0 to  $359.99^\circ$  valid range.

Non-valid data are assumed when a value is outside the valid range.

How roll is assumed to be measured is operator selectable, either with respect to the horizontal plane (the Hippy 120 or TSS convention) or to the plane tilted by the given pitch angle (i.e. as a rotation angle around the pitch tilted forward pointing x-axis). The latter convention (called Tate-Bryant in the POS/MV documentation) is used inside the system in all data displays and in logged data (a transformation is applied if the roll is given with respect to the horizontal).

Note that heave is displayed and logged as positive downwards (the sign is changed) including roll and pitch induced lever arm translation to the system's transmit transducer.

This format has previously been used with the EM 950 and the EM 1000 with the first synchronisation byte always assumed to be zero. The sensor manufacturers have been requested to include sensor status in the format using the first synchronisation byte for this purpose. It is thus assumed that

- 90h in the first byte indicates a valid measurements with full accuracy
- any value from 91h to 99h indicates valid data with reduced accuracy (decreasing accuracy with increasing number)

- any value from 9Ah to 9Fh indicates non-valid data but normal operation (for example configuration or calibration mode)
- and any value from A0h to AFh indicates a sensor error status

### Format

aabbccddeeffgghhiijj

### Format description

- 1 **aa** = Byte 1: Sync byte 1 = 00h, or Sensor status = 90h-AFh
- 2 **bb** = Byte 2: Sync byte 2 = 90h
- 3 **cc** = Byte 3: Roll LSB (least significant byte)
- 4 **dd** = Byte 4: Roll MSB (most significant byte)
- 5 **ee** = Byte 5: Pitch LSB
- 6 **ff** = Byte 6: Pitch MSB
- 7 **gg** = Byte 7: Heave LSB
- 8 **hh** = Byte 8: Heave MSB
- 9 **ii** = Byte 9: Heading LSB
- 10 **jj** = Byte 10: Heading MSB

## KMVDM AIS VHF data-link repeat

This is a NMEA 0183 standard compliant telegram designed by Kongsberg Maritime. It holds the data received from an Automatic Identification System (AIS) message packet.

### Format

\$KMVDM,aaaaaaaa,x.x,x.x,x.x,x.x,x.x,\*hh<CR><LF>

### Format description

- 1 **KMVDM** = talker identifier and telegram identifier
- 2 **aaaaaaaa** = Maritime Mobile Service Identifier (MMSI)
- 3 **x.x** = latitude
- 4 **x.x** = longitude
- 5 **x.x** = speed over ground (SOG)
- 6 **x.x** = heading
- 7 **x.x** = course over ground (SOG)
- 8 **\*** =
- 9 **hh** = checksum

## LBP LBL position

This is a NMEA 0183 standard compliant telegram designed by Kongsberg Maritime. It holds the position of a Long Base Line (LBL) transponder. This telegram is typically generated by a HiPAP or HPR system.

### Format

```
$PSIMLBP, hhmmss.ss, c--c, c--c, c--c, aa_, x.x, x.x, x.x, x.x,
x.x, x.x, x.x*hh<CR><LF>
```

### Format description

- 1 **PSIMLBP** = Talker identifier and telegram identifier
- 2 **hhmmss.ss** = The clock in hours, minutes and seconds. The decimal fraction is optional
- 3 **c—c** = Tp array for which the origin is valid
- 4 **c—c** = The type of the item positioned. The Type field is Ve when the position is for the vessel. It is R1 to R4 for ROV 1 to ROV 4. It is T1 to T4 for TPs being positioned in LBL mode using the TP range feature of the TP.
- 5 **c—c** = Status of the position:
  - A: OK
  - RES: The residuals of the measurement are too large
  - NVC: The position calculation does not converge in the vertical direction. It may happen when positioning items in the same depth as the seabed TPs
  - NOC: The position calculation does not converge in the horizontal direction
  - FER: Too few replies are received to calculate a position
  - CER: Computational error when calculating the position
  - ???: Another error condition
- 6 **aa\_** = Coordinate system. C and L for Cartesian, U and E for UTM.
- 7 **x.x=** X coordinate. The Coordinate system field should be used to decode the X and Y coordinate fields. The Cartesian coordinates are the position of the vessel or ROV in metres relative to the origin of the transponder array. The Eastings and Northings are the UTM coordinates of the vessel or the ROV:
 

Coordinate system	X coordinate
C (Cartesian N/E)	North
L (Cartesian E/N)	East
U (UTM N/E)	Northings
E (UTM E/N)	Eastings
- 8 **x.x=** Y coordinate. The Coordinate system field should be used to decode the X and Y coordinate fields:

Coordinate system	Y coordinate
C (Cartesian N/E)	East
L (Cartesian E/N)	North
U (UTM N/E)	Eastings
E (UTM E/N)	Northings

- 9 **x.x**= The depth of the position
- 10 **x.x**= The major axis of the error ellipse
- 11 **x.x**= The minor axis of the error ellipse
- 12 **x.x**= The direction of the major axis in the error ellipse
- 13 **x.x** = The rms value of the normalized residuals. The field contains the root mean square of the normalized residuals. A normalized residual is the residual divided with the expected accuracy of the measurement. An rms value less than 1 indicates that the measurements tend to be more accurate and fit better together than expected.
- 14 **\***= checksum delimiter
- 15 **hh**= empty or checksum

## PSXN20 Position, motion and velocity quality

This is a proprietary telegram designed by Kongsberg Seatex. It holds quality factors related to the position, velocity, heading and motion information provided in the PSXN23 telegram. This telegram is typically generated by a product in the Seapath family.

For more information, see *PSXN23 Position, motion and velocity* on page 224.

### Format

```
$PSXN,20,horiz-qual,hgt-qual,head-qual,rp-qual*hh<CR><LF>
```

### Format description

- 1 **PSXN** = talker identifier
- 2 **20** = telegram identifier
- 3 **horiz-qual** = horizontal position and velocity quality: 0 = normal, 1 = reduced performance, 2 = invalid data
- 4 **hgt-qual** = height and vertical velocity quality: 0 = normal, 1 = reduced performance, 2 = invalid data
- 5 **head-qual** = heading quality: 0 = normal, 1 = reduced performance, 2 = invalid data
- 6 **rp-qual** = roll and pitch quality: 0 = normal, 1 = reduced performance, 2 = invalid data

## PSXN23 Position, motion and velocity

This is a proprietary telegram designed by Kongsberg Seatex. It holds position, velocity, heading and motion information. The quality of the data is provided in the PSXN20 telegram. This telegram is typically generated by a product in the Seapath family.

For more information, see *PSXN20 Position, motion and velocity quality* on page 223.

### Format

```
$PSXN,23,roll,pitch,head,heave*hh<CR><LF>
```

### Format description

- 1 **PSXN** = talker identifier
- 2 **23** = telegram identifier
- 3 **roll** = roll in degrees on format d.dd. Positive with port side up
- 4 **pitch** = pitch in degrees on format d.dd. Positive with bow up
- 5 **head** = heading, degrees true on format d.dd (0.00 - 359.99)
- 6 **heave** = heave in metres on format d.dd. Positive down

## SNS sensor values

This is a NMEA 0183 standard compliant telegram designed by Kongsberg Maritime. It holds sensor values from a acoustic positioning transceivers. This telegram is typically generated by a HiPAP or HPR system.

### Format

```
$PSIMSNS, hhmss.ss, c--c, xx__, xx__, x.x, x.x, x.x, x.x, , , , , ,  
, *hh<CR><LF>
```

### Format description

- 1 **PSIMSNS** = talker identifier and telegram identifier
- 2 **hhmss.ss** = coordinated universal time (UTC) of position. The decimal fraction is optional
- 3 **xx\_\_** = Transceiver number
- 4 **xx\_\_** = Transducer number
- 5 **x.x** = The roll angle in degrees
- 6 **x.x** = The pitch angle in degrees
- 7 **x.x** = The heave in metres
- 8 **x.x** = The heading in degrees. A value between 0 and 360
- 9 = empty field. May be used in the future
- 10 = empty field. May be used in the future
- 11 = empty field. May be used in the future
- 12 = empty field. May be used in the future
- 13 **\*** = checksum delimiter
- 14 **hh** = checksum

## SSB SSBL position

This is a NMEA 0183 standard compliant telegram designed by Kongsberg Maritime. It holds the position of a Super Short Base Line (SSBL) transponder. This telegram is typically generated by a HiPAP or HPR system.

### Format

```
$PSIMSSB, hhmss.ss, cc__, A, cc_, aa__, aa__, aa__, x.x, x.x, x.x, x.x, *hh<CR><LF>
```

### Format description

- 1 **PSIMSNS** = talker identifier and telegram identifier
- 2 **hhmss.ss** = empty or time of reception
- 3 **cc\_\_** = Tp code (Examples: B01, B33, B47)
- 4 **A** = Status, A for OK and V for not OK. When the measurement is not OK the Error code field contains the error code

- 5 **cc\_\_** = Error code. Empty or a three character error code
  - NRy: No reply is received. No position is calculated
  - AmX: Ambiguity error in the X direction. No position is calculated
  - AmY: Ambiguity error in the Y direction. No position is calculated
  - Rej: The position is measured OK, but rejected by the SW filter in either the transceiver or in the HSC 400
  - Mi2: The second pulse of the Tp reply is missing. Additional\_info field is N
  - Mi3: The third pulse of the Tp reply is missing. Additional\_info field is N
  - Pre: No position is measured. The position is predicted by the Kalman filter in the HSC 400
- 6 **aa\_\_** = Coordinate system. C for Cartesian, P for Polar and U for UTM
- 7 **aa\_\_** = Orientation. H for vessel head up, N for North and E for East
- 8 **aa\_\_** = SW filter. M for Measured, F for Filtered and P for Predicted
- 9 **x.x** = X coordinate. The Coordinate system and Orientation fields should be used to decode the X and Y coordinate fields:

Coordinate system	Orientation	X coordinate
P Polar	H (vessel head up)	Horizontal range
C (Cartesian)	H (vessel head up)	Starboard
C (Cartesian)	N (North)	North
C (Cartesian)	E (East)	East
U (UTM)	N (North)	Northings
U (UTM)	E (East)	Eastings

- 10 **x.x** = Y coordinate. The Coordinate system and Orientation fields should be used to decode the X and Y coordinate fields:

Coordinate system	Orientation	Y coordinate
P Polar	H (vessel head up)	Bearing in degrees
C (Cartesian)	H (vessel head up)	Forwards
C (Cartesian)	N (North)	East
C (Cartesian)	E (East)	North
U (UTM)	N (North)	Eastings
U (UTM)	E (East)	Northings

- 11 **x.x** = Depth in metres
- 12 **x.x** = Expected accuracy of the position
- 13 **aa\_\_** = Additional information. N for None, C for Compass and I for Inclinator
- 14 **x.x** = First additional value. Empty, Tp compass or Tp x inclination
- 15 **x.x** = First additional value. Empty or Tp y inclination
- 16 \* = checksum delimiter
- 17 **hh** = empty or checksum

## Third party telegram formats

The telegrams below are designed by third party vendors. The telegrams are listed in alphabetical order.

### Topics

- on page
- on page
- on page
- on page
- *VDS Speed log* on page 227

### VDS Speed log

This is a third party speed log telegram designed to hold longitudinal and transverse water speed .

### Format

`$VMVDS,±xx.xx,N,±yy.yy,N*hh<CR><LF>`

### Format description

- 1** VM = talker identifier
- 2** VDS = telegram identifier
- 3** ±xx.xx = longitudinal water speed, negative number signifies astern
- 4** N = speed in knots
- 5** ±yy.yy = transverse water speed, negative number signifies port
- 6** N = speed in knots
- 7** \* = checksum field delimiter
- 8** hh = checksum

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ISBN: -

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