

**GROUNDWATER
IS OUR
BUSINESS**



GETTING STARTED GUIDE

Diver-HUB



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1 Introduction

Diver-HUB is an easy-to-use, cloud-based web portal delivering centralized and secure access to groundwater monitoring data from anywhere in the world. Diver-HUB allows you to manage groundwater monitoring data in real-time on your desktop, smart phone or tablet. Diver-HUB analyzes Diver data logger time-series, and creates interactive maps and graphs based on your monitoring data, effectively keeping track of all hardware deployed in the field and supporting the overall management of your monitoring network.

This getting started guide outlines how to setup Diver-HUB, create and setup a project and start data collection. Diver-HUB supports two data collection methods: manual and remote monitoring.

The first step is to request an account. At first login, after the account is confirmed, a wizard starts to confirm or set the Diver-HUB configuration. Once completed, a project must be created before data collection can start. Setting up a project is done by importing a set of CSV files with data about the various locations, such as name, address and coordinates. Also, specific well information is needed, so that the system can automatically calculate water levels from the collected Diver data.

After defining the project, already available Diver data can be uploaded using Diver-Office to Diver-HUB or Diver data that is manually collected can be uploaded in the future. In case of a remote monitoring project some additional steps must be done. First, the Diver-Links must be configured using Diver-HUB. Next, the Diver-HUB project data must be imported in Diver-Office before programming the Divers using Diver-Office and/or Diver-Field. Finally, the Divers are connected to the Diver-Links and deployed in the field.



2 Setup an Account

2.1 Request Access

The first step in the process is to request access to Diver-HUB. Go to the Diver-HUB registration page <https://www.diver-hub.com/Admin/RegisterCompany> and fill out the form and click the Save button.

Diver-HUB

Register Company Here you can send a request to create an account for your company

Licence type: Free

Company: Demo Company

Address: 2083 Dogwood Road

Zip code: AZ 85040 City: Phoenix

Country: United States Telephone:

Order number:

Local admin account

First name: Harry

Last name: Davis

Email address: [redacted]

Cancel Save

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Please contact us if you require a license type other than Free.

After an account has been created, you will receive an email with a link to the login page and a temporary password.

2.2 First Login

After the first successful login you will be asked to enter a new password.

Home > Settings > My Profile > Change password >

Email: [redacted]

Temporary password: [masked]

New password:

Confirm password:

Cancel Save

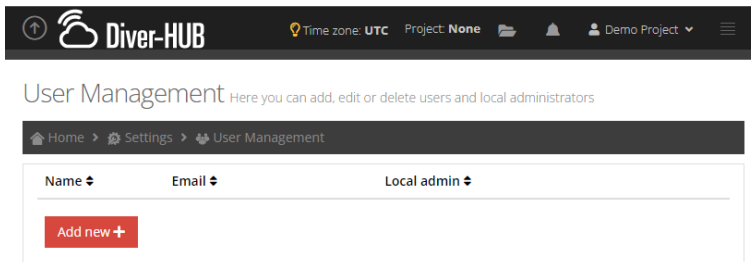


2.2.1 Company Information

Next, you will be asked to verify your company information. Click Next when the information is correct.

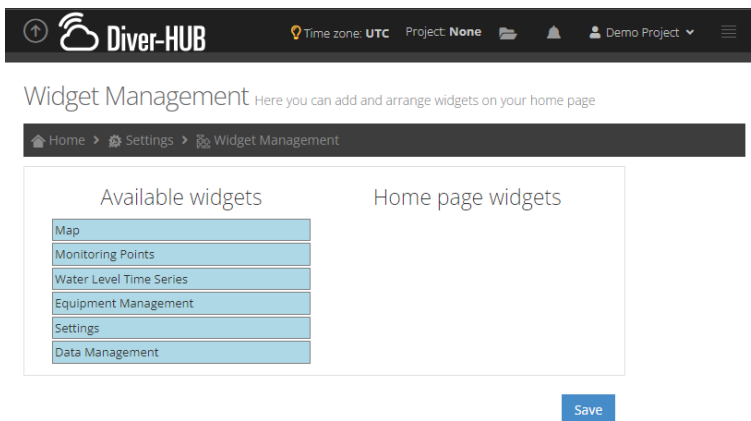
2.2.2 User Management

In the User Management section, you can add new users. If you are the only user click Next.



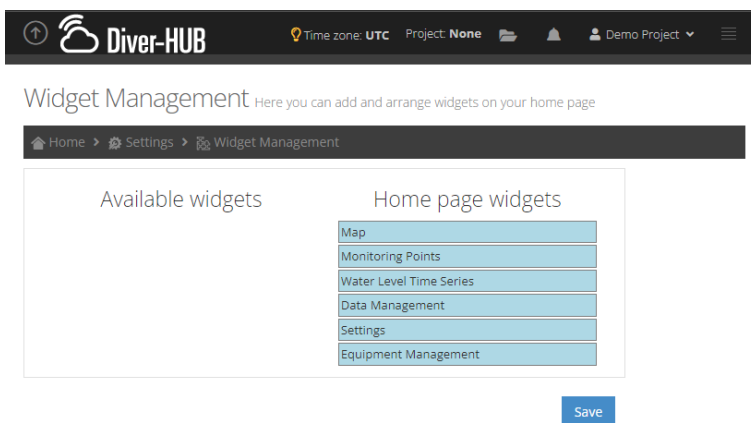
2.2.3 Widget Management

In the Widget Management section, you can determine which widget will be shown on your homepage and in which order. Drag-and-drop the widgets from the Available column (left) to the Home page column (right).



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In this example all available widgets will be shown on the homepage in the order as shown below. Click Done when you are satisfied with the selected widget and their order.

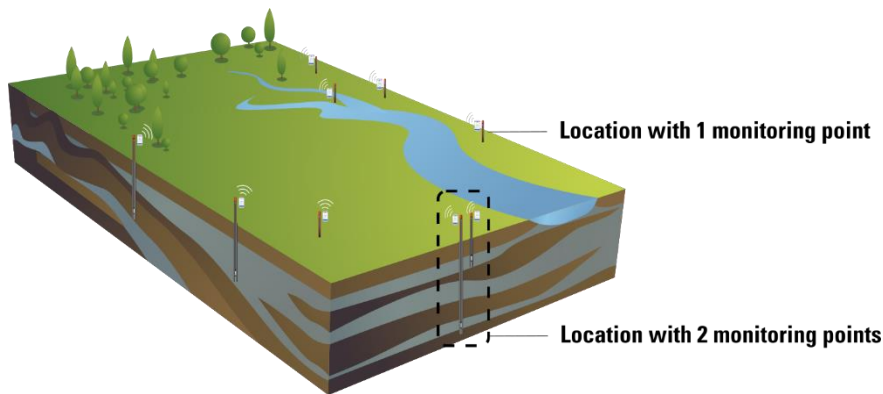




3 Setup a Project

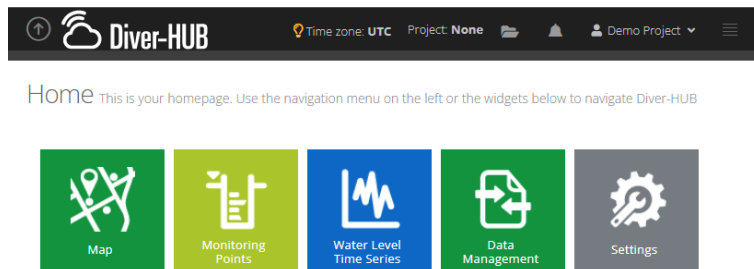
3.1 Project Definition

A project in Diver-HUB is defined as a set of locations as depicted in the figure below. A location has a unique name and X, Y coordinates. At each location there are one or more monitoring points (Divers). Each monitoring point must have a unique name.



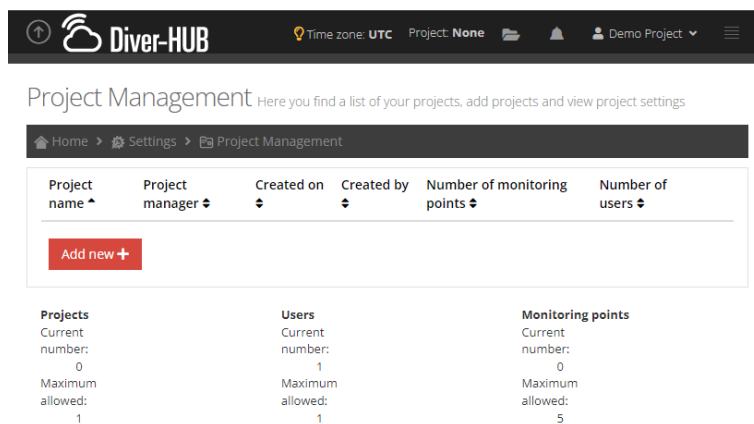
3.2 Create a Project

After completing the setup of Diver-HUB or after logging in to Diver-HUB the homepage will be shown.



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Click the Settings button and then the Project Management button. The following view will appear. Click the Add new + button. Only users with administrator rights can create a new project.





The following view will appear. Type a Project name, assign a Project manager, select the users for the Project team and click Save. The settings for the Public Web Portal are for display only. Please contact Van Essen Instruments if you want to make your groundwater data publicly available on www.diver-hub.com/public/tucson.

Diver-HUB Time zone: UTC Project: None Demo Project

New Project

Here you can create a new project

Home > Settings > Project Management > Create New Project

Project name: DemoVEI

Project manager: Demo Project

Vertical reference datum: Mean Sea Level

Project logo: Please select a .jpg file for the project logo **Browse...**

Public Web Portal

Show data in public web portal: Not Set

Data available via API: Not Set

URL slug:

Show also provisional water level data:

Project team

Demo Project: Default

Cancel **Save**

3.3 Import Project Data

In this step locations and monitoring points will be setup. The data can be imported using the Data Management widget. In the Home screen click the Data Management tile and the view as shown below will appear. Then click the desired Templates tile and download the Excel file for each import.



Templates Here you can download template files for each import

Home > Data Management > Templates

1. Location Metadata	2. Monitoring Point Metadata	3. Link Monitoring Point and Name Programmed in Diver datalogger	4. Barometric Source for Barometric Compensation	5. Cable Information for Barometric Compensation
6. Monitoring Point Top of Casing Elevation	7. Ground Surface Elevation	Location Images	Manual Groundwater Measurement Data	User Defined Notifications related to Time-Series Data
Provisional Water Levels	Monitoring Point Water Density			

The Excel template file contains information about the required data format of each column. The columns in green in the Excel template file are mandatory fields, the yellow columns are optional.

The value for the *client_name* must be equal to the Company in Settings > My Profile. The value for *project_name* must be selected from one of the project listed under Settings > Project Management.

After filling out the Excel template file, save the file as a CSV file. Next, navigate to Data Management > Import and click the Import+ button. The following view will appear, in which you select if you want Diver-HUB to add new objects (locations & monitoring points) and/or update existing objects. Select the time zone corresponding to the time stamps of the imported data.

Import Here you can import your data using CSV and ZIP file(s)

Home > Data Management > Import Management > Import

Choose CSV or ZIP file to import

Import new data objects

Update existing data objects

Time zone (for date time values)



3.3.1 Sequence of Data Import

Diver-HUB automatically calculates water levels for each monitoring point. This requires the following minimum dataset. The data must be imported in the following sequence:

1. *Location Metadata*. Each location must be added as a row in the template file.
2. *Monitoring Point Metadata*. A location can contain one or more monitoring points. Each monitoring point must be added as a row in the template file.
3. *Link Monitoring Point and Name Programmed in Diver datalogger*. The link between the monitoring point in Diver-HUB and the name programmed in the Diver datalogger is time dependent. Multiple Divers with different names that were used in the same monitoring point can be listed in this template file. Add a row for each name including a timestamp.
4. *Barometric Source for Barometric Compensation*. Each monitoring point requires a link to a barometer (barometric source) that is used for the barometric compensation including a timestamp that indicates the start of the link to that specific barometer. When another/new barometric source is used for compensation, add a new row to the template file including a timestamp (*date_from*) from when the new barometric source must be used.
5. *Cable information for Barometric Compensation*. Each monitoring point must have at least one value for the cable length including a timestamp. In case cable length changes over time, new values including a timestamp may be added as a new row to the template file.
6. *Monitoring Point Top of Casing Elevation*. Each monitoring point must have at least one value for the top of casing elevation including a timestamp. In case the top of casing changes over time, new values including a timestamp may be added as a new row to the template file.
7. *Ground Surface Elevation*. Each monitoring point must have at least one value for the ground surface elevation including a timestamp so that the water level below ground surface can be calculated. In case the ground surface elevation changes over time, new values including a timestamp may be added as a new row to the template file.

3.3.2 Import Images

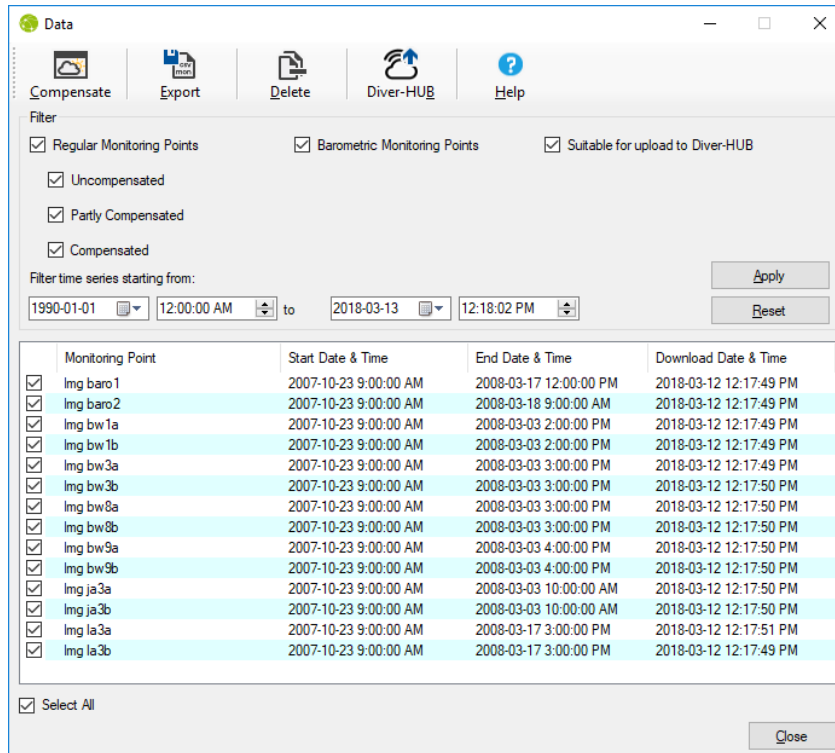
Images, e.g. location photo and borehole log plot (bhlp), can be imported for each location by downloading the *Location Images* template. In the columns *photo1*, *photo2* and *bhlp_image* type the exact name of each file including its extension, e.g. *.jpg*, *.png* and save the *Location Images* template as a CSV file. Subsequently, create a ZIP file and add the *Location Images* CSV file and image files to it. Do not use sub-folders. The ZIP file can be imported in the same way as other data; navigate to Data Management > Import.



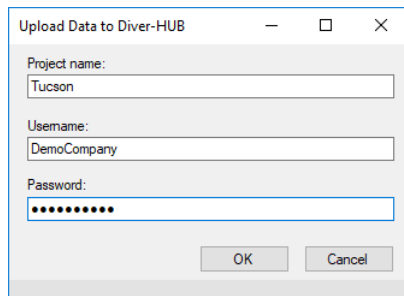
4 Diver Data Collection

4.1 Manual Data Upload

Diver-Office can be used to upload Diver data to Diver-HUB. In Diver-Office click on the Data button in the toolbar the following window will appear:



You can upload specific time series data to Diver-HUB from the Data dialog. Enable the Suitable for upload to Diver-HUB checkbox to filter the time series that can be uploaded. Suitable time series are those that were downloaded directly from the Diver or from imported DAT files. Enable the checkbox(es) for the desired time series data and click the Diver-HUB button from the toolbar. The following dialog will display:



Fill out the Project name, Username and Password fields and click the [OK] button to upload the data. Please contact Van Essen Instruments to obtain the Username and Password.

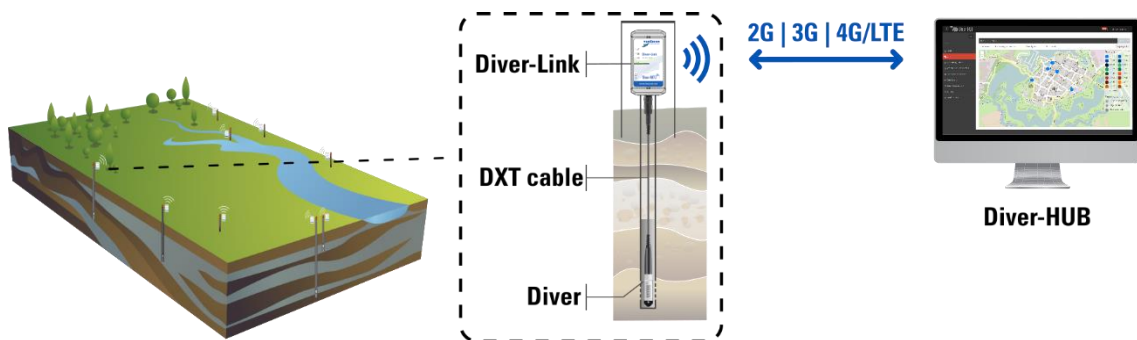


Diver-HUB will automatically compensate the Diver data into water levels, when the Diver-HUB project was setup properly. The uploaded data and the resulting water level data will be shown in the Water Level Time-Series widget.

4.2 Remote Monitoring

4.2.1 Operating Principle

A Diver groundwater datalogger is suspended on a DXT Cable which is connected to a Diver-Link at the top of the well. The Diver-Link connects to a 2G, 3G or 4G/LTE cellular network and transmits the Diver data and the data from its internal barometric datalogger to the Diver-HUB server.

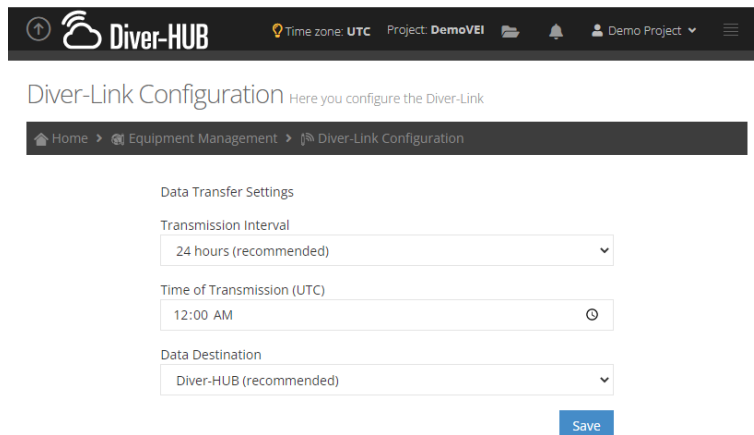


4.2.2 Diver-Link Configuration

First select the project for which you want to configure the Diver-Links. Then, in the Home screen click the Asset Management tile. Next, click the Diver-Link Configuration tile and the view as shown below will appear.

Set the desired data transmission interval, the time of the day that the transmission must occur and the data destination. Click Save to store the settings and on the next connection of the Diver-Link to the server, these settings will be applied.

Setting the Data Destination to External FTP Settings requires you to setup your own FTP server and enter the login credentials for it here. Choosing this option will not show any Diver data in Diver-HUB.

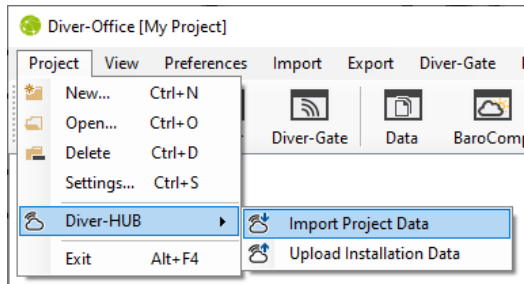




4.2.3 Diver Configuration

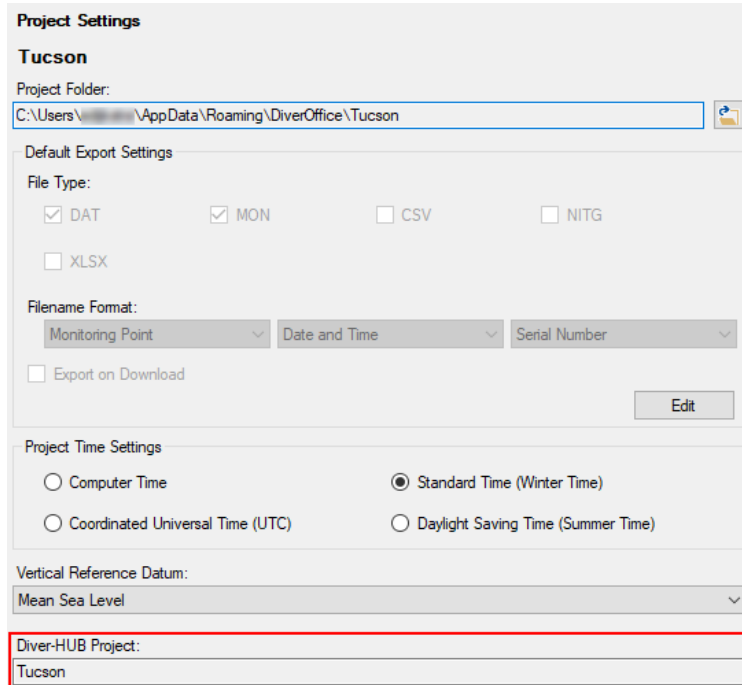
For the system to link the Diver-Link and Diver to the appropriate Diver-HUB project the following procedure for programming the Divers must be followed.

Open Diver-Office and open any project. Go to Project > Diver-HUB > Import Project Data.



A dialog wizard appears. In the first step enter your username and password for your Diver-HUB account. In the second step, a list of available Diver-HUB projects is shown. Select the Diver-HUB project from which you want to import the data and click Next. In the third step a list of all the monitoring points in the selected project is shown. Deselect the monitoring point that you do not want to import. By default, all monitoring points are selected. Click Import to import the selected monitoring points.

If the project name that is being imported does not yet exist in Diver-Office, then a new project will be created. Otherwise, the monitoring point information in the existing project will be updated. At the bottom of Project Settings details frame, the Diver-HUB project is now shown.

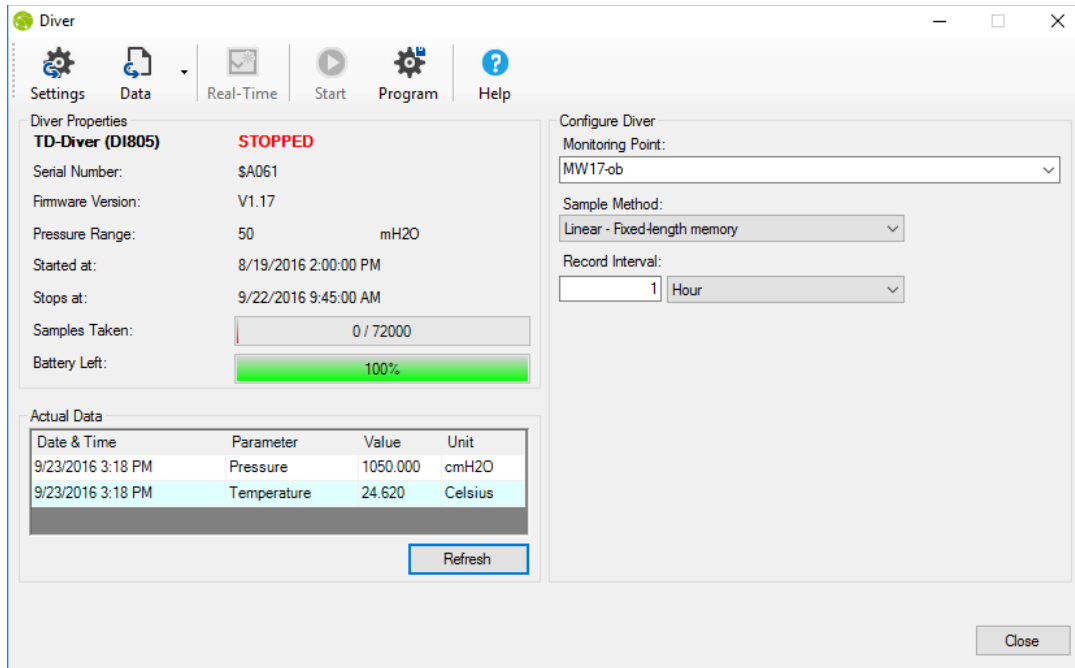




Now the Divers can be programmed. Connect the to the computer through a USB Reading Unit (part no AS330) or the Smart Interface Cable (part no. AS346) and click the Diver button to open the Diver window. See the image below for an example where the following parameters are used:

- Select the Monitoring Point name from the dropdown list: “MW17-ob”
- **sample method:** “Fixed – Fixed-length memory”
- record interval: 1 hour.

After entering the settings, the Diver must be programmed by clicking the Program button.



Once the settings are successfully programmed into the Diver the Start button will be enabled. Clicking the Start button opens the Start Diver dialog as shown below. Here you can select from the three start methods. It is recommended to select the Future Start option to start the Diver at a specified time in the future. Please refer to the Diver product manual for more details on programming Divers.

4.2.4 Hardware Deployment

Now that the Divers are programmed, they can be connected to the Diver-Link through a DXT Cable. Please refer to the Diver-Link Product Manual on how to setup and deploy the Diver-Link. Once the Diver is connected to the Diver-Link, its data will appear in the selected Diver-HUB project.