

YSI incorporated



610D Display/Logger
610DM Display/Logger

**Environmental
Monitoring
Systems**

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SECTION 1 GETTING STARTED

The YSI Display and Logger series instruments are powerful, hand held microcomputers that allow the user to display sonde readings, configure sondes, store and recall data, upload data from sondes and transfer data to computers for analysis and plotting.

1.1 BATTERIES AND CHARGING

An internal NiMH battery pack powers the YSI 610. This supply is sufficient to run a YSI 610 connected to a sonde for 6-8 hours. If the sonde is being powered separately, the YSI 610's batteries can last much longer. The sondes can be powered by their internal batteries (6920, 6600 and 600XLM only), or by using a power supply such as the YSI 6038.

To ensure that you get maximum operational time from your hand-held display/logger, the user should follow the procedures below:

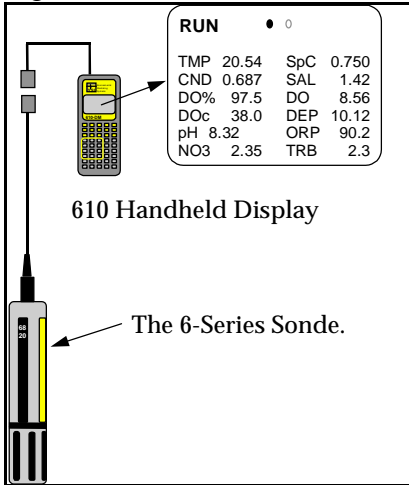
- 1) Place your display/logger on charge for approximately 24 hours.
- 2) After 24 hours, take the display/logger off the charge and switch it on. Leave the display/logger on until the battery is fully discharged.
- 3) Repeat steps one and two at least two more times. This ensures that the battery is charged to its maximum capacity.
- 4) Do not charge the batteries for more than 48 hours.

If the above steps are not followed, it may result in limited operational time of your display/logger and limited lifetime of your terminal's battery pack. When the YSI 610's batteries get low, the YSI 610 beeps. This provides approximately a one-hour warning before the YSI 610 will turn itself off. A wall-mount power supply is supplied with the YSI 610 to recharge the batteries. An optional automotive cigarette lighter adapter is also available.

1.2 CONNECTING TO A SONDE

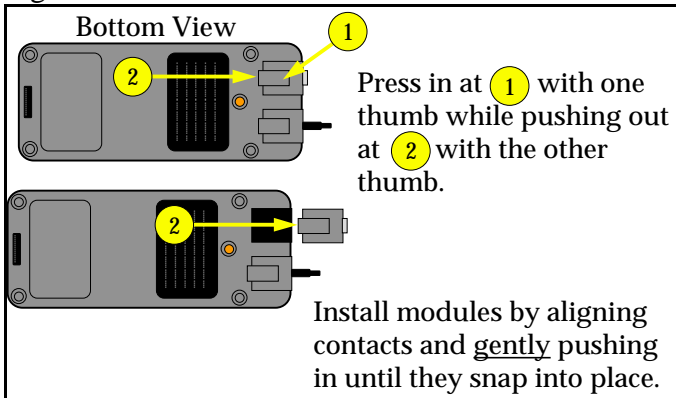
Since YSI 6-Series sondes do not have displays or controls, users must communicate to them with a PC or terminal and emulation device. Figure 1 is a diagram of the YSI 610 connected to any 6-Series sonde.

Figure 1



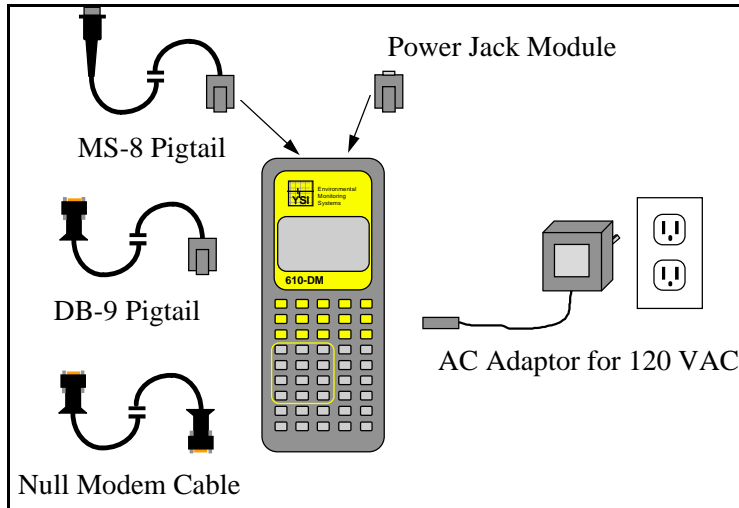
There are two slide plugs on the back of the YSI 610. One plug is for power and the other is for communications to a sonde or computer. They are not interchangeable. In a laboratory situation, you will often use the AC adapter plug to power and charge your YSI 610. Because this plug is not intended to be watertight, replace it with the blanking plug when taking the YSI 610 into the field. An optional slide plug adapter for connecting your YSI 610 to an external battery is also available.

Figure 2



Two slide plug cable adapters are available for the communications plug. One is for communication with a PC and terminates in a 9 pin miniature sub-D connector (DB-9). When communicating with a PC, be sure to use a null modem cable. The other adapter is for use with a sonde and terminates in an 8 pin, military style connector (MS-8). Plug the MS-8 end of the cable into the sonde cable and the other end into the YSI 610.

Figure 3



1.3 POWERING UP

After the YSI 610 is shipped, the batteries may need a few minutes of charging before the unit can be turned on. Normally, whenever the AC adapter is plugged in, the YSI 610 turns itself on. To turn the YSI 610 off when the AC adapter is plugged in, press the Power button, wait for the power up display to appear and then press the Power button again. Do not allow the YSI 610 to charge more than 48 hours continuously.

With a sonde plugged in, the YSI 610 powers up into the Run mode and displays readings.

RUN				●	0
TMP	20.54	SpC	0.750		
CND	0.687	SAL	1.42		
DO%	97.5	DO	8.56		
DOc	38.0	DEP	10.12		
pH	8.32	ORP	90.2		
NO3	2.35	TRB	2.3		

The message, “No Sonde in Use” may appear occasionally while the YSI 610 is trying to establish communication to a sonde. If the message does not go away after 60 seconds check the cables, power and baud rate selection on both the YSI 610 and the sonde to make sure that they are working properly, and that the baud rates agree (See **Section 2, Sondes** of the YSI 6-Series Operations Manual for information about the proper baud rate).

SECTION 2 USING THE KEYBOARD

To select different menu options, use the arrow keys to highlight the name of the menu that you want to open, and press the **Enter** key. To return to the previous menu, press the **Esc** key.

Information can be entered into the YSI 610 when you see a blinking cursor within a highlighted item. If you wish to change the highlighted information, type in the new information, and press **Enter**. You can enter information in upper or lower case.

Durations and intervals, which appear on logging and deployment menus, are entered in a special way. Values may be entered in units of seconds (s), minutes (m), hours (h) or days (d). You must type a number followed by a letter (press Shift after typing the numeric portion). Thus 15 seconds is entered as "15s", and 36 hours is entered as "36h".

The upper right corner of the screen indicates the keyboard shift status by showing "shft" or "caps". If you wish to type a number instead of a letter, press the shift key and "shft" will disappear. When the "shft" appears in the upper right corner of the screen, letters can be typed. The YSI 610 automatically changes the shift status when it expects numeric/text input. The "caps" appears in the upper right corner when you hit the caps key to type capitalized letters (useful for naming files).

When the menu is too large to fit on the screen, arrow symbols appear in the upper or lower corners. To see the part of the menu that is not shown, use the Arrow keys, and the screen will scroll as necessary.

SECTION 3 CHOOSING WHICH READINGS TO DISPLAY

The Setup Sensors and Setup Parameters menus of the YSI 610 allow you to display or change the active sensors and parameters that are in the sonde. Both menus are listed in the Main menu and have similar formats. To select or deselect an item in these menus, highlight it and press **Enter**. You will rarely use the Setup Sensors menu, except when you are first setting up your sonde after purchase, and only occasionally use the Setup Parameters menu.

The Setup Sensors menu in the YSI 610 can not detect the presence or absence of a particular sensor in the sonde. So regardless of which sensors are installed in your sonde, all possible sensors are listed in the YSI 610 Setup Sensors menu. If you activate a sensor that isn't really connected, you will see false readings for that sensor, because the YSI 610 and the sonde will believe whatever you enter.

You access the Run mode by selecting Run from the YSI 610 Main menu, or by powering up the YSI 610 with a sonde already connected. In the Run mode, the YSI 610 constantly requests live data from the sonde and displays it on the screen. To go to the YSI 610 Main menu from the Run mode, press the **Esc** key.

3.1 SETTING UP AND USING THE SITE LIST

A feature of the YSI 610-DM (but not the YSI 610-D) allows you to place a list of “site names” into memory to eliminate having to type them in during fieldwork. While using the YSI 610-DM in the Run mode, you may press the “C” key (capture), “A” key (add) or “M” key (marked) to view the Site List. Choose a site name from the list, or type in a new name and confirm creating a new file if necessary. Press **Enter**, and the data will be added or captured to this file. Each of these features are discussed in further detail in this section.

There are two approaches to setting up and using the Site List feature. One allows you to designate a descriptive file name and then add or capture data to this file at various times. For example, you may decide to sample at “bridge1” each day for 14 days and capture readings for several minutes each time. When you review or upload this file it will contain 2 weeks of data, time and date stamped. This data is specific to “bridge1” site and all of the data are in one file. If you want to collect data at another site (e.g., “bridge2”), you need to open a second file.

The second approach allows you to collect all readings for a particular field trip into one file. For example, you may decide to sample at “bridge1”, then “bridge2”, then to “uplake”, and so on. When setting up this file (automatically named “marked” by the YSI 610-DM), you list a descriptive name in the “file” prompt to describe the site, then assign a number in the “site” prompt that corresponds to this site. This mark number is important because it is the key identifier when you view the readings at a later time. Again, the advantage of “marked” file is that you can store readings from many sites in one file and be able to identify the sites later. This may be your approach of choice on a one day trip to multiple sites.

USING THE SITE LIST WITH THE MARKED FILE

The **Site List** is accessed through the **Setup YSI 610** menu. If the site list is empty, “make NEW entry” appears and prompts you to type in a new file name.

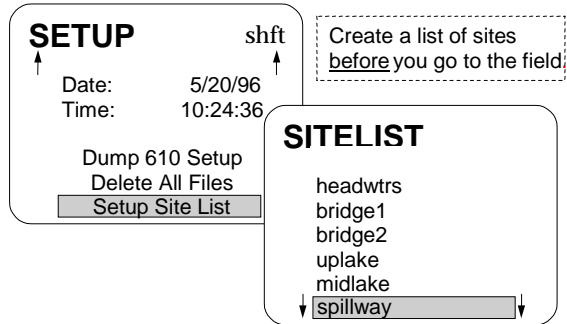
When using the Mark feature, there is only one file name, “marked”. All readings that are stored using the “m” prompt during Run mode are stored to the file name “marked”.

IMPORTANT: You can only set up “marked” file by pressing the “m” key in the **Run** mode. You can not type in the word “marked” to create this file. Once you have

collected readings under the pre-assigned site names, you may rename “marked” file to a file name of your choice using submenu FILES.

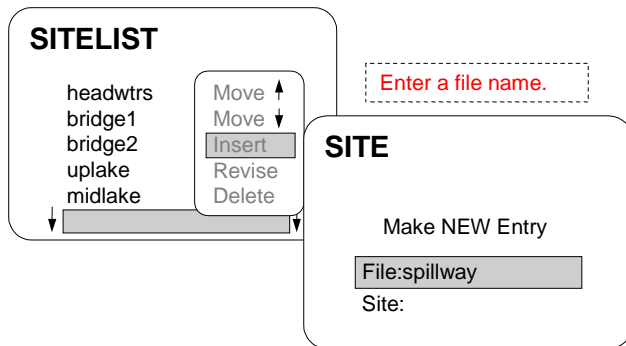
In this mode, you can set up a site list using a Mark Name and a Mark Number. In the Site List use the File item to hold the Mark Name, and the Site item to hold the Mark Number. Use any combination of alpha/numeric characters (we recommend using 8 characters max for compatibility with DOS based systems) for the Mark Name, but for the Mark Number you must enter numeric values (-99999 to 999999). You will likely use positive numbers beginning with 1, then 2 and so on.

From the YSI 610’s Main menu, select **Setup YSI 610** and then select **Setup Site List**. If no sites have been entered, the “make NEW entry” screen appears. To modify an existing list, press **Enter**, then choose from the pop-up menu. To enter a new site, choose Insert. Using the example shown, type in “spillway” and press **Enter** to add to the list.

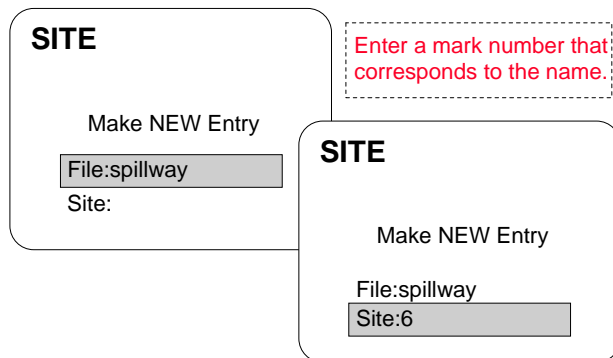


To correctly format this site for Mark status, highlight “Site” and enter a numeric value to complete this entry. Using this example the number “6” is used to identify the site “spillway”.

While in the Run mode, press the “m” key. Select the site name by highlighting it to begin the process of collecting readings.



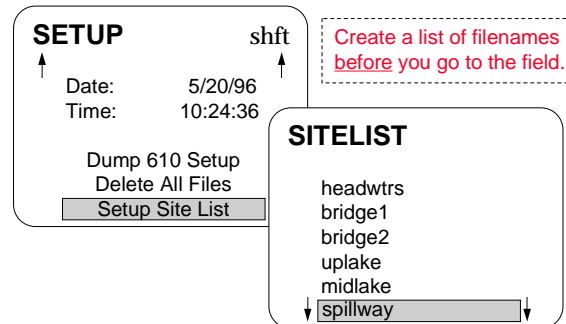
Remember that when you review data from the “marked” file, lines of data from the site “spillway” will be labeled as “sample 6”. Each of the sites have corresponding numbers. When you set up the sites, we recommend that you write down the list for later reference to correlate names with numbers.



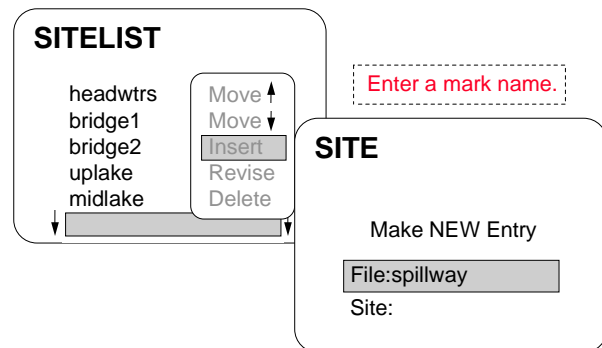
USING THE SITE LIST FOR CAPTURE, LOG AND ADD FILES

The **Site List** is accessed through the **Setup YSI 610** menu.

From the YSI 610 Main menu select **Setup YSI 610**, and then select **Setup Site List**. If no sites have been entered, “make NEW entry” appears. To modify an existing list, select an existing name, press **Enter** and choose from the pop-up menu. To enter a new site, choose Insert. Type in “spillway” and press **Enter** to add to the list.



By typing information after “Site:”, you may further describe your site. This will not appear in the file name list. The information typed under “Site” only appears in the header information during review of files using the YSI 610 or YSI software. No entry is required under “Site” for Add, Capture and Log functions. A numeric value is required if the Mark function is used.



The Site List can be kept in any order. It is suggested that you arrange it in the order that you visit your sites. Making an entry on the Site List does not create a file, it only stores a file name for future use. The file name will not appear in the Site List until data is stored in the file.

There are different kinds of files for each of the three types of storage: Add, Capture and Log. The file type is fixed after the first set of readings is stored to the file. If you decide to use more than one type of storage, then you might want to make that clear in the file name itself by adding “c”, “a”, or “l” as a suffix to the file name.

SECTION 4 LOGGING

Logging refers to the collection of a set of readings at regular intervals. There are two different applications of the YSI 610 related to logging.

Some 6-Series sondes (6920, 6600 and 600XLM) have on-board memory and power. These sondes can log readings to sonde memory for days or weeks at a time. You may use the YSI 610-D or YSI 610-DM to setup one of these sondes for deployment, disconnect the sonde and allow it to log readings on its own. Then use the YSI 610 to upload files from the sonde.

The second application uses YSI 610-DM memory to store readings from any of the 6-Series sondes. Since the readings are being logged to YSI 610-DM memory, sonde memory and on-board power are not required. During logging, the YSI 610 can not do anything else. While the YSI 610 can readily withstand short exposure to rain, it can not be left out in the weather for extended periods of time. For these reasons, the YSI 610 is best suited for short term logging applications.

LOGGING TO THE YSI 610-DM

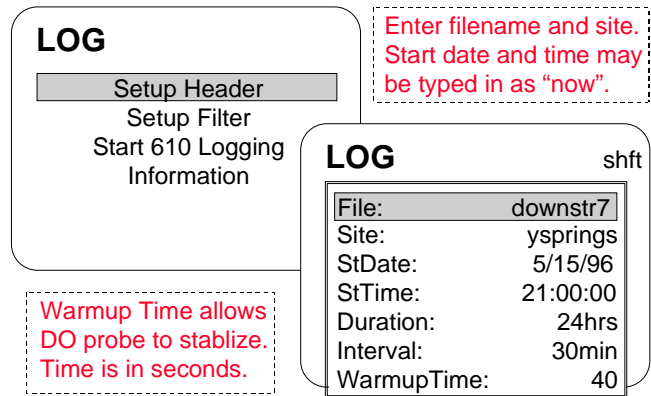
The YSI 610-DM can log sample data directly to its internal memory from any 6-Series sonde. Logging produces a file in the standard YSI file format, capable of being uploaded to a PC and processed by EcoWatch for Windows.

NOTE: If you log files to the 610DM, only the parameters that are active in the Report Menu will be available to the PC software. For example, if only DO mg/L is activated in Report during logging, it will not be possible to later generate DO% values. This is different from files that are logged to sonde memory where DO% would be available as a calculated parameter in EcoWatch software. It is important to be certain that all desired parameters are active in the Report Menu before beginning a 610 logging study.

When logging with the 610DM, the sensors will be turned off between logged samples, affecting the manner in which the DO calibration should be carried out. First, when setting up the sonde, the DO warm up time in the sonde's Advanced Sensor menu is set to the same value as the DO warm up time that is used to set up the 610DM logging study. Second, After establishing the connection between the sonde and the 610DM, you must turn on Autosleep RS232 in the sonde's Advanced Setup menu. This can be done by using Smart Terminal as described in **Section 7.3, Communications** . Third, proceed directly to the Calibrate menu of the 610DM after Autosleep is activated. If you activate Run mode, Autosleep will be deactivated. Follow the calibration procedures for DO as described in **Section 7.4, Calibration Mode**. The calibration will occur automatically after a countdown of the warm up time. Finally, proceed to the Logging menu and begin the study as described below.

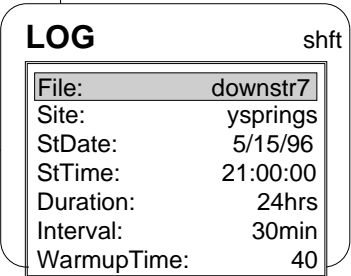
To begin logging with any sonde, select the **Logging** menu from the YSI 610 Main menu. Four sub-menu choices are displayed.

(1) The **Setup Header** menu allows you to specify control and timing information for the deployment. Be sure to set a file name and an interval. We recommend that warm-up time be set between 40 and 60 seconds.



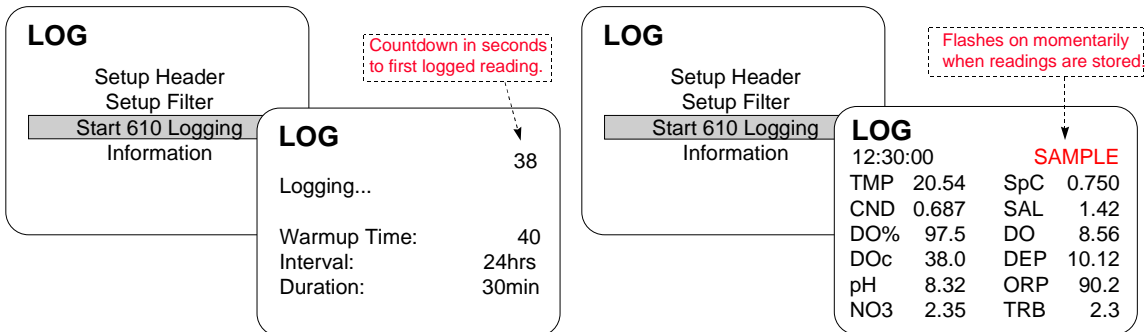
(2) The **Setup Filter** menu allows you to automatically discard samples that do not meet your criteria. This feature is rarely used.

Warmup Time allows DO probe to stabilize. Time is in seconds.

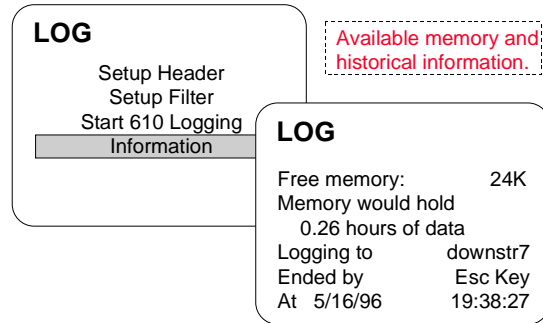


(3) The **Start YSI 610 Logging** menu begins the logging session that was specified in the Setup Header and Setup Filter menus. If the file name specified already exists and was created by Logging on the YSI 610, new data will be appended to the file. If the file name does not exist, you will be asked if you want to create it, asked to enter a site name, and asked if you want to enter the weather info. Pressing the **Esc** or **Power** keys terminates logging. Logging stores all parameters to the data file even though only 12 fit on the screen.

If the sonde is equipped with a wiping turbidity probe, the probe will be cleaned automatically before each sample but only if time permits. Cleaning takes up to 24 seconds, and the YSI 610-DM makes sure that cleaning will end at least 30 seconds before the sample. You set the number of wipes in the Sonde main menu, see **2.9, Sonde menu** of the YSI 6-Series Operations Manual. When the YSI 610 is started, the number of wipes is included in the Logging screen. This allows you to verify that wiping will occur.



(4) The **Logging Information** screen tells you how much space is available for additional logging, and how much time this corresponds to in Logging mode.

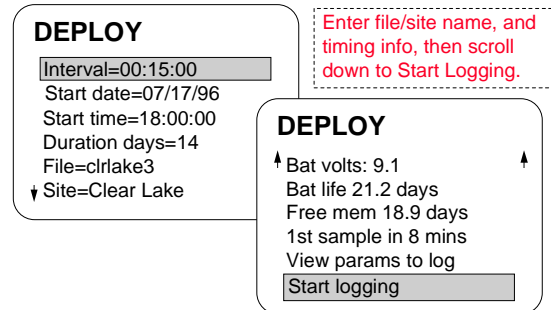


4.1 SETTING UP A SONDE FOR UNATTENDED LOGGING

The data logging discussed here refers to logging by the sonde into its own “sonde” memory. This logging is completely separate from the YSI 610-DM Logging, Capture and Add features which record data into the YSI 610-DM memory. The function of the YSI 610 is to communicate with the sonde, to set logging parameters and to start or stop the logging function. (Note that sondes without batteries must have an external power source to log.)

To set up a sonde for logging, select **Deploy Sonde** from the Main menu.

The YSI 610 communicates with the Sonde Main menu. Choose **Run** and then choose **Unattended Sample**. Enter a file name and a logging interval, then choose the last item on the menu, **Start logging**. Finally, the sonde asks for confirmation before actually starting the logging run. Logging will begin at the next even multiple of your logging interval.



Before starting, you should check **Free Mem** and **Bat Life**, to make sure that you have the capacity to log for your intended deployment time. It is strongly recommended that you log a few readings and view them before deploying the sonde. This will verify that you have set it up properly.

SECTION 5 FILES

5.1 UPLOADING LOGGED FILES

Uploading a file from a sonde does not change the sonde files in any way. Only formatting flash disk will delete files. To upload the data in a file, you do not need to stop logging.

If you get a “No Sonde” message that persists for more than a 60 seconds, check the cabling, batteries or power, and baud rate.

From the YSI 610 Main menu go to the **Communications** menu and select **Kermit YSI 610 < Sonde**. You will see the sonde’s **File** menu. From that menu choose **Upload**. A list of files will be displayed. Select the file you want and then select **Proceed**. After choosing a file format, the upload will begin. You will see several status counters on the YSI 610 screen. Any errors that occur during the upload are detected and corrected by the YSI 610. But if the counters do not advance, press **Esc** to abort the upload, and try again.

If the file is the last file in the directory (or the currently-active file), you may use the Quick Upload selection to upload the entire file.

When the upload is done, you will see "Successful" on the YSI 610 screen. Press the YSI 610’s **Esc** key twice to get back to the YSI 610 Main menu. Then select **File System** and press **Enter**. You may now view the data file.

5.2 TRANSFERRING FILES TO A COMPUTER

Run EcoWatch for Windows software on your PC, then select **Settings** from the Comm menu. Verify the Baud Rate is 9600, and that the Com port is correctly assigned. Change them if needed. Select **Sonde** from the Comm menu and press **Enter**. A blank screen will appear.

Connect the null modem cable to the appropriate PC com port. Connect the other end of the null modem cable to the YSI 610 DB-9 pigtail PC adapter. From the YSI 610 Main menu, select System Setup and verify that the Baud Rate is 9600 (or matches the PC). Change it if necessary.

From the YSI 610 Main menu select **Communications**, then select **Kermit YSI 610 > PC**. Select the file you wish to send, or select **Send All Files** (at the bottom of the list). If a file by the same name already exists in the PC, EcoWatch for Windows will ask you if you want to overwrite the PC file. If you do not want to overwrite, press N, and type in a different file name.

During the upload, you will see several status counters on the YSI 610 and PC screens. Any errors that occur during the upload are detected and corrected by EcoWatch. But if the counters do not advance, press **Esc** at both the PC and the YSI 610 to abort the upload, and try again. When the upload is complete, the status will read “Successful”. Press Esc on the 610 to return to the Main menu.

SECTION 6 SAMPLING

Sampling applications refer to readings that are taken while the user is present and controlling the collection of data.

In sampling applications the total data collection time is relatively brief, from a few minutes to perhaps a few hours. **Examples:** taking one set of readings at the outfall of a wastewater treatment plant once a day, taking readings at one mile intervals along the length of a river, checking the DO concentration once a week in several ponds, or spending an entire day profiling a lake.

The YSI 610 has several powerful features that make data collection easy during applications. Because the interpretation and use of the Site List depends on which feature you use, we recommend that you choose one method that best suits your needs, learn that method and ignore the others. The following chart lists the major features of each type of memory. The rest of this section explains in detail the uses of each type.

Stash	Simplest way to store readings Data is not intended to be uploaded to a PC Data is stored in 26 slots, each referred to by letter (A-Z) Weather data can be stored in the same way
Add	Stores single sets of readings to an uploadable file Only available on the YSI 610-DM
Capture	Stores several consecutive readings to an uploadable file Only available on the YSI 610-DM.
Mark	Stores readings from many sites in a single, uploadable file Only available on the YSI 610-DM.

6.1 STASH MEMORY

Stash memory is available on both the YSI 610-D and YSI 610-DM display/loggers.

While in the Run mode, you can store readings to the Stash memory. To store a set of readings, simply press the “S” key, then at the prompt press any letter to choose a “slot”.

① Press the “S” key to Store.

② Choose a location, A-Z.

③ Message appears to verify location.

To recall a set of readings later, press the “R” key and then press the letter corresponding to the slot where the readings are stored. These slots are not deleted but can be overwritten. You must be in the Run mode to use the Recall function.

① Press the “R” key to Recall.

② Choose a location, A-Z.

③ Stored data displayed until **Esc** pressed.

There is an additional sets of slots, one for storing weather information. To store weather information, press the “W” key and press any letter key to select a slot. You are then presented with a form where you can record wind speed, precipitation, sky conditions and other weather-related information.

Note that Stash memory for readings and weather are organized into slots referred to by letters. These three sets of letter slots are independent of each other. However, you may choose to use the same letter when storing weather and readings from the same site.

To check the status of Stash memory or weather press the “L” key during Run mode to view the screen to the right. This screen displays the last 11 entry slots in the order in which they have been used.

Press “L” key from Run mode to the last 11 Stores and Weather locations.

LAST

Newest ————
 Oldest ————

Stores: RAZMGDFIJSB
 Weather: -none-

6.2 CAPTURE AND ADD MEMORY

Capture memory stores readings to a file as quickly as they come from the sonde. From Run Mode press the “C” key to start Capture. Stop it by pressing “C”, **Esc** or **Power**. When you press “C”, readings will resume being displayed in the Run mode. When you press **Esc**, you return to the Main menu. When you press **Power**, the YSI 610 turns itself off.

Add memory stores a single set of readings to a file. From Run Mode press the “A” key to start Add. Once the reading is stored, the display returns to Run mode and “live” readings continue to be displayed. You may store as many readings as you like by pressing the “A” key repeatedly. In all other respects the Capture and Add features are the same.

After pressing “C” or “A”, enter a file name. You may press the down arrow key to view additional site names on the Site List, or you may enter a new site name (file name) in the highlighted area.

Remember that if a file is open and has been activated as a Capture or Add file, you can only capture readings to a Capture file and only add readings to an Add file.

From Run mode press the C key. Accept the filename presented (if appropriate), or choose from the Site List.

RUN	●	○
TMP	20.54	SpC 0.750
CND	0.687	SAL 1.42
DO%	97.5	DO
DOc	38.0	DEP 1
pH	8.32	ORP
NO3	2.35	TRB

CAP

File: capbuck1

TMP	20.54	SpC 0.750
CND	0.687	SAL 1.42
DO%	97.5	DO 8.56
DOc	38.0	DEP 10.12
pH	8.32	ORP 90.2
NO3	2.35	TRB 2.3

Press Enter to confirm.

CAP	●	○
TMP	20.54	SpC 0.750
CND	0.687	SAL 1.42
DO%	97.5	DO
DOc	38.0	DEP 1
pH	8.32	ORP
NO3	2.35	TRB

Press C key to terminate; Capture Mode.

RUN	●	○
TMP	20.54	SpC 0.750
CND	0.687	SAL 1.42
DO%	97.5	DO 8.56
DOc	38.0	DEP 10.12
pH	8.32	ORP 90.2
NO3	2.35	TRB 2.3

From Run mode press the A key. Accept the filename presented (if appropriate), or choose from the Site List.

RUN	●	○
TMP	20.54	SpC 0.750
CND	0.687	SAL 1.42
DO%	97.5	DO
DOc	38.0	DEP 1
pH	8.32	ORP
NO3	2.35	TRB

ADD

File: addsam25

TMP	20.54	SpC 0.750
CND	0.687	SAL 1.42
DO%	97.5	DO 8.56
DOc	38.0	DEP 10.12
pH	8.32	ORP 90.2
NO3	2.35	TRB 2.3

Press Enter to confirm.

ADD	Data Added	
TMP	20.54	SpC 0.750
CND	0.687	SAL 1.42
DO%	97.5	DO 8.56
DOc	38.0	DEP 10.12
pH	8.32	ORP 90.2
NO3	2.35	TRB 2.3

After pressing Enter the Data Added message appears momentarily.

RUN	●	○
TMP	20.54	SpC 0.750
CND	0.687	SAL 1.42
DO%	97.5	DO 8.56
DOc	38.0	DEP 10.12
pH	8.32	ORP 90.2
NO3	2.35	TRB 2.3

The 610 then returns to Run Mode.

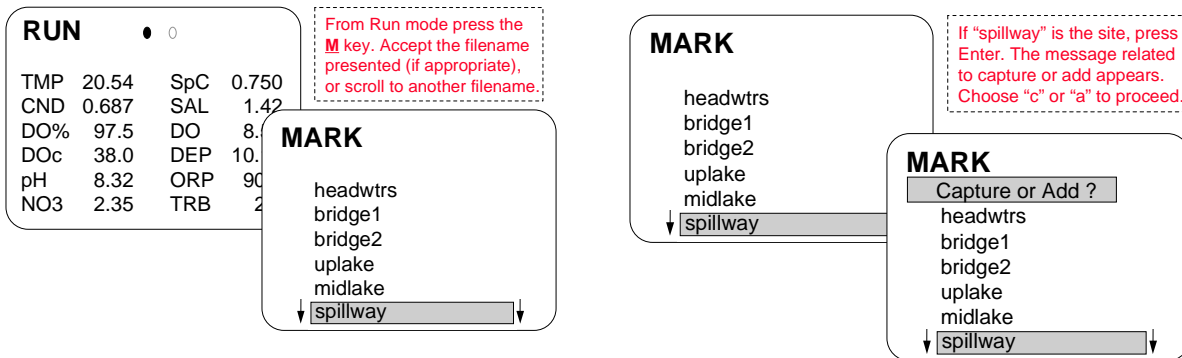
6.3 MARK FEATURE

The Mark feature of the YSI 610-DM allows you to store data from several sites into a single file. You can only create a marked file using the “M” key prompt during Run mode. You may upload the file to YSI EcoWatch for Windows software just like any other data file.

Example: A typical application would be a horizontal profile on a river or lake studying the effect of location on readings. At each site, you would place the sonde in the water, wait for readings to stabilize, select a name from the Site List, and store a set of readings in the “marked” file. At the end of the study, you will have one file with data from many sites. Each set of readings includes a Mark Number identifying which site the readings came from.

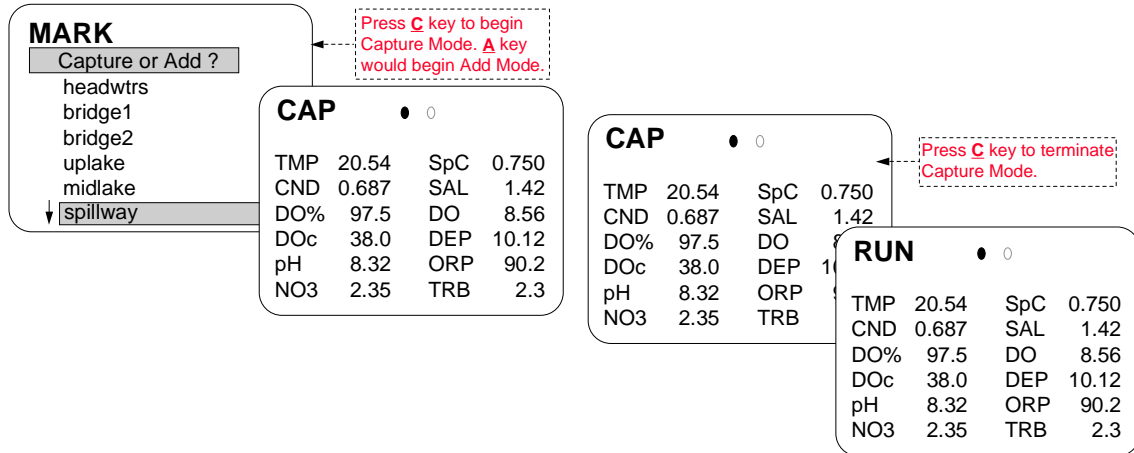
To use the Mark feature, start by building the Site List. Normally, the Site List includes pairs of file names and site names. Marked data goes to only one file named “marked”. Since there is no need for other file names, the YSI 610 interprets the Site List as pairs of site names and site numbers. Use the Site List “File” item to hold the Mark Name. Use the Site List “Site” item to hold the Mark Number. The Mark Name can be anything you wish, but the Mark Number must be numeric, -99999 to 999999, usually 1, 2, 3, 4, etc. The YSI 610-DM stores a site number in the data file, not a site name so it is important to remember the association of the number with the name.

After building the Site List you are ready to use the Mark feature. You may choose to add a single set of readings to the Marked file, or capture sets of readings to the Marked file as fast as they come from the sonde. Start by pressing the “M” key while in Run mode. Choose a name from the Site List. Next, choose whether to Capture or Add.

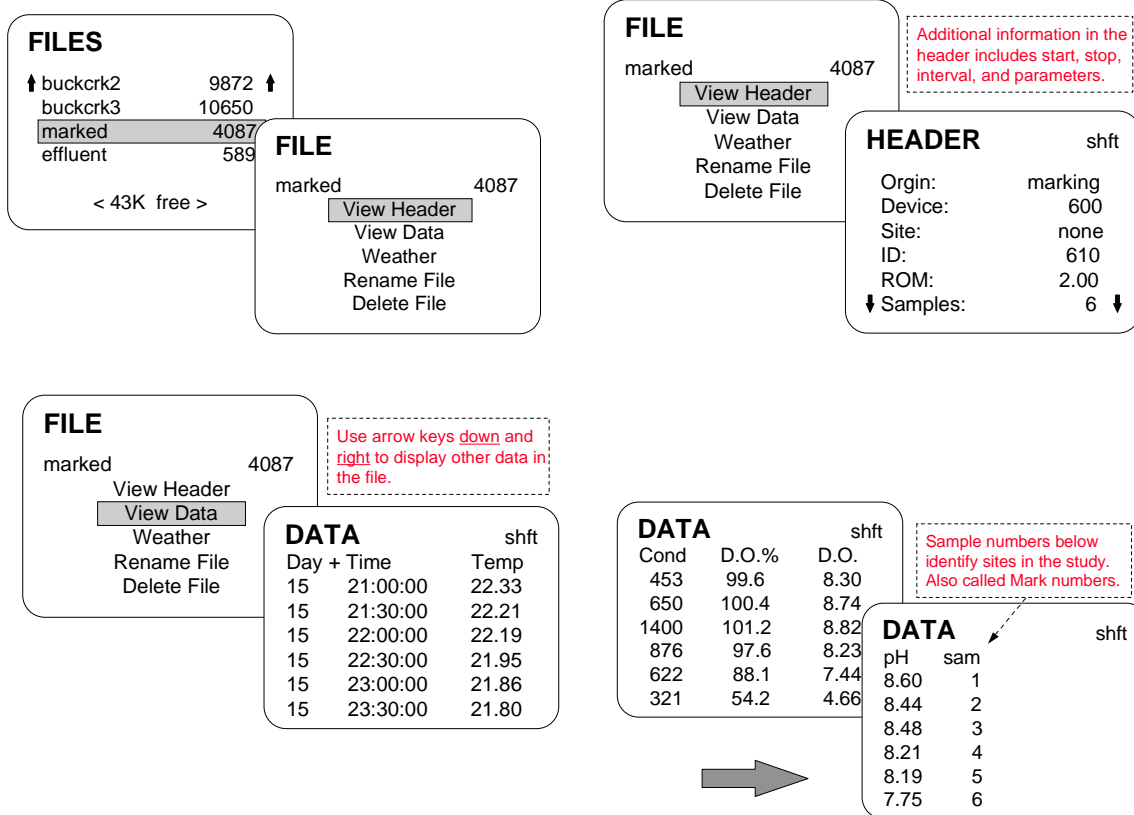


From this point, proceed as any other time you would Capture or Add. Press “C” or “A”. If it is the first entry to the Marked file, the YSI 610-DM prompts "New File yn?". Press “Y” to create the file. The YSI 610 then prompts you for Weather information. If you want to enter Weather information, press “Y” and enter information. Otherwise, press “N”. Next, the YSI 610 indicates that it has added a single set of readings to the file or that it is capturing data to the file. To terminate Capture, press the “C” key again. You

do not need to terminate the Add operation since the YSI 610 automatically returns to the Run mode display.



With each set of readings the YSI 610 stores the date and time and a Mark Number. The Mark Number appears just like an extra parameter, although it does not appear on the screen in Run mode. The Mark Number will only appear when viewing the file in the YSI 610 Files menu, and in YSI software on the PC. All sets of readings in the marked file must have the same parameters.



YSI PC software will interpret the Mark Number just like any other parameter. Viewing the data in table format, you will see columns for each of the readings (Temperature, DO, pH, etc.) and an extra column for the Mark Number. EcoWatch labels the column “Unknown”. Both programs can easily print a report in table format.

If you plot the data, there will also be a plot of the site number. Furthermore, readings from all sites will appear end to end as they are in the file. Plots may not be appropriate for your application. If you prefer to use other analysis software, YSI software can export the data in CDF or ASCII format.

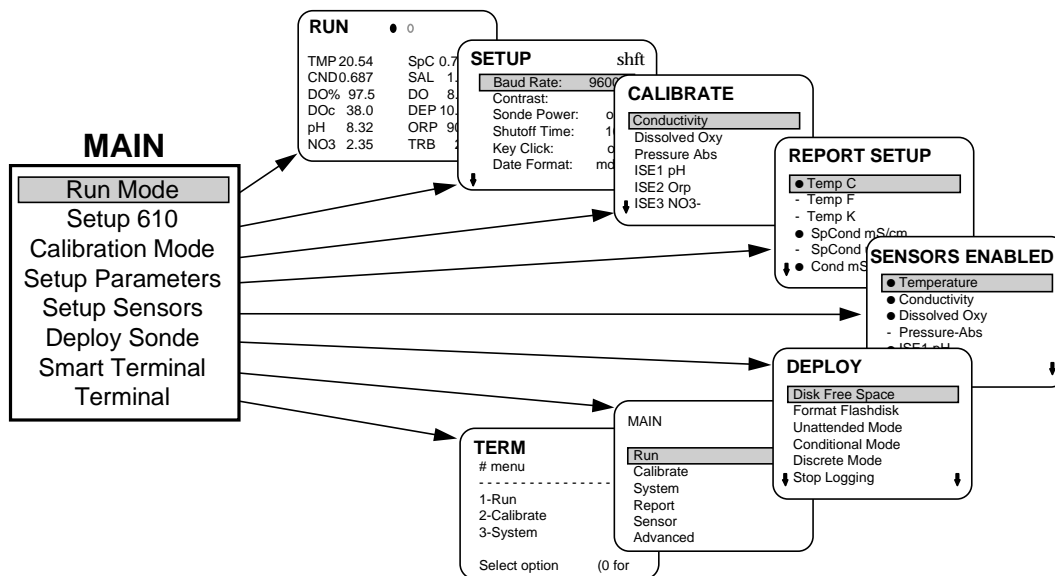
Things to remember about the Mark feature:

- The YSI 610 stores all Marked data in a special file named “marked”. The YSI 610 stores a site number with each set of readings, not a site name.
- Only one weather entry is possible for the entire marked file. You cannot enter different Weather data for each site or for different days.
- Before using the Mark feature, you must define pairs of site names and site numbers in the Site List.
- All sets of readings in the marked file must have the same parameters.
- To store marked data in a different file, rename the current Marked file using YSI 610 File System. The renamed file still contains a Mark Number for each set of readings. Additional marked data will be stored in a new file named “marked”.

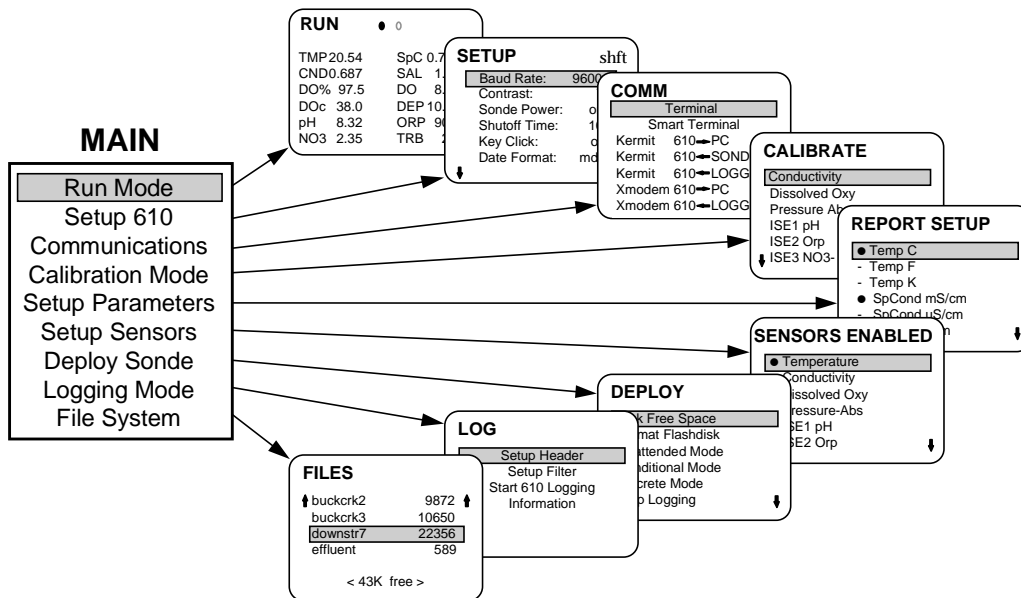
SECTION 7 YSI 610 MENU

To help you access the many features of the YSI 610, its features are grouped into menus. Each menu has several items on it. An item can perform a function, such as deleting a file, accepting and displaying information, entering the time, or providing access to a sub-menu.

610-D Menu



610-DM Menu



7.1 RUN

You access the Run mode by selecting Run from the YSI 610 Main menu, or by powering up the YSI 610 with a sonde already connected. In the Run mode, the YSI 610 constantly requests live data from the sonde and displays it on the screen. To go to the YSI 610 Main menu from the Run mode, press **Esc**.

When 6 parameters or fewer are selected, data are displayed double-sized. If more than 12 parameters are selected, you may scroll to see all additional parameters.

Pressing **H** in Run mode displays the Help screen. The Help screen displays the special keys that are active in Run mode. These keys can be pressed while in Run mode, or when the Help screen is showing. The keys are as follows:

C	Turn Capture mode on/off (YSI 610-DM only)
A	Add a reading to a file (YSI 610-DM only)
S	Store a reading
M	Capture or Add readings to the Marked File (YSI 610-DM only)
R	Recall a reading
W	Local Weather
L	Show Last 11 Stores/Weathers
T	Clean turbidity and/or chlorophyll probe attached to sonde
H	Show Help screen

WEATHER

Sometimes, it is useful to record local weather details during a field trip. The YSI 610 provides 26 handy Weather slots, each capable of holding a complete description of the local weather. These slots are completely separate from the Weather information that is attached to each file.

You enter or view the 26 Weather slots from the Run mode by pressing **W** and then a letter A-Z. Slots are never erased, but can be edited as needed. When you make changes, the Weather slots are automatically time-stamped. To quit the Weather slots without making changes, power off the YSI 610 and power up again.

The Skip key advances you to the next-used Weather slot (in alphabetical order). The **L** function reminds you what you have changed lately.

Station:	The name of the station (or site)
Date:	Shows the last date that this Weather slot was used
Time:	Shows the last time that this Weather slot was changed

TIME OF NEAREST

Low Tide: Enter the time of the nearest low tide

High Tide:	Enter the time of the nearest high tide
Ebbing?	Press enter if the tide was ebbing
Flooding?	Press Enter if the tide was flooding
Beaufort Scal:	Enter the Beaufort Scale number
Wind Dir:	Enter wind direction as compass point (e.g. WSW) or in degrees
Wind Speed:	Enter wind speed (any units)
Wind Still?	Press enter if the wind is still
Wind Light?	Press enter if the wind is light
Wind Gusty?	Press enter if the wind is gusty
Wind Strong?	Press enter if the wind is strong
Barometer:	Enter barometric pressure (any units)
Cloudless?	Press enter if the sky is cloudless
Partly Cloudy?	Enter barometric pressure in any units
Overcast?	Press enter if the sky is overcast
Fog/Haze?	Press enter if the sky is foggy or hazy
Drizzle?	Press enter if it is drizzling
Intermit Rain?	Press Enter if there is intermittent rain
Raining?	Press enter if it is raining
Snowing?	Press enter if it is snowing

24 HOUR PRECIP

None?	Press Enter if 24-hour precipitation has been zero
Light?	Press Enter if 24-hour precipitation has been light
Heavy?	Press Enter if 24-hour precipitation has been heavy
Inches:	Enter the inches of precipitation in the last 24 hours

SECCHI DISK

Extinction:	Enter YES or NO
Disapp(m):	Enter the depth that the disk disappears (meters)
Reapp(m):	Enter the depth that the disk reappears (meters)
TotDep(m):	Enter the total depth (meters)

LAST 11 STORES

Press L in Run mode. The screen displays the most-recent 11 Store slot letters, in chronological order, based on the time stamp when they were Stored. Similarly, the last 11 Weather slots are displayed, based on the time stamp when they were last changed.

CLEAN TURBIDITY AND CHLOROPHYLL

Press T in Run, Capture, or Calibration mode, to clean the turbidity and chlorophyll probes connected to the sonde. A message tells you how long the process will take.

The wiper motor puts a significant load on the YSI 610's batteries. If you are using wiped turbidity or chlorophyll, we recommend that you have NiMH batteries for your YSI 610 and that you take particular care to keep them charged according to the instructions in **Section 1.1, Getting Started**.

When the batteries are nearly discharged, it is possible that they may not be able to power the motor. In this case, the message will show twice the normal time for cleaning.

7.2 SETUP YSI 610

Select Setup YSI 610 from the YSI 610 main menu. This menu allows you to adjust the operation of the YSI 610.

Baud Rate: For communicating with a sonde or PC, the baud rate is usually 9600. The default value is 9600.

Contrast: Contrast for the LCD screen (0 minimum to 15 maximum)

Sonde Power: Direct control of the supply of power to the sonde. Enter On or Off. This is only functional with a powered sonde. Sonde power is still manually controlled during the YSI 610 Logging mode.

Shutoff Time: Number of minutes until YSI 610 shuts itself off to save batteries. Enter 1-12, or 0 to disable shutoff. Note the YSI 610 never shuts itself off in Capture, Logging or Calibration modes regardless of the shutoff time setting.

Key Click: Enter On or Off to engage the keyboard clicking.

Year digits: Choose between a 2- or 4-digit year format

Date Format: Enter MDY or DMY or YMD.

Date Separate: Delimiter character for date display, typically a front slash (/)

Time Separate: Delimiter character for time display, typically a colon (:)

Radix Mark: Also known as decimal point

Date: Enter today's date in the format you selected above. You may use any delimiters you wish (Space is easiest).

Time: Enter the present time. Use any delimiters you wish. Note the time you see is frozen the moment you enter this menu.

Dump YSI 610 Setup: Sends all setup, logging, store/recall, file, etc.

Delete All Files: Deletes all files in the YSI 610.

Setup Site List: Access to Site List menu.

7.3 COMMUNICATIONS

TERMINAL

Select Communications from the YSI 610 Main menu. This allows you to receive files from field recoding equipment (loggers), and later send the files to a PC. Two industry standard file transfer protocols are provided, Kermit and Xmodem.

The YSI 610 can emulate a “dumb” RS-232 terminal, allowing you to configure and operate devices that communicate using ASCII characters. No handshaking lines are used in the YSI 610 Terminal Emulator. Select **Terminal** from the YSI 610-D Main menu, or from the YSI 610 –DM Communications menu.

You should be familiar with the terminal interface of the target device, or have its operations manual handy. This will avoid accidental disruption of the device’s operation.

The Terminal emulator maintains an 80 character wide by 25 line image from the target device. The cursor is always on the bottom line of this image. The Arrow keys are used to pan left and right, and to back-scroll to lines that have scrolled off the screen. Panning and scrolling are indicated on the top line of the screen.

A special interpreter has also been embedded into the Terminal Emulator. The interpreter traps raw data from YSI’s type 1029/1144/1152 Water Level Series products, and displays the data in engineering units. The interpreter also swallows all ANSI escape sequences to avoid cluttering the screen.

In addition, two other keys have special use in the Terminal Emulator. The **Ins** key sends an ASCII Escape character to the target device, and the **Skip** key pans/scrolls the screen directly to the cursor position.

SMART TERMINAL

The YSI 610 provides a Smart Terminal feature that allows convenient access to the sondes advanced features. All sondes except the 6000UPG have this capability. The Smart Terminal allows the menus that are built into the sonde to flow out through the YSI 610 screen. The menu name, messages, all items on the menu, and any data being displayed all come directly from the sonde. Sometimes, however, the YSI 610 abbreviates text from the sonde so that it will fit on the YSI 610 screen.

There are several ways to get into Smart Terminal mode. The direct way is from the Communications menu, highlight **Smart Terminal** and press **Enter**. The YSI 610 also enters Smart Terminal automatically when you enter Setup Sensors, Setup Parameters, Calibration or the Deploy menus. The YSI 610 indicates that it is in Smart Terminal mode by showing the menu name (top left corner of the screen) in narrow font.

When you display data in the Smart Terminal mode, you can not Capture, Add or Store the readings.

DATA TRANSFER

Kermit 610 →PC:	To transfer files from the YSI 610 to a PC, see Section 5.2 .
Kermit 610 ←Sonde:	To receive a file from a 6000UPG, 6920, 6600 or 600XLM sonde to the YSI 610, see Section 5.1, Files .

Kermit 610 ← logger:

To send a file from non-YSI equipment to a PC, see **Section 5, Files.**

Xmodem ←logger:

Receiving files from non-YSI equipment requires an extra step. You must first tell the equipment to begin sending the file. Do this using the YSI 610 Terminal emulator. Once the logger is trying to send the file, back out of the Terminal emulator and select **Xmodem ←logger:** or **Kermit 610 ← logger:**.

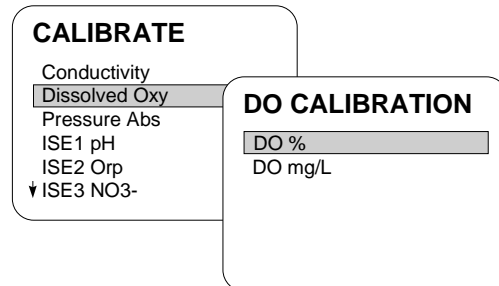
Sending non-YSI files to a PC can either be done by using EcoWatch and Kermit as discussed above, or using other PC communications software.

If you are using other PC communications software, you must first tell it to begin receiving the file. Once the other software is waiting for the file, select “**Kermit 610 → PC:**” or **Xmodem 610 → PC**, select the file to send and press Enter.

If file transfer repeatedly fails, there is probably a baud rate or cabling problem. Set the baud rate for the YSI 610 in the System Setup menu. 9600 baud is typical for YSI sondes, and YSI PC software. Set the baud rate and Com port in the Setup menu of EcoWatch for Windows. Also check the cabling. A Null Modem cable/adaptor (provided) must be used when connecting a YSI 610 to a PC, because both devices are computers. A Null Modem cable must not be used when connecting the YSI 610 to a YSI sonde.

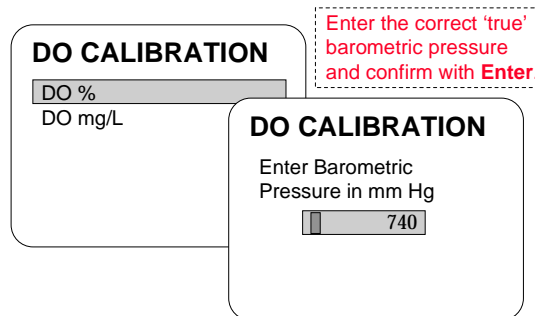
7.4 CALIBRATION MODE

Most sensors need to be calibrated occasionally. When you calibrate a sensor, you are telling the sonde that you know the exact value for what it is measuring. For example, you may know the exact pH of a solution in which the probe is immersed.



Keep in mind that although you are interfacing with the YSI 610, it is the sonde that is being calibrated and the results of that calibration are stored in the sonde.

All calibrations are similar. An example of DO calibration is shown here and below. When you enter the Calibration menu (from the Main menu), you are presented a list of sensors that can be calibrated.

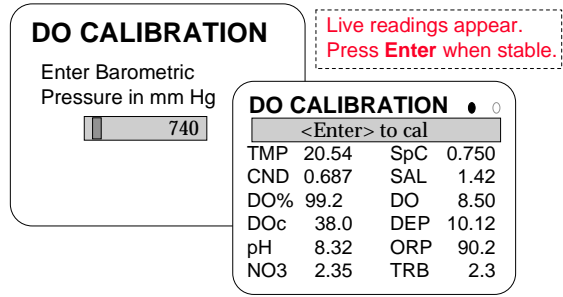


Some sensors, like pH or nitrate, can be calibrated using 1, 2, or 3 points. These options are either shown separately on the

list, or offered right after you select a sensor. Select the sensor and number of points you wish and press **Enter**.

The YSI 610 requests the exact value to calibrate, and commands the sonde to calibrate.

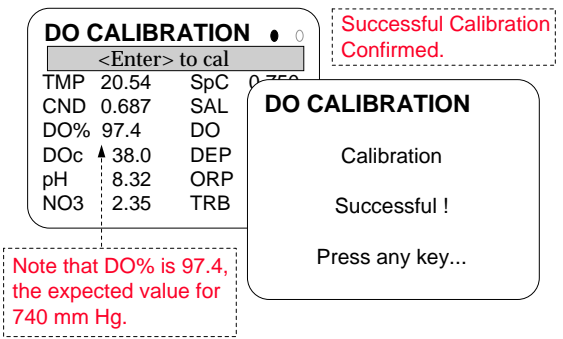
The YSI 610 will step you through multi-point calibrations if applicable.



All YSI sondes described in this manual display the reading until you are satisfied that it is stable.

Errors can occur during calibration. The number you enter may be out of range, the sensor may be installed incorrectly or the sensor may be drifting. If an error occurs, the sonde rejects the calibration and an error message is displayed on the YSI 610 screen.

Some types of errors can be overridden and the display then offers you an option to accept. Never override an error or warning message without understanding the problem and being certain that your data will not be compromised.



When calibrating turbidity or chlorophyll, it is important to eliminate bubbles that can drastically alter results. The 6026 Turbidity Probe and the 6025 Chlorophyll Probe have a wiper that is very helpful in removing bubbles during calibration and reading. You can activate the wiper manually by pressing the T key, at any time while you wait for stabilization.

Before a calibration is complete, you may press **Esc** to abort it.

7.5 SETUP PARAMETERS AND SETUP SENSORS

These two menu choices allow you to display or change the active sensors and parameters in the sonde. They are entered through the YSI 610 Main menu or through the Deploy menu into Sensors (Setup Sensors) and Report (Setup Parameters). See **Section 2.9, Sonde Menu** of the YSI 6-Series Operations Manual.

7.6 DEPLOY MODE

The Deploy menu takes you right into the Run /Unattended menu of the sonde. For more see **Section 2.9, Sonde Menu** of the YSI 6-Series Operations Manual.

7.7 LOGGING MODE (YSI 610 DM ONLY)

The YSI 610-DM can log sample data to its internal memory from any YSI sonde. This is separate from the sonde's ability to log data into its own memory. Logging produces a file in the standard file format, capable of being uploaded to a PC and processed by EcoWatch for Windows. See **Section 4, Logging** for a detailed explanation.

Select Logging from the YSI 610-DM Main menu. Then select Setup Header. This menu allows you to specify control and timing information for the deployment.

File: The YSI 610 file name to log data into.
Site: The Site name to embed in the file
StDate: Date to start logging (use "now" if you wish)
StTime: Time to start logging (use "now" if you wish)
Duration: Length of deployment (see **Section 7.5** for how to properly enter duration)
Interval: Recording interval (see **Section 7.5** for how to properly enter interval)
WarmupTime: Warm up time for the sondes DO sensor (seconds)

Press **Esc** to go back to the Logging menu, then select **Setup Filter**. The Setup Filter menu allows you to automatically discard samples that do not meet your criteria.

Log All Points: Press **Enter** here to record all samples taken.
Wet Switch: Press **Enter** here to record only those samples taken when the probe is wet. This only logs sample with a conductivity greater than 180 uS/cm
Log Only When: Press **Enter** to activate the next three menu items.
Param: Press **Enter** to select a parameter for comparison (selected from a list)
Is: enter Above to record samples above the value, or below
Value: Enter a value in appropriate engineering units for comparison.

The **Start YSI 610 Logging** menu begins the logging session that was specified in the Setup Header and Setup Filter menus. If the file name specified already exists and was created by Logging on the YSI 610, new data will be appended to the file. If the file name does not exist, you will be asked if you want to create it, asked to enter a site name, and asked if you want to enter the weather info. Pressing the **Esc** or **Power** keys terminates logging. Logging stores all parameters to the data file even though only 12 fit on the screen.

The **Logging** screen tells you how much space is available for additional logging, and how much time this corresponds to in Logging mode.

If the sonde is equipped with a wiping turbidity probe, the probe will be cleaned automatically before each sample but only if time permits. Cleaning takes up to 40

seconds, and the YSI 610-DM makes sure that cleaning will end at least 30 seconds before the sample. You set the number of wipes in the Sonde main menu, see **Section 2.9, Sonde menu** of the YSI 6-Series Operations Manual. When the YSI 610 is started, the number of wipes is included in the information screen. This allows you to verify that wiping will occur.

7.8 FILE SYSTEM (610 DM ONLY)

The YSI 610-DM is equipped with 96 K bytes of battery-backed RAM to hold data files. Files can be created in the YSI 610 itself (by using Logging, Capture or Add) or can be transferred from a YSI or non-YSI logger (by Kermit or Xmodem). The YSI 610 can hold up to 50 files. See **Section 5, Files** for a detailed explanation of how to use the File system.

The YSI 610 provides flexible access to the files. You can view them at any time in any order. You can append data to them in any order (provided you are appending data in the same manner it was originally placed in the file). You can append data to one file, then another file, then return and append data to the first file again. The only limit on file size is the amount of unused memory. Deleting a file immediately frees up its memory to use for other files.

To access the file system, select **610 File System** from the YSI 610-DM Main menu. The Files list appears with a file size next to each name. File names are always unique and are case-insensitive. At the bottom of the Files list is a note about how much RAM is free. Select the file that you want to access, and press Enter. The Files sub-menu appears. If the YSI 610 only holds one file, the software skips the Files list and proceeds directly to the File sub-menu.

The View Header menu provides you a summary of administrative information about the selected file. If the file was uploaded from a non-YSI logger, the summary is not shown. Instead a text viewer is activated, allowing you to view a flat ASCII text file using the four Arrow keys and the 0-9 keys (0 moves to the start of the file, 9 to the end of the file, 1-8 part-way through the file).

Origin:	Where the sonde came from
Device:	What sonde the data came from
Site:	The site name embedded in the file
ID:	The serial number in the file
ROM:	Program version of the YSI 610 (or Sonde for uploaded files)
Samples:	Number of data records in the file
Datums:	Number of datum/calibration records in the file
Began:	Date and time logging was started
First:	Data and time first sample was taken
Last:	Data and time last sample was taken
Interval:	Recording interval when file was created
Length:	Length of file (in days or hours)

Params: Complete list of parameters in file

The View Data menu allows you to view all the data in the selected file. Data is arranged into labeled columns. Day-of-the-month and time are always the leftmost columns. Use the four Arrow keys to view the data. Additionally, the 0-9 keys help you quickly position yourself in large files: 0 moves to start of file, 9 to end of file, 1-8 part way through file.

If the file is uploaded from a non-YSI logger, the data is shown using a text viewer instead. The text viewer allows you to view a flat ASCII text file using the four Arrow keys and the 0-9 keys.

To conserve memory, files uploaded from YSI sondes only contain measured data. Only measured data is seen on the YSI 610, but when the file is uploaded into EcoWatch all data and derived calculations will be available as usual.

SECTION 8 TECHNICAL INFORMATION

8.1 SOFTWARE UPDATES

YSI 610 software may be updated from time to time. This is simple since the 610 uses non-volatile FLASH memory to hold the software. New 610 software can be installed by using a PC. To update software all you need is a YSI 610 software update diskette from YSI. Everything else you need comes with the standard 610 kit.

The 610 software update diskette contains two files used for update, and may contain other files. The two files are AOUT.A03 that contains the new 610 software, and LOAD4.EXE which is a PC program you run to send the new 610 software to the 610.

When loading new 610 software, the entire keyboard will appear to work incorrectly. This is normal. Follow the instructions below carefully. If you type a wrong character, hit the Skip key (which is a backspace).

8.2 LOADING NEW SOFTWARE

To load new YSI software into the 610, proceed carefully as follows:

1. Connect the 610 to a Personal Computer in the MS-DOS mode, using the Null Modem cable (provided). This forms a 5-wire RS-232 connection. You must use the COM1 RS-232 port of the PC.
2. Make sure there is no mouse on COM1 or COM3.

3. Set the PC to run from the floppy drive which holds the YSI programs (type A: or B: on the PC, and press **Enter** on the PC).
4. Disconnect the wall charger from the 610 if it is connected.
5. Turn off the 610 by pressing Power, or by pressing Esc then Power. Reset the 610 by tapping the Esc and Skip keys simultaneously, and then releasing them immediately. If you did this correctly the message RESET DONE or MASTER RESET will appear in the 610 display. If you do not get either message, go back to step 5.
6. Type the following 5 keys on the 610: D C ? Del Bksp. Verify you see PMODE on the 610 screen. If you make a typo, press Skip to backspace over the typo and retype it. Once you see PMODE press the Z key. The 610 screen displays PROGRAMMING MODE !!LOADING!!
7. On the PC at the DOS prompt, type the command "LOAD4 -ROM -F128" and press Enter (also on the PC). This runs the transfer program. Loading begins at once and takes about 5 minutes. Loading is complete when the DOS prompt returns to the PC screen, and you hear a chirp from the 610.
8. Verify the message ALL ROM BANKS SENT is on the PC screen, and the word COMPLETE has appeared on the 610 screen. If either message is not shown, go back to step 1.
9. If the 610 has never been loaded with YSI software before, you need to do items A-E below. These items are shown here for completeness. Otherwise proceed to step 10.
10. (A) Type the 5 keys: ' Bksp _ G D. Verify you see SETUP on the 610 screen. Press the Z key.
 (B) Press Q until baud rate is 9600, then press "
 (C) Press Q until word format is 8D+1 STOP then press "
 (D) If bank number is not 0, press Q Y Z then press "
 (E) If prog addr is not 16384, press Q S P U J N Z then press "
11. Type the following 3 keys on the 610: F G ". Verify you see RUN on the 610 screen. If you make a typo, press Skip to backspace over the typo and retype it. Once you see RUN press the Z key. The 610 displays YSI SOFTWARE INITIALIZED for 3 seconds, then shuts itself off.
12. The 610 is now ready for use.

SECTION 8 WARRANTY AND SERVICE INFO

The display/loggers are warranted for two years against defects in workmanship and materials when used for its intended purposes and maintained according to instructions. All cables are warranted for one year. Damage due to accidents, misuse, tampering, or failure to perform prescribed maintenance is not covered. The warranty period for

chemicals and reagents is determined by the expiration date printed on their labels. Within the warranty period, YSI will repair or replace, at its sole discretion, free of charge, any product that YSI determines to be covered by this warranty.

To exercise this warranty, write or call your local YSI representative, or contact YSI Customer Service in Yellow Springs, Ohio. Send the product and proof of purchase, transportation prepaid, to the Authorized Service Center selected by YSI. Repair or replacement will be made and the product returned transportation prepaid. Repaired or replaced products are warranted for the balance of the original warranty period, or at least 90 days from date of repair or replacement.

LIMITATION OF WARRANTY

This Warranty does not apply to any YSI product damage or failure caused by (i) failure to install, operate or use the product in accordance with YSI's written instructions, (ii) abuse or misuse of the product, (iii) failure to maintain the product in accordance with YSI's written instructions or standard industry procedure, (iv) any improper repairs to the product, (v) use by you of defective or improper components or parts in servicing or repairing the product, or (vi) modification of the product in any way not expressly authorized by YSI.

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Phone: (800) 765-4974 • (937) 767-7241 • E-Mail: info@ysi.com

CALIFORNIA

EQUIPCO Sales and Service • 1110 Burnett Avenue, Suite D • Concord, CA • 94520 •
Phone: (800)550-5875 • Fax: (510)674-8655

COLORADO

Ted D. Miller Associates, Inc. • 2525 S. Wadsworth Blvd., Suite 300 • Lakewood, CO •
80227 • Phone: (303) 989-7737 • Fax: (303) 989-8875 • E:mail: tdma@earthlink.net

FLORIDA

***Aquatic Eco Systems, Inc. • 1767 Benbow Court • Apopka, Florida • Phone: (407)
886-3939 • Fax: (407) 886-6787

MAINE

***Q.C. Services • P.O. Box 68 • Harrison, Maine • 04040 • Phone: (207) 583-2980

MISSISSIPPI

C.C. Lynch & Associates, Inc. • P.O. Box 456 • 300 Davis Street • Pass Christian, MS •
39571 Phone: (800) 333-2252 • (228) 452-4612 • Fax (228) 452-2563

***Aquacenter • 166 Seven Oaks Road • Leland, Mississippi • 38756 • Phone: (601)
378-2861 • Fax: (601) 378-2862

OREGON

***Q.C. Services • P.O. Box 14831 • Portland, Oregon • 97293 • Phone: (503) 236-2712

WISCONSIN

***North Central Labs • 400 Lyons Road • Birnamwood, Wisconsin • Phone: (800) 648-
7836 • Fax: (715) 449-2454

INTERNATIONAL SERVICE CENTERS

YSI Incorporated • Repair Center • 1725 Brannum Lane • Yellow Springs, Ohio • 45387 •
Phone: (937) 767-7241 • E-Mail: info@ysi.com

YSI Europe • Lynchford House • Lynchford Lane • Farnborough • Hampshire •
GU146LT • Phone: (44-1252) 514711 • Fax: (44-1252) 511855 • Tlx: 858210

YSI Nanotech • Kaizuka 1-15-4, Kawasaki-Ku • Kawaskaki City • Japan • 210-0014 •
Ph: 011-814-4222-0009 • Fax: 011-81-44-221102 • E-mail: Nanotech@ysi.com

Nortech GSI • 1131 Derry Road East • Mississauga, ONT., L5T 1P3 • Canada • Ph: 800-
263-3427 • Fax: 905-564-4700

CLEANING INSTRUCTIONS

NOTE: Before they can be serviced, equipment exposed to biological, radioactive, or toxic materials must be cleaned and disinfected. Biological contamination is presumed for any instrument, probe, or other device that has been used with body fluids or tissues, or with wastewater. Radioactive contamination is presumed for any instrument, probe or other device that has been used near any radioactive source.

If an instrument, probe, or other part is returned or presented for service without a Cleaning Certificate, and if in our opinion it represents a potential biological or radioactive hazard, our service personnel reserve the right to withhold service until appropriate cleaning, decontamination, and certification has been completed. We will contact the sender for instructions as to the disposition of the equipment. Disposition costs will be the responsibility of the sender.

When service is required, either at the user's facility or at YSI, the following steps must be taken to insure the safety of our service personnel.

- ☞ In a manner appropriate to each device, decontaminate all exposed surfaces, including any containers. 70% isopropyl alcohol or a solution of 1/4 cup bleach to 1-gallon tap water are suitable for most disinfecting. Instruments used with wastewater may be disinfected with .5% Lysol if this is more convenient to the user.
- ☞ The user shall take normal precautions to prevent radioactive contamination and must use appropriate decontamination procedures should exposure occur.
- ☞ If exposure has occurred, the customer must certify that decontamination has been accomplished and that no radioactivity is detectable by survey equipment.
- ☞ Any product being returned to the YSI Repair Center, should be packed securely to prevent damage.
- ☞ Cleaning must be completed and certified on any product before returning it to YSI.

PACKING INSTRUCTIONS

- ☞ Clean and decontaminate items to insure the safety of the handler.
- ☞ Complete and include the Cleaning Certificate.
- ☞ Place the product in a plastic bag to keep out dirt and packing material.
- ☞ Use a large carton, preferably the original, and surround the product completely with packing material.
- ☞ Insure for the replacement value of the product.

Cleaning Certificate	
Organization _____	
Department _____	
Address _____	
City _____ State _ Zip _____	
Country _____ Phone _____	
Model No. of Device _ Lot Number _____	
Contaminant (if known) _____	
Cleaning Agent(s) used _____	
Radioactive Decontamination Certified?	
(Answer only if there has been radioactive exposure)	
__ Yes _____ No	
Cleaning Certified By _____	
—	
Name	Date

APPENDIX A REQUIRED NOTICE

The Federal Communications Commission defines this product as a computing device and requires the following notice.

This equipment generates and uses radio frequency energy and if not installed and used properly, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class A or Class B computing device in accordance with the specification in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Relocate the computer with respect to the receiver
- Move the computer away from the receiver
- Plug the computer into a different outlet so that the computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet, prepared by the Federal Communications Commission, helpful: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No.0004-000-00345-4.

APPENDIX B ACCESSORIES

- ❑ 610-D Display/Logger with Accessories
- ❑ 610-DM: 610-D with 128K of memory
- ❑ 610-DM: 610-D with 512K of memory
- ❑ 614 Ultraclamp, C-clamp Mount for 610
- ❑ 615 Leather Carrying Case for 610
- ❑ 616 Cigarette lighter adapter (powers and charges 610s)
- ❑ 617 Replacement Battery Pack for 610
- ❑ 6099: 610 to Female DB-9 (PC serial)
- ❑ 6097 Blank port plug for 610
- ❑ 6104 Replacement Charger Jack for 610
- ❑ 6042 Battery Charger for 610
- ❑ 6101 Portable Power Pack for 610 or sondes

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