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### **SBE 16plus V2 SEACAT Firmware Error**

#### **Equipment Affected**

All SBE 16plus V2s with firmware versions 2.0 through 2.1; the firmware version is shown in the first line of the status (DS) response (see example below, firmware version in bold):

```
S>DS
SBE 16plus V 2.1 SERIAL NO. 6001 24 Aug 2009 14:11:48
. . .
```

Note: This firmware bug does **not** affect earlier versions (without the V2), nor does it affect the SBE 16plus-IM V2.

#### **Description of Problem**

If you use the **delayed logging feature** of the 16plus V2 (setting the 16plus V2 to start logging at a date and time in the future), **a firmware bug causes the 16plus V2 to start logging immediately in the following situation:**

1. You enter a delayed start date and time (**StartDateTime=**) that is **more than 6 hours in the future**,  
**AND**
2. You send the **StartLater** command to command the 16plus V2 to start logging at that date and time,  
**AND**
3. You then send additional commands to the 16plus V2, and you do not use the **QS** command to put the 16plus V2 to sleep (the 16plus V2 times out automatically and goes to sleep after 2 minutes without any commands).

If the 16plus V2 starts logging immediately and is not equipped with a pump, you will simply use up additional battery power and memory before the deployment. **However, if the 16plus V2 is equipped with a pump, prolonged pump operation in air may damage the pump, resulting in poor quality data once you deploy the 16plus V2.**

#### **Solution**

Two solutions are detailed below:

- If you are able to access our ftp site and update the firmware in your 16plus V2.
- If you are not able to access our ftp site and update the firmware in your 16plus V2, but you need to use the delayed logging feature to start logging more than 6 hours in the future.

#### **If you are able to access our ftp site and update the firmware in your 16plus V2:**

Download the firmware loader software and the updated firmware:

- Go to <ftp://ftp.halcyon.com/pub/seabird/OUT/CustomerService/FirmwareUpdates/> and download: **FirmwareLoaderV2\_3.exe** or later (Sea-Bird software used to load the firmware into the instrument)
- Go to [ftp://ftp.halcyon.com/pub/seabird/OUT/CustomerService/FirmwareUpdates/SBE16plusV2\\_Firmware/2.1a/](ftp://ftp.halcyon.com/pub/seabird/OUT/CustomerService/FirmwareUpdates/SBE16plusV2_Firmware/2.1a/) and download: **16plusV2.hex** (16plus V2 version 2.1a firmware file)

Update and test the firmware in your instrument with the following simple procedure (time required to update the firmware is several minutes, in addition to setup and testing time).

1. Connect the data I/O cable to the *16plus* V2 and to an RS-232 COM port on the computer.
2. Record the current setup of the *16plus* V2 and verify / set the baud rate in **SeatermV2** as follows:
  - A. In the Instruments menu, select the *SBE 16plus V2 RS232. Seaterm232 opens*.
  - B. If this is the first time Seaterm232 is being used, the Serial Port Configuration dialog box displays. Select the COM port and current baud rate that the *16plus* V2 is programmed to use for communication, and click OK.
  - C. Seaterm232 tries to automatically connect to the *16plus* V2. As it connects, it sends **GetHD** and displays the response, which provides factory-set data such as instrument type, serial number, and firmware version. You should then see an S> prompt or an <Executed/> tag, depending on the *16plus* V2 setup.
  - D. Record the current *16plus* V2 setup for re-entry after the firmware update --
    - Click the Capture menu. Enter the desired file name and location to record the current setup.
    - Type **DS** (status command) and press the Enter key; the display should show the *16plus* V2 response.
  - E. Verify the baud rate the *16plus* V2 is using for communication by looking at the baud in the status bar at the bottom of the Seaterm232 window. If the *16plus* V2 is communicating at a rate other than 38400 baud, change the baud --
    - Type **BaudRate=38400** and press Enter.
    - In the Communications menu, select Configure; select 38400 and click OK.
    - Type **BaudRate=38400** and press Enter again to reset the baud.
    - The *16plus* V2 should now be communicating at 38400 baud; verify this by looking at the status bar again.
  - F. Click the Capture menu to end capturing of the session.
3. Type **OutputExecutedTag=Y** and press Enter; the *16plus* V2 must display XML Executed and Executing tags while using the firmware loader.
4. In the Communications menu, click Disconnect to free the COM port for use with the firmware loader.
5. Double click on FirmwareLoaderV2\_3.exe (or later). The software will lead you through the installation process. As a default, the software will be installed in c:\Program Files\Sea-Bird\FirmwareLoader.
6. Double click on LoadFirmware.exe. The following appears:



- A. Select the computer COM port for communication with the *16plus* V2.
  - B. Select the instrument - **SBE 16plus, 38400 baud**.
  - C. Click *Select HEX File* and select the appropriate file – **16plusV2.hex**.
  - D. Click *Program*. The status field changes from *Waiting to Program*, and shows the download progress.
  - E. When done, the status field shows *successful firmware update*. Click Exit.
7. Test the *16plus* V2 in Seaterm232 to verify that the new firmware is installed properly:
    - A. In the Communications menu, select Connect. You should get an <Executed/> tag.
    - B. Type **DS** (status command) and press the Enter key; the display should show the *16plus* V2 response Verify that the firmware version on the first line of the status response is **2.1a**.
  8. Set up / reset the *16plus* V2 in Seaterm232 for your intended sampling scheme. Do not forget to reset the baud rate to the desired rate for the deployment (**BaudRate=**), and to turn off the Executed tags if desired (**OutputExecutedTag=N**).

**If you are NOT able to access our ftp site and update the firmware in your 16plus V2, but you need to use the delayed logging feature, set up your 16plus V2 as follows:**

If you need to use the delayed logging feature to set up the 16plus V2 to start logging more than 6 hours in the future, use the following procedure to set up the instrument:

1. Connect the data I/O cable to the 16plus V2 and to an RS-232 COM port on the computer.
2. In SeatermV2's Instruments menu, select the *SBE 16plus V2 RS232*. Seaterm232 opens.
  - A. If this is the first time Seaterm232 is being used, the Serial Port Configuration dialog box displays. Select the COM port and current baud rate that the 16plus V2 is programmed to use for communication, and click OK.
  - B. Seaterm232 tries to automatically connect to the 16plus V2. As it connects, it sends **GetHD** and displays the response, which provides factory-set data such as instrument type, serial number, and firmware version. You should then see an **S>** prompt or an **<Executed/>** tag, depending on the 16plus V2 setup.
  - C. Set up the 16plus V2 as desired, except for the delayed logging commands; send **DS** to verify the setup.
  - D. Send **StartDateTime=** to set the delayed logging date and time.
  - E. Send **StartLater** to command the 16plus V2 to start logging at the delayed logging date and time.
  - F. Send **DS** to verify the delayed logging setup.
  - G. Send **QS** to put the 16plus V2 to sleep.

CAUTION: Do not allow the 16plus V2 to timeout (which occurs after 2 minutes with no commands) after sending **DS**. You must put the 16plus V2 to sleep with **QS** to work around the firmware bug.