# New Firmware for AP Diving Rebreathers

# with Mono-chrome Vision Electronics.

In August 2015 we launched the Vision 2020 Colour handset. Since then we refer to the original Vision handset, the one produced since 2005, as the “mono-chrome” display.

**PLEASE NOTE: this update is only for the “Mono-chrome” products and is NOT for the “colour screens.”** (If you try and load incompatible code to the Vision, you will see relevant text on the display – “incompatible code”).

Firmware – General Release Date: 10th May 2016

New Firmware (embedded software) has been released for your Vision oxygen controllers and handset.

Please read this entire document to ensure you do things in the correct order.

The AP Communicator and AP LogViewer programs are only available at this time for Windows PCs or Macs running Windows in Parallels or VMware Fusion.

Under development is a new computer software package with a planned release date of October 2016: The “AP Connect” and “AP DiveSight” programs will be available in native versions of Windows and OSX (Macs) but will only be compatible for Vision 2020 Colour handsets.

The last general release firmware was V05.02.01, released in July 2013.The new firmware, V06.00.20, is suitable for upload to all monochrome Vision “lids” and offers significant improvements on previous versions.

It is the result of many years of development, updates, improvements and testing with the firmware development conforming to Annex B (Safety-Critical Software) of the European Standard, EN14143:2013 and audited by Lloyds Quality Assurance’s Critical Safety Experts.

Firmware Version 06.00.20 is now available for download from the website:

<http://www.apdiving.com/en/rebreathers/resources/rebreather-firmware/>

Select the language you would like to have on your Vision handset and download that language specific folder.

In the download folder, there is a new suite of PC Software to ensure compatibility with V06.00.20 firmware.

**PLEASE NOTE: DO NOT use your existing AP Communicator to load the new firmware.**

V06.00.20 is an open upgrade suitable for all mono-chrome Vision lids, regardless of the firmware version already on the lid, the decompression option chosen and regardless of the serial number, so one copy of the firmware can be uploaded to all (Vision) rebreathers. Your personal details will be retained on the handset as will the decompression status and basic dive details.

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# Changes to Code from V05.02.01 to V06.00.20

1. Time delay inserted on switch-on to aid distinction between a splash and immersion of auto activation handsets.
2. Improvement to CNS & OTU recovery after the dive
3. Gradual setpoint change modified in Nitrox and Trimix versions (not Recreational 1 & 2) to maintain as high a setpoint as possible if there is a deco ceiling. If there is no deco ceiling (i.e. it’s a no-stop dive) then the setpoint is gradually lowered during the ascent as in V05.02.01.
4. Added OCB =CC to “open mouthpiece” prompt for calibrations
5. Depth sensor averaging altered to give extra stability in depth readings
6. Modified use of ceiling calculation to ensure change to the GF low during initial deco and ensure a gradual migration from GF low to GF high on ascent
7. Setpoint programming changed to ensure customer chosen switch depths remain the default values.
8. mVolts display
   1. 5 seconds display of cells’ mVolts.

As in the previous version - the mVolts of the cells can be seen by pressing and holding the left switch. However, should a left switch fail and be effectively “stuck on” – the display stayed on the mVolt display. The mVolt display is now restricted to 5 secs, so in the unusual event of a stuck left switch – the display reverts to the normal underwater display of PPO2 and depth & dive time information.

* 1. A pointer has been changed to ensure the displayed mVolts during calibration, if selected, now shows the raw data, the same as it always has done in dive mode.

1. Digital Pressure Sensor
   1. The filtering of Depth sensor data has been improved to help eliminate false depth sensor warnings both at start up and during the dive.
   2. In the event of a DPS failure the diver is given the choice to dive or not, albeit without depth sensor and deco info. Setpoint switching will then be manual only and you will need to change to the low setpoint in order to switch off.
2. The shut-down routine post dive has been modified to ensure a clean switch off of all three processors with all hardware configurations.
3. The “cell warning” alarm has been added to the cell invalidation routine.
4. The “cell warning” alarm now consists of a two stage warning level. The first warning occurs when one cell is 0.2 bar away from the average of the other two and is suppressible. The second warning is activated when one cell is 0.4 bar away from the average of the other two and is not suppressible.
5. The audible alarm has been added to the existing visual alarm when unit fails to calibrate.
6. CO2 sensor
   1. Improved CO2 sensor handshakes and analysis.
   2. Warning added – if CO2 sensor fails calibration, diver now receives a prompt “ CO2 sensor – no calibration, dive now, Y/N?
   3. Audible alarm removed from CO2 sensor alarm when diver changes deco mode to OC
   4. Two level warnings introduced. The 1st at 5 mbar PCO2 is suppressible by the user. The 2nd at 10 mbar PCO2 is not.
7. Added HUS (Head Up Screen) Driver
8. Added the ability to be factory programmed for use with the AP rechargeable batteries.
9. New logo

# PC Software

New versions of AP Communicator and AP LogViewer are issued to ensure compatibility with V06.00.20 Vision firmware.

* **AP Communicator (APCommunicatorSetupSPORT\_ V5\_2\_9\_0.exe)** 
  + For compatibility, the new version of Communicator is to be used with V06.00.20 Vision Firmware.
* **AP LogViewer (APLogViewerSetupSPORT\_ V5\_2\_3\_5.exe)** 
  + For compatibility, the new version of LogViewer is to be used with V06.00.20 Vision Firmware.

# Update Instructions:

**Step 1)**

If you want to keep the full dive information from the last 7 hours of diving, use your existing Communicator software to download the data from the Vision lid and store the data on your PC.

**Step 2)**

**Download the files from the website:**

Go to <http://www.apdiving.com/en/rebreathers/resources/rebreather-firmware/>

and select the language version you require. Enter the required registration information and download the file to a readily accessible location on your PC such as the Desktop.

The file contains the firmware for your Vision electronics (\*.ccr) and the three AP programs (\*.exe), Communicator, LogViewer and Projection Dive Planner.

The firmware for your Vision electronics (Vision\_V06.00.20\_English\_Sport\_System.ccr) **is NOT an executable file, so “double clicking it” won’t work – instead go to step 3:**

**Step 3) Install the new AP Communicator:**

Once the files have been extracted, firstly install the AP Communicator by double-clicking on it. It simply replaces your installed program, there is no need to “uninstall” the old version. Leave the “create a desktop icon” box ticked and it will simply overwrite your old desktop icon.

**Step 4)** Install new batteries into both battery boxes.

**Step 5)** Connect your PC to the Vision lid using the Bridge Interface, NOT the DiveStore !

**Step 6)** Run the APD Communicator Program, by double clicking on the Desktop icon:

**Step 7)** Press the left button on the Vision handset, the screen should say “PC Link.” If it doesn’t switch off, check the connection to the Bridge Communicator and re-try.

1. The Two grey boxes on the AP Communicator should now have yellow rebreathers in them, if not, go into Settings and change the Com Port. (If the rebreather icons remain grey, then go into Settings and select the Com port. Sometimes it is necessary to go to Control Panel / Device Manager and select com ports to see if your PC has identified the USB/serial adaptor. Then, restarting the AP Communicator program is usually sufficient. If you have problems, please contact the factory for a copy of the trouble shooting guide. The latest, white, USB/serial lead usually self-installs when you plug it into the USB port on your PC/Mac.
2. Once the rebreather icons are yellow then Upload the Vision ccr file to the rebreather by clicking on the large Upload button and selecting the new Vision\_V06.00.20\_language\_Sport\_System. ccr upgrade file. Select Upload and the \*.ccr file will be loaded onto the lid and handset. A blue bar shows you the progress and the text above advises when each processor is being programmed. Once it is 100% finished you will see the prompt:



Select OK



Then select Done.

Switch off the handset by pressing the centre and right switches on the handset. When the handset screen is blank, disconnect the lid from the Bridge.

**Step 8) Install the AP LogViewer Program**

In the file you will find the latest version of the AP LogViewer ( V5\_2\_3\_5). It is an \*.exe file, which is PC software, so simply double click on it to run the install program This version of LogViewer is backwards compatible with all previous Logfiles.

On the Download site <http://www.apdiving.com/en/rebreathers/resources/rebreather-firmware/>

you’ll see there is a guide for “Mac” owners.

# Quick Guide

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| --- | --- | --- | --- |
| **Step** | **Files in The Zip File** | **Type of File** | **Update Procedure** |
| 1 | Download the dives from the lid using your existing APCommunicator software. |  |  |
| 2 | Go to the website: <http://www.apdiving.com/en/rebreathers/resources/rebreather-firmware/>  and Select and download your language folder | Folder | Save the entire folder onto your Desktop. |
| 3 | Ensure you have good batteries in both Controllers. |  |  |
| 4 | Connect the lid to the PC using the Bridge Interface |  |  |
| 5 | APCommunicatorSetupSPORT\_ **V5\_2\_9\_0.exe** | PC Application | Open the folder and install the AP Communicator by double clicking on the Communicator Setup file |
| 6 | V06.00.20\_English\_Sport\_System.ccr | AP Vision Firmware | Upload the rebreather code (\*.ccr) to the Vision lid by using new AP Communicator. When done, switch off handset, disconnect from Bridge interface and switch the handset on again. |
| 7 | APLogViewerSetupSPORT\_ **V5\_2\_3\_5.exe** | PC Application | Install the AP LogViewer by double clicking on the LogViewer Setup file |
| 8 | Update Notice (This document) | PDF |  |