

He/O₂ analyzer – procedure for downloading firmware

Download the new firmware, which is available on the page with support at <http://www.divesoft.cz/support/analyzer-7>, to the appropriate directory. Check whether you are downloading the file intended for your version of the device. The file name is in the form **HeO_HWrevision_FWrevision.hex**; for example, HeO_24_218.hex is the version of FW 2.18 for HW version 2.4.

Download and install the driver for the USB virtual serial port from the producer's website at <http://www.ftdichip.com/Drivers/VCP.htm>. The analyzer must appear as USB COM device (Manufacturer FTDI), even if the analyzer is switched off.

Download and install the FLIP program for firmware downloading. This program is available on the Atmel Corporation website at <http://www.atmel.com>; the most recent known version is available at <http://www.atmel.com/tools/FLIP.aspx>. For version 2.4 (with barometric sensor) version FLIP 3.x.x is needed; for older versions, it is possible to use FLIP 2.4.6. The description below relates to version FLIP 3.4.2. and analyzer version 2.4.

You can determine the HW and FW versions from the introductory screen after switching on the device. The display period can be extended by holding the ON/OFF button in the pressed position.

Recapitulation of versions:

- 1.0 first version with wand probe
- 2.1 integrated probe, LCD display
- 2.2 same as 2.1, changes in the rear connector (in addition, user TTL output)
- 2.3 OLED display
- 2.4 OLED display, rechargeable LiIon battery, barometric sensor

It is necessary to switch the device to firmware-upgrade mode, which can be done in two ways:

- insert the programming plug into the system connector
- or according to the following procedure:

In the 9V battery compartment, there is an opening by which the jumper pins are accessible. If you do not have the appropriate jumper available, in an emergency you can remove the three screws on the bottom of the analyzer (two under the battery cover, one near the charger connector) and carefully lift and remove the cover. During this process, be careful not to damage the ribbon cables by which the keypad and display are connected. The pins are then better accessible; they are located on the edge of the board immediately next to the lead from the 9V battery.

Connect the analyzer to your computer using the USB cable. The new COMx will appear in the system (this can be verified via the Device Manager).

Start the FLIP program and perform the following steps in sequence:

- select from the menu *Device, Select* and select AT89C51ED2. (version 1.0 – 2.3) or AT89C51RE2. (version 2.4)
- select from the menu *File, Load HEX File* and select the required file with the new firmware.

- select from the menu *Settings, Communication, RS232*, select the port which was created by connecting to USB
- and set *Baud=115200*, leave *Manual Sync* empty. Leave the RS232 window open.

On the analyzer's keypad, press the ON/OFF button and hold it. If the analyzer starts normally, turn it off, check the programming plug and repeat the procedure. The analyzer's program must not run during download; the display has nothing to show.

Remove the jumper or programming plug (according to the utilized method), continue to hold the ON/OFF button.

Select *Connect* in the RS232 window of the FLIP program. The window will disappear and the program's basic screen will again be accessible.

On the left side, four check boxes will become accessible. Check all of them (*Erase, Blank Check, Program, Verify*).

Press the *Run* button under the check boxes. Start the download, which takes approximately 60 seconds; progress is shown in the dialogue window.

After completing the download, release the ON/OFF button and close FLIP.

Close and screw the cover onto the analyzer if it was necessary to open it.

It is recommended to use the *Reset to default* function from the menu.

In the case of loading firmware intended for a different hardware version, the device will beep five times and shut down. In such case, repeat the procedure and load the correct FW version.

If the procedure seems excessively complicated, entrust the firmware upgrade to your vendor.