



# NERD Firmware v10 Release Notes

DocRev: A

Date: 2015-06-22

## Changes in NERD Firmware v10



NERD **DiveCAN** users must update from v09 to v10.

Updating is optional for NERD Fischer users, as there are no changes.

**FIX:** Fixed problem with PPO2 value used for deco and CNS calculations when in DiveCAN mode. V09 should not be used by DiveCAN users.



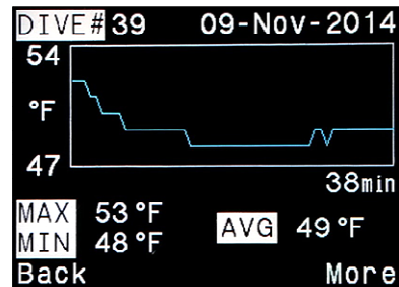
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## Changes in NERD Firmware v09

**NEW FEATURE:** A plot of the dive temperature is now shown in the dive log view. Also shows minimum, maximum, and average temperature for the dive. Accessed after the dive log graph.



Temperature graph in the dive log

**NEW FEATURE:** Additional information can now be viewed in the dive log view. Accessed after the temperature graph (see above). Includes:

- Mode (OC Tec, OC Rec, OC/CC, Gauge, etc)
- Surface Interval
- Surface pressure in millibar
- Deco model and conservatism
- Start CNS %
- End CNS %

Parameter	Value
DIVE #	39
Date	09-Nov-2014
Mode	OC/CC
Surface Int	01h 30m
Surface mbar	1004
Deco Model	GF 30/70
Start CNS	008%
End CNS	018%
Buttons	Back Edit

Additional dive information can now be viewed in the dive log

**CHANGE:** When surface pressure is less than 960 millibar, now forces the use of auto altitude setting (i.e. cannot use the SeaLvl setting). This does not change the saved setting.

**FIX:** Fixed a communication problem that occasionally caused compass to lock up.

**IMPROVEMENT:** The dive planner now inserts ascent legs in the results table to perform gas switches during the initial ascent to the first deco stop. The decompression calculations always included these switches, but the planner results were only showing a single ascent to the first deco stop using the bottom gas. This change results in more accurate gas usage results for some dives.

**NEW FEATURE:** Dive log parameters can now be edited. To access, press right button while viewing the dive log graph. Allows editing of:

- Dive #
- Dive start time and date
- Delete dive

**IMPROVEMENT:** In "Adv. Config.->System Info" now shows the total lifetime dive count and dive time (in hours and minutes).



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**NEW FEATURE:** External PPO2 monitoring is now supported for 2 sensors (previously only allowed 1 or 3 sensors). Access the 2 sensor mode by performing a PPO2 calibration with only sensors #1 and #2 connected (single sensor mode accessed by calibrating with only sensor #2 connected). When using the 2 sensor mode, a configurable value may be displayed on the right side of the screen.

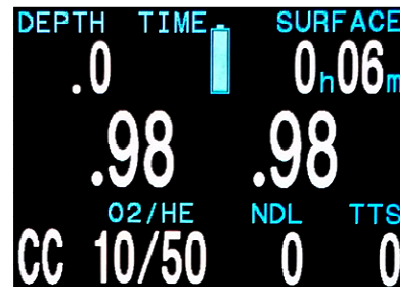
The voting works as follows in 2 sensor mode:

### Voting Passed

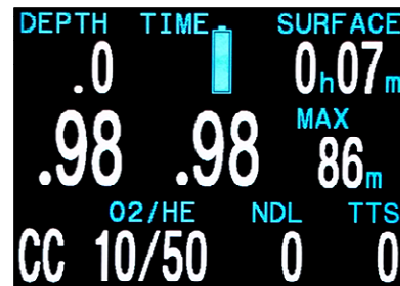
- If sensors within 20%, voting passes and the average PPO2 of the two sensors is used for decompression and CNS calculations.

### Voting Failed

- If the two sensors differ by more than 20%, voting has failed.
- Failed sensors are shown in yellow (unless below 0.4 or above 1.6, then they will be shown in red).
- PPO2 display will alternate with the message "VOTING FAILED".
- The lower PPO2 value will be used for decompression calculations.
- The higher PPO2 value will be used for CNS calculations.



Two sensors can now be used in the external PPO2 monitoring mode (not available on controller models)



A configurable value (maximum depth in the above image) can optionally be displayed

**IMPROVEMENT:** When using external PPO2 monitoring and voting has failed (i.e. no consensus between cells), the CNS is now calculated off the highest PPO2 measurement. Previously used the lowest measurement. Deco calculations continue to use the lowest PPO2 measurement. This is the most conservative approach for both deco and CNS.



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**NEW FEATURE:** Added Clear Log menu option to clear all dives. When dives are deleted, doesn't actually delete data, but flags logs so they do not display on Petrel or desktop software. However, logs can still be undeleted or downloaded with special commands. Reason for the ability to recover logs is in the case of a diving accident, where logs have been accidentally or maliciously deleted.

**IMPROVEMENT:** For 1.5V lithium battery type, added temperature compensation for more accurate battery gauge and warning levels.

**IMPROVEMENT:** When using external PPO2 monitoring and voting has failed (i.e. no consensus between cells), the CNS is now calculated off the highest PPO2 measurement. Previously used the lowest measurement. Deco calculations continue to use the lowest PPO2 measurement. This is the most conservative approach for both deco and CNS.

**IMPROVEMENT:** For long operations that lock-up the user interface (for example, drawing a dive log graph or auto-calibration), now clears the button press queue when operation completes. Previous behavior was that after the long operation all queued button presses executed, which could perform random and unintended operations.

**IMPROVEMENT:** More robust method of storing settings protects better against transient conditions when a battery dies inside unit to prevent corruption of data.

**NEW FEATURE:** Recreational Nitrox Open Circuit Mode. An open-circuit only, 3 gas Nitrox mode. With simpler main screen, optional safety stops, and a configurable bottom row. Also adds a NDL planner, gas MOD warnings, N2 bar graph, and simpler settings.

**IMPROVEMENT:** Appearance of the PPO2 Calibration Results screen improved.

**CHANGE:** When on surface and not wet, the no-activity shutdown timeout increased from 15 minutes to 45 minutes (non-controller models still have 15 minute timeout).

**CHANGE:** When setpoint is 0.19, center row displays yellow warning "SetP = .19" above the PPO2 readings.

**Reminder that the 0.19 setpoint is not intended for use when breathing on the loop. The 0.19 setpoint is a convenience feature for use when setting up and storing the rebreather only.**

**CHANGE:** For DiveCAN controller models, the "System Setup->Dive Setup" menu page now shows "Mode" (fixed at OC/CC) and "PPO2 Mode" (fixed at Ext.). These values appear grayed-out and can't be edited.

**CHANGE:** For DiveCAN controller models, reduced sensitivity of wet contacts to prevent accidental turn-on.

**CHANGE:** Changes to auto setpoint switch behaviour. Previously, each auto switch direction could only occur once per dive. Also, previously the auto setpoint switches could fight with manual switches under certain conditions, requiring the manual switch to be performed twice. Now the auto switches can happen each time the switch depth is crossed, but only when crossed while depth is changing in the appropriate direction. That is, the switch up occurs when the switch up depth is crossed while descending. The switch down occurs when the switch down



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depth is crossed while ascending. Also, changes have been made such that manual switches take precedence, but auto switches can still occur at later times when needed.

**FIX:** Fixed an rMS roll-under bug that could occur if rMS system lost connection with probes during dive and was operating in the countdown mode.

**CHANGE:** If an rMS probe fails its power-up test (i.e. "TEMP PROBE FAIL" message), then the entire rMS system is locked out and does not provide information. NERD must be turned off and back on to clear this state.



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## Previous Release Notes

Versions v05 to v08 were not publically released.

### Version 04:

- First public release to customers.