

Shearwater Petrel 1 & 2/Perdix/Perdix AI/NERD 2 Firmware v59 Release Notes

VERSION 59 2018.07.06

V59 is for the NERD 2 only.



NOTE

A note on models: The NERD 2, Petrel, Petrel 2, Perdix, and Perdix AI share a common firmware base. Due to hardware differences, not all features are available on all models. The following changes apply to all models unless otherwise noted.

NEW

For the NERD 2 only, adds automatic detection of depth sensor model, so that the same firmware build can be used with either the original NERD 2 sensor, or the newer improved sensor. Previously, NERD 2 users needed to use v54 for the new sensor, and V53 or lower if they were still using the older sensor.

CHANGE

Adds support for more flash memories for supply chain flexibility. No functional change.

VERSION 54 2018.04.09

V54 is for the NERD 2 only.

CHANGE

Adds support for the new improved depth sensor for NERD 2. V54 can only be used with hardware that has the new sensor. If the old sensor is used, then v53 or lower must be installed. Otherwise, v54 is identical to v53.

Shearwater Petrel 1 & 2/Perdix/Perdix AI/NERD 2 Firmware v53 Release Notes

VERSION 53 2018.02.21



NOTE

A note on models: The NERD 2, Petrel, Petrel 2, Perdix, and Perdix AI share a common firmware base. Due to hardware differences, not all features are available on all models. The following changes apply to all models unless otherwise noted.

NEW

Incorporates features from the NERD 2 v46 release for all models.

This includes the “Stack Timer” (CO2 scrubber duration timer). The Stack Timer is only available in Closed Circuit (CC) modes. The Stack Timer counts down when diving. It is manually reset by the user when changing the scrubber stack. The total time can be changed by the user. The warning at 1hr00min and alert at 0hr30min are fixed.

See v46 release notes in next section for all details.

DEPTH	TIME	STOP	TIME
105	32	20	2
1.20	1.22	1.21	
STACK USED	REMAINING		
1:45	1:15		

Adv. Config 3	
Stack Timer	On
Total Time	3:00
Stack Timer	Diving
Warn at	1:00
Alarm at	0:30
Done	Edit

DEPTH	TIME	SURFACE
0		12h 52m
1.20	1.22	1.21
Reset Stack Time		

Shearwater Petrel 1 & 2/Perdix/Perdix AI/NERD 2 Firmware v53 Release Notes

VERSION 53 2018.02.21

NEW
(models
with AI
only)

The in-computer dive log now displays start and end tank pressures and average SAC.

DIVE#138 26-JAN-2018	
T1 Start	3040
T1 End	1022
T2 Start	N/A
T2 End	N/A
AVG SAC T1	21
Back	Edit

NEW
(X-CCR
model
only)

Adds support for CO2 sensors. Reports CO2 as the partial pressure of CO2 (PPCO2) in millibar. Alarms when PPCO2 is greater than 5 mbar. Allows user to calibrate the CO2 with a user specified parts-per-million (ppm). For example, in fresh outdoor air a value of 400 ppm should be used.

IMPROVE

Improves capturing of the first logged sample for each dive. This moves the first sample earlier, capturing the surface conditions in most cases. Previously the first sample would be taken approximately 18 seconds into the dive (8 second delay before starting dive mode, then first sample 10 seconds later), often resulting in a fairly deep first sample.

CHANGE

The NDL Planner (available in OC Rec mode only) has been changed to include the descent time to the bottom depth in the reported NDL times. This is the industry standard approach and makes it consistent with the Deco Planner. Previously, the NDL Planner only included the time spent at the bottom depth. The result of this change is that NDL numbers reported by the NDL Planner will now be slightly longer. No changes have been made to the deco calculations. This change has no impact on in-dive NDL numbers. The Deco Planner always included the descent time in the bottom time, and remains unchanged.

CHANGE

The “seconds” bar in the Time display is now drawn in the same color as numeric values (previously was drawn in same color as the titles), making it stand out more.

Shearwater Petrel 1 & 2/Perdix/Perdix AI/NERD 2 Firmware v53 Release Notes

VERSION 53 2018.02.21

CHANGE (NERD 2 only) Reduced the inactivity auto-off time to 10 minutes (previously 30 minutes). This reduces power consumption when the NERD 2 is left on after a dive. For rEvo Controller models, the auto-off time is 20 minutes, extended to 30 minutes if the RMS is in the warmup or ready state.

FIX (rEvo SOLO Controller models only) Allow the user to set the Solenoid Depth Compensation to On or Off.

FIX (Petrel 1 models) Fixed an issue where the real-time clock could run incorrectly after certain power loss events.

FIX (models with AI only) Fixed an issue where “OVR” (overflow) was displayed for the SAC value in certain conditions. This issue only affected the displayed value, and not the calculated or logged value.

FIX (DiveCAN models only): Fixed an issue where the “Bus Devices” list could display the wrong device name.

Shearwater NERD 2 Release Notes

VERSION 46 2017.09.01

V46 is the first release for the NERD 2, and is only being released for the NERD 2.



NOTE

A note on models: The NERD 2, Petrel, Petrel 2, Perdix, and Perdix AI share a common firmware base. Due to hardware differences, not all features are available on all models. The following changes apply to all models unless otherwise noted.



NOTE

Note on translations: Translated notes only cover the release notes from version 29 to version 44. If you need information on more recent release notes you can refer to our English release notes. If you're still having issues, please contact us at info@shearwater.com.

NEW
NERD 2
only

Added support for the NERD 2 hardware.

NEW
NERD 2
only

Added support for built-in li-ion charging and battery gauge.

NEW

Added "Stack Timer" feature for timing rebreather CO2 scrubber duration. This is a countdown timer, that can be optionally enabled in CCR modes. Has a user defined reset time, and is manually reset. Counts down when in dive mode, and generates alarms at 1 hour remaining time and 30 minutes remaining time.

FIX

Increased a Bluetooth timeout that was occasionally falsely triggering.

CHANGE

Allows user to access "End Dive" option whenever the absolute pressure is less than 1.1 ATA. This is to allow breaking out of a dive that has falsely started (mostly likely due to having turned the unit on while in an airplane).

IMPROVE

Improved calculations used in compass calibration.

IMPROVE In PPO2 mode (i.e. the Gauge mode with external PPO2 monitoring), added an info screen that shows temperature and average PPO2.

IMPROVE Reduced sleep mode power consumption for longer standby battery life when off.

VERSION 44 2017.03.02

NEW Release of translated languages for Perdix AI. Translated versions may be selected when updating firmware. The following languages are available on the Petrel, Petrel 2, Perdix, and Perdix AI:

- English
- 中文 Simplified Chinese
- Français French
- Deutsch German
- Italiano Italian
- 日本語 Japanese
- 한국어 Korean
- Português Portuguese
- Español Spanish
- 中文 Traditional Chinese

FIX Fixed problem when unit is in the turned-off state at high altitude, where it was using sea level pressure to update the tissue tensions. This resulted in overly conservative decompression profiles. This problem was introduced in v29.

NEW Add support for X-CCR rebreather model.

VERSION 40 2016.12.12



NOTE

Version 40 was only released for the Perdix AI model.

NEW
Perdix AI
only

Support for the Air Integration (AI) feature. Please refer to “Perdix AI Manual”.

CHANGE

Only one way to start Bluetooth now. Removed the “Upload Log” and “Load Upgrade” menus. The new “Start Bluetooth” option is at the top-level of menus.



CHANGE

Timer (on the configurable row) now uses the big font for seconds.

CHANGE

Some pop-up messages have been re-titled from “Error” to “Info”, “Warning”, or “Error” with different colors, based on the message type. Previously, all messages were titled “Error”, even when the message was not due to an error.

VERSION 38 2016.09.26

- FIX** Fixed a problem where under certain conditions a value between 0 to 5 minutes could be added to the surface interval time after a turn off then turn on cycle.
- FIX** Changed the compass heading mark colour back to green (instead of white).

VERSION 37 2016.06.20

- FIX** Corrected the ascent rate arrows display. In v34 the dark gray was incorrect, making the display appear to always be full.



- FIX** Now able to add the $\Delta+5$ to the configurable center row locations. This was mistakenly omitted from v34 on the Petrel 1 model only.

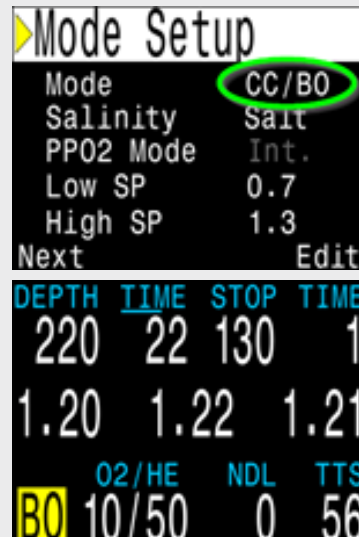
- FIX** Added ability to correct an O₂ offset problem that affected Petrel 2 analog PPO₂ monitoring models (e.g. the Petrel 2 Fischer) that shipped from the factory with firmware v29 installed. Please see the notice at www.shearwater.com for more details. DiveCAN rebreather controller models were not affected by this issue.

VERSION 34 2016.05.04

CHANGE The 'OC/CC' mode has been renamed to 'CC/BO', where BO means bailout.

Purpose is to clarify that OC/CC mode was never intended to be used for purely OC dives. Using the OC/CC mode for OC dives results in sub-optimal operation. This change clarifies the CC/BO mode is for closed circuit dives, with open circuit bailout.

When diving OC, the mode should be set to either "OC Tec" or "OC Rec".



"OC/CC" mode renamed to "CC/BO" for clarity of purpose

NEW **Perdix only** A custom image can be used as the Perdix startup splash screen. The size image size must be 320x240 pixels. Shearwater Desktop version 2.5.4 or higher is required to upload images.



Add a custom startup image to the Perdix

IMPROVE Better dive log page navigation. Allows moving backwards and forwards through the pages of dive logs (previously could only move forward or exit).

NEW The gas will display in flashing red when its PPO2 is outside of a safe breathing range (i.e. below the min PPO2 or above the max PPO2 setting).

In CC mode, this warning refers to the diluent only. The breathing loop PPO2 may be in a safe range, but if the diluent is unsafe to breathe directly then the gas will be red. Note that other warnings exist to warn when the breathing loop is outside of a safe range.



The CC diluent is red to indicate it is unsafe to breathe directly (PPO2 > 1.60)

NEW Units of depth and temperature can be set independently. Depth can be set to feet or meters. Temperature can be set to °F or °C.

NEW $\Delta+5$ (Delta + 5 minutes) is added as an option on the configurable center row, configurable bottom row, and 'NDL display' replacement. $\Delta+5$ is the difference in the time-to-surface (TTS) if you remain at the current depth for 5 more minutes. This value can be positive or negative. For example, a $\Delta+5$ of +10 would mean that staying 5 more minutes at the current depth would result in 10 more minutes of decompression stops.

$\Delta+5$ is similar to $@+5$, but the $@+5$ value shows the entire TTS while the $\Delta+5$ only shows the difference from the current TTS.

CHANGE When editing the dive number for the next recorded dive, the menu is now named "Next Log=" and you enter the value for the next dive. Previously you would enter the number of the last dive and the next dive would be this value plus one. The new method is more intuitive and is better described by the menu name.

IMPROVE Added a method to recover deleted dive logs. In the 'Dive Log' menu, there is now a 'Restore Mode' option. Setting this to "ON" allows either a "Restore All Logs" option or restoring individual logs (View the log list, deleted logs will be grayed out. Enter into the log view then the edit page will have an undelete option). After the unit is turned off then back on, this option will be reset to "OFF".

CHANGE When viewing the "TISSUES" bar graph, the display will not timeout back to the main screen.

FIX Corrected the issue which the dive log was not shown properly when screen is flipped. This bug only affected the Perdix model.

VERSION 33 2016.01.15

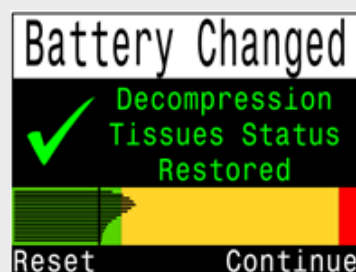


NOTE

Firmware v33 was the first public release for the Perdix. Perdix firmware is identical to Petrel 2 firmware, with the exception of an updated display driver for the new display in the Perdix. Improvements to the compass only apply to the Petrel 2 and Perdix models.

NEW After changing the battery, the current deco tissue loading is shown on the Tissues Restored screen.

NEW On the Tissues Restored screen, a shortcut to reset the tissues is given. If Reset is chosen, a prompt will be displayed to confirm. **Do NOT reset tissues between repetitive dives, as inert gas loading will be lost.**



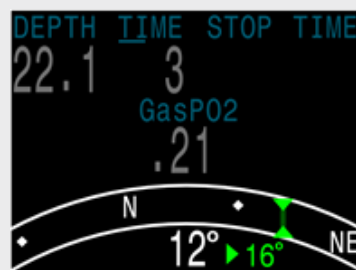
The tissues bar graph is now shown on the Tissues Restored screen

CHANGE Compass mark heading menu moved to reduce button presses. Also, the compass can now be viewed while marking. Operation: when viewing compass a left button press brings up an "Exit/Mark" menu. Right press marks compass, Left press exits to main screen. Previously had to navigate to regular menus to mark the compass.



The mark heading command now requires less button presses

IMPROVE When a heading is marked, the display now shows the offset angle between the current heading and the marked heading. This is useful for navigating patterns. For example, a box pattern requires turns at 90° intervals, while a triangle pattern requires turns at 120° intervals.



The offset between current and marked heading is now shown (in this example 16°)

IMPROVE Compass display improvement. The 'N', 'E', 'S', and 'W' characters changed to a larger font.

NEW New “Cave” brightness setting. This is even dimmer than “Low” brightness, and is suitable for very dark environments like caves.



Cave brightness is very dim and thus best suited for dark environments like caves

NEW Added support for changing settings on peripheral boards.

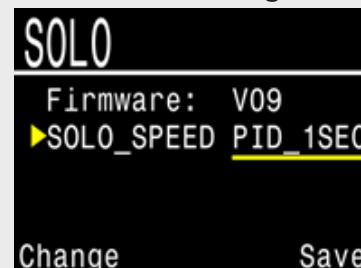
DiveCAN Models only

For example, on the SOLO board (solenoid and oxygen controller) the Solenoid Speed setting can be adjusted. Go to “Bus Devices” page on Petrel to access peripheral boards. Settings viewed here are stored on the peripheral device.



On the “Bus Devices” page, choose “View” to see more info and settings

Firmware updates on peripheral boards may be required before settings can be adjusted.



If settings are available, they can be changed here. These settings are stored on the peripheral device.

FIX Fixed problem where gas usage for bottom time segment in dive planner was too low, due to the ascent rate (33 fpm) being used to calculate descent (60 fpm). Only affected gas usage calculations and not the decompression schedule.

NEW For Perdix, backup the deco tissues and clock into permanent memory every 16 seconds when on (every 5 minutes when off). Reason is to restore to these values after battery change, since Perdix does not have super-capacitor. Also, the Petrel will use these backups if the super-capacitor gets drained.

NEW Added support for Perdix hardware and new display driver for Perdix.

VERSION 29 2015.06.26



NOTE

After upgrading to v29, it is not possible to downgrade to earlier versions.

NEW Petrel 2 only

Added a mini compass as an optional display on the center row.



NEW Petrel 2 only

The current compass numerical value (azimuth) is shown on the “Mark Heading” menu.

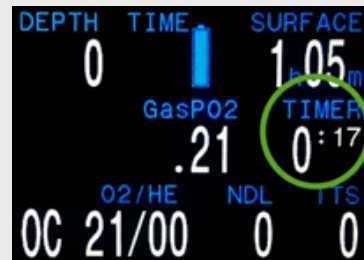


CHANGE Petrel 2 only

After marking a heading, if the new mini-compass is shown, returns to the main screen. If mini compass is not shown, returns to the compass screen as before.

NEW

Timer (stopwatch) display added as an option on the configurable center row or configurable bottom row.



IMPROVE

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

CHANGE

Automatically turns on the unit when the absolute ambient pressure is greater than 1100 mbar (previously was 1300 mbar). Result is faster auto-on when dive starts with Petrel turned-off. As a reminder, this auto-on feature is designed as a backup. We always recommend turning your Petrel on before a dive starts to confirm functionality and setup.



IMPORTANT NOTICE Change to surface pressure determination

IMPROVE Improvements have been made to ensure the surface pressure (i.e. the atmospheric air pressure) determination is more reliable for divers at high altitudes, regardless of how the Petrel is turned on.

The surface pressure is now determined by the following:

- When in sleep mode (off), the pressure is sampled every 15 seconds.
- The last 10 minutes of pressure samples are saved.
- Upon turn-on (regardless of the cause), the minimum pressure from the 10 minute pressure history is set as the surface pressure.
- The exception is when the battery is changed, since there is no 10 minute history. In this case it is assumed that the unit is on the surface, so the current pressure is used as the surface pressure.

CHANGE When on surface and not wet, the no-activity shutdown timeout has increased from 15 minutes to 30 minutes (although DiveCAN controller models still have 45 minute timeout).

CHANGE In OC Rec (Nitrox) mode, a fixed value of 0.16 is now used for the low ppo2 warning. This change is to prevent low PPO2 warnings when diving at altitude (previously used 0.19). Note that O2 % cannot be set lower than 21% anyways when in OC Rec mode.

FIX Fixed wrong CNS calculation in Dive Planner during diving.

FIX Fixed wrong CNS and gas usage calculation in Dive Planner after the Salinity is changed.

FIX Fix to Dive Planner where in certain dives ascent to first stop takes place in one minute rather than actual expected time.

FIX Fixed some VPM-B dives are more conservative issue.

IMPROVE Better compatibility with some Android devices when uploading logs via Bluetooth.

IMPROVE Now can display dive time more than 999 minutes (16h40m). When dive time exceeds 999 minutes, shows as XXhXXm, up to 99h99m. However, a smaller font must be used to fit the time in the hours and minutes format.

IMPROVE Display one decimal place for max and average depth when using meters.

IMPROVE For 3.6V saft battery type, improved compensation for temperature and current draw for more accurate battery gauge and warning levels.

CHANGE Added limitation that PPO2 calibration cannot be performed when pressure is above 1080 mbar.



rEvo rMS Model:

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. Petrel must be turned off and back on to clear this state.

**IMPORTANT NOTICE** Change to auto setpoint switching

CHANGE Changes to auto setpoint switch behaviour. The reasons for these changes are:

- Allows each setpoint switch to occur more than once per dive, but under more controlled circumstances.
- More intuitive behaviour.
- Fights less with manual setpoint switches.

CHANGE The switch down depth is now enforced to be less than the switch up depth, by at least 20ft (6m).

CHANGE The minimum switch down depth is 5ft (2m). Thus, the minimum switch up depth is 25ft (8m).

CHANGE Each auto setpoint switch can now occur as many times per dive as the switch depth is crossed. The 20ft (6m) enforced gap between the up and down depths prevents oscillations.

CHANGE A switch up will only occur while descending (going deeper) across the switch up depth.

CHANGE A switch down will only occur while ascending (going shallower) across the switch down depth.

CHANGE If a manual setpoint switch occurs, the auto switch will be cancelled if within 6ft (2m) of the auto switch depth.

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. This fighting could also lead to the one auto switch being inadvertently consumed, which could cause confusion later in the dive when the auto switch would not occur as expected.

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

FIX Fixed DiveCAN doesn't log PPO2 source when bailing out to OC.