



Measure Life ... Anywhere

Release Note: OmniSense 4.0



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1 Scope

This document provides an overview of the added features and release status for Zephyr OmniSense 4.0 application software. It covers both OmniSense Live and Analysis applications. For more specific information about new features, refer to the New Features page and OmniSense Analysis and Live Help guides.

2 New Features

2.1 OmniSense Live and Analysis

2.1.1 Improved Download Speed

Up to 8x faster download from BioModule.

2.1.2 ECHO Modes

Two new modes have been added to provide the following Live monitoring options:

ECHO 20x1 will provide a 1 second update rate for 20 subjects

ECHO 50x2.5 will provide the legacy 2.5 second update rate for 50 subjects

ECHO 100x5 will provide 5 second update rate for 100 subjects

2.1.3 Google Maps

OmniSense Analysis and Live now include embedded or separate windows to display geographic locations. The maps are enhanced by heat maps, physiological data overlays on paths, distance markers, zoom/pan functions, shuttle function of position for multiple subjects simultaneously.

2.1.4 Altitude Zones

Addition of altitude zones allows another metric to cross reference geological data to physiological data.

2.1.5 Embedded Accelerometry Algorithms

The BioModule will now summarize and store movement metrics without any processing required after Live monitoring or download. Each metric includes associated graphs in Analysis and are included in the consolidated report.

The metrics include:



- Walk Step Count
- Running Step Count
- Bound Count
- Jump Count
- 10 step average Rate of Force Development
- 10 step average Impulse (Area under Force/Time curve)
- 10 step average Period
- Minor Impact Count (< 3 g)
- Major Impact Count (> 3 g)
- Spherical Angles for the peak force for each second

2.1.6 Improved HRV Algorithm

HRV is now more reliable in the presence of motion/noise artefact, providing a dramatic increase in the availability of valid values for HRV

2.1.7 Readiness Metrics and Readiness Protocol

Includes a resting test and survey to calculate a Readiness score (0 – 10) and track other subject entered metrics that include:

- Resting HR Laying
- Resting HR Standing
- Orthostatic Hypotension
- Resting HRV
- Training Intensity
- Training Load
- Sleep Quality
- Overall Stress
- Current Stress
- Eating Habits
- Hydration
- Injury Status

2.1.8 Support Smaller Qstarz BT1300ST GPS

A slim GPS which is best suited for athletic practices of 3 to 4 hours in duration.



2.1.9 Workout Files Support Text to Speech Audio

Workouts created by the user will read the entered text over audio while executing the timing and training zones displayed in Live for subjects to follow.

2.1.10 Analysis Data Filters

User defined data filters are created with a simple wizard tool. The graphs will display the change based on a user defined filter, or a new session can be saved containing the result of filters. Data can be filtered based on HR, BR, HR confidence, HRV, Speed, Activity etc. The user can select to interpolate or NULL data which exceeds their thresholds.

2.1.11 Control of Markers in Analysis

Markers can now be added and deleted in Analysis.

2.1.12 Merge Sessions

Multiple sessions can be combined into one in Analysis.

2.1.13 Change Time of Sessions

Change the session start time, or shift the time by an offset.

2.1.14 User Defined Scaling of Select Summary Bar Graphs

Previously all summary graphs auto scaled. The current release allows for multiple summary type bar graphs to have a user defined scale to provide the user with a standard appearance each time a certain metric is analysed.

2.1.15 Categorization of Variables

Variables have now been re-organized for ease of use. The categories can also be shown/hidden to hide less used variables in Analysis.

2.1.16 User Defined Time Period for Analysis at Startup

The user can now set the duration into the past that Analysis will load at startup. Loading time of data is improved.



2.1.17 Updated Pebble Watch App

The Zephyr Watch App now has 3 custom panels that can display user selected metrics on a single watch face.

3 Operational Requirements

3.1 PC System Requirements

PC Operating System:	Windows 7, 8.1, 10 .NET 4.0 framework required
PC Processor:	32 or 64 bit Dual core or higher, 1.7 GHz or higher
PC RAM:	8GB or higher
PC Memory:	250GB (Solid State HD recommended)
Connectivity:	USB
Graphics Card:	NVIDIA or Radeon recommended
Screen Resolution:	1024 x 768 Touchscreen recommended
Bluetooth:	Default Microsoft Windows Bluetooth stack. This may not be the case for all PCs with built-in Bluetooth. (Not required unless using BT Direct or GPS)



3.2 Firmware

Zephyr BioModules require firmware upgrades for use with this application release, as stated in the table below.

Firmware upgrades for existing devices are included in the supplied Zephyr installation disc or root directory.

3.2.1 Zephyr Hardware

A new hardware version of the Zephyr BioHarness 3 is required to support the Pebble watch. This version has new Bluetooth module that supports Bluetooth classic and Bluetooth modes, while also retaining the support for ECHO. It can transmit over both Bluetooth and ECHO protocols simultaneously.

BioHarness 3 Hardware Part No.	Radio Protocol Supported
9800.0153 (1G)	Bluetooth only (current version 1G_1.4.12.0)
9800.0189v6-v9g (2G)	Bluetooth + ECHO (current version 2G_1.4.12.0)
9800.0189v9k (3G)	Bluetooth + ECHO + Bluetooth Low Energy (current version 3G_1.4.12.0)



3.2.2 Firmware Versions

Upgrades to the following firmware is required to access new functionality.

System	BioH 3.0	Additional Components
PSM Training ECHO	1.4.12.0	ECHO Gateway
PSM Training w/GPS	1.4.12.0	QStarz 818XT and 1300ST GPS (supported live and logging)
PSM Bluetooth Direct	1.4.12.0	Bluetooth with Windows Drivers
PSM Responder	1.4.12.0	XTS Mic. 2.1.1.0 , XTS RID 1.0.15.0
PSM Defense	1.4.12.0	Various RID firmware updates – confirm with Zephyr. For correct hardware firmware components..
PSM Responder APX	n/a	Not yet released

3.2.3 Third Party Hardware

(no firmware upgrades required, supported with OmniSense Live in Responder, Defense and Bluetooth Direct modes)

- MyTech: HPL-108 USZ 1005232045.
- Nonin: 9560 Not applicable
- QStarz: 818XT and 1300ST GPS (Live tracking supported in ECHO, Responder, and Defense radio networks only, excluding MBITR)



3.3 Motorola XTS Requirements

The following feature sets must be installed on the XTS Motorola radios:

- Q947 – Packet Data Interface

4 Fixes and Corrections

4.1 Various bug fixes

Various minor bugs that do not affect system performance or user interfaces were rectified to enable a more reliable product

Please contact support@zendesk.zephyrtech.com to report any issues encountered.



5 Dropped Features

- Support for BioHarness 2
- Support for Bluetooth Access Point systems
- Support for ISM systems
- Support for Harris Radios

6 Known Issues, Limitations and Restrictions

6.1 Known Issues

6.1.1 Installation and Upgrade

- A pre-configured database will be supplied with the system if the software is purchased as a Zephyr 10, 30, or 50 Subject Advantage Pack with or without GPS components. This will be installed automatically with all hardware prepopulated into the database if the installation PC has never had OmniSense previously installed. If upgrading from a previous installation, it is recommended to contact Zephyr support for assistance in the upgrade to ensure the system is properly configured.
- For updating a system, be sure to perform the update when you have time to **update firmware on all BioModules**. The system will not connect via live until firmware is updated (after installing the new OmniSense software).
- For updating a system that previously had GPS units paired directly to BioModules, there is a significant amount of work required to add GPS units to the system and assign them to personnel to restore full functionality. Updating without performing this step will effectively un-pair GPS units from devices deployed in live mode. **Do NOT perform this update unless you have time to complete the process. Updating a 50 man system with GPS units could take as much as 2-4 hours.** If you would like onsite support to perform the update, contact your Zephyr sales representative. Keep in mind that this is an optional update, so if you do not have time or do not see that the new features add sufficient value, please wait to update.



6.2 Limitations

- BioHarness 3 modules PN 9800.0189v6-v9 (2G) must be used for an ECHO system.
- BioHarness 3 modules PN 9800.0189v9k (3G) must be used for Bluetooth Low Energy compatibility with custom Pebble watch (contact Zephyr Sales)
- Pebble watch requires custom Zephyr supplied firmware and should not be connected with Pebble Android or iOS smart phone app to avoid automatic update of Pebble firmware to an incompatible open market version.
- BioModule Firmware upgrades are required, as outlined in section 5.4.2
- Current BioModule Firmware is shipped with this release.
- PC hibernation should always be disabled when using OmniSense.
- PSM Bluetooth Direct is no longer supplied as a standard configuration for OmniSense. Bluetooth continues to be supported. Zephyr professional customers are being directed to the ECHO system as having several advantages. Notable are increased range, and a device limit of 50 per system, as well as reducing driver compatibility related issues.

6.3 Restrictions

- The accelerometer, jump and dash test data is restricted to systems using Bluetooth Direct, or ECHO communications. The data is not available for XTS systems. The Accel side panel will not be visible when Network Type is set to XTS.
- In the Analysis Module, Jump and Dash parameters are visible but data is not available when XTS is used.
- In OmniSense Analysis, Accelerometry waveform data (as opposed to Peak Accelerations), can only be accessed if streaming accelerometry data has been activated in the Live module at the time of session recording. This is restricted to a single device per system, and is only supported by Bluetooth Direct and ECHO communications.

7 Related Documentation

All product documentation is contained on the OmniSense Install Package under the "Documentation" folder.



8 Definitions and Abbreviations

8.1 Abbreviations

AT	Anaerobic Threshold
BioGauge	Graphical representation of physiological parameters
BPM	Blood Pressure Meter
ECHO	Zephyr 802.15.4 - 2.4GHz radio network type
HR	Heart Rate
HR@AT	Heart Rate at Anaerobic Threshold
PSM	Physiological Status Monitoring
RID	Radio Interface Device
RSM	Remote Speaker Microphone
SCL	Skin Conductance Level
SpO ₂	Pulse Oximeter (% dissolved blood oxygen)
USB	Universal Serial Bus

9 Document Version Control

Version	Description
1.1	First Release
1.2	Updated Release to fix minor issues in Version 1.1
2.0	Updated to support more radios, new features and modified GUI, added restrictions on Blood Pressure and SpO ₂ devices
2.1	Updated to include the Z-Modem, Beep Test, Physiology Normative comparison report, Various RIDs, Various new software features and bug fixes
2.2	Updated to include Bluetooth direct to the PC
2.3	Support for additional accelerometer data in Live; support for next-generation BioHarness devices. Jump and Dash Test peak acceleration values added [for BT systems].
3.0	Updated to describe Bluetooth Access Point systems using BioHarness 3 devices, & Bluetooth Direct Systems using BioHarness 2 devices
3.2	Internal release only Load parameters replace Effort, functional changes to Analysis module; support for 802.15.4 systems when available
3.3	BioGauge updates, Downloader Install integration
3.4	ECHO system, initial GPS support, revised ROG, Z-Modem & tactical RID support
3.5	Live Training & workout tabs, more GPS support, increased variety of Training reports – not released
3.6	Includes all changes from 3.5 with Bug fixes and updated Intensity and Load algorithms
3.7	Updated for support with Windows 8, performance improvements and bug fixes. Improved GPS support. Windows Security Certificates updated. Multi-language support updates. Added Impact Processing tool in Analysis
3.8	Training Limits, Archiving (to zsf), Custom Intensity ranges, Auto calibration of time over ECHO, Accel Processor (from summary and waveform logs), Markers (single, team, all), Subsession creation wizard, selectable Training Zone model
3.9	Support for Live GPS data feed over ECHO, Integrated GPS assignment and auto-pairing via ECHO, Data Management Enhancements in



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	OmniSense Analysis, New optional add-ons for Barcode Rapid Allocation Tool and Pebble Watch Interface, Support for Wireless Download via Bluetooth
4.0	ECHO Modes, Google Maps, Embedded Accelerometry Algorithms, Improved HRV Algorithm, Data Filters, Readiness, Workouts text to speech, Time Shift sessions, Merge sessions, Marker controls in Analysis, User Defined Summary Graph scales, Updated Pebble Watch App, support of small Qstarz 1300ST GPS