

RESPIRONICS®



Actiware®
CLINICIANS GUIDE

Overview of Actiwatch

The Actiwatch® is designed for documenting physical movements associated with applications in physiological monitoring. The Actiwatch is intended for the measurement, storage, and analysis of body activity. The Actiwatch can be attached to the subject's limb or trunk and through the use of an accelerometer, motion is measured, the activity is stored within the device. The Actiwatch comes with its own software for data processing and display.

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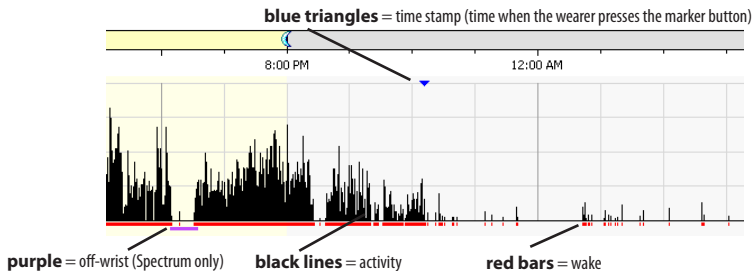
Note: Actiware includes detailed instructions in the online Help section.

OVERVIEW OF AN ACTOGRAM

To generate an Actogram, you must first select a database.

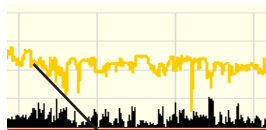
- From the main menu, click on **File > Database > Open**. Select the database of your choice.
- Double-click the **New Analysis** symbol to select the patient data you wish to view. This displays the Actogram.

Below is an excerpt from an Actogram with “activity only” enabled.

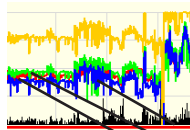


Below is an excerpt from an Actogram with “activity plus light” enabled.

Actiwatch 2



Actiwatch Spectrum



Blue = blue light
Green = green light
Red = red light

HOW TO SET REST INTERVALS

Setting Intervals

To analyze data set an interval for a specific period of time. There are a variety of interval types, and several methods you can use to set intervals.

- Automatic - Use an automated software algorithm.
 1. For major sleep periods (3+ hours), click on **Tools > Auto Set (Major) Rest Intervals**.
 2. For minor sleep periods (shorter than 3 hours), click on **Tools > Auto Set (Minor) Rest Intervals**.
- Quick Method - Click on **Help > Interval Selection**
- Menu and Sleep Diary Method
 1. From the Main Menu, click on **Interval > Add Interval**
 2. Select the interval type
 3. Manually enter the times from the sleep diary
- Fine Control Method - (described in the following pages)

Tips

- Although it is not critical for analysis, the starting point of the interval is generally set at the area of reduced activity and the ending point is set at the area of increased activity.
- When creating intervals, you can press the **Escape** key to clear the markers.
- To remove a single interval, click the left mouse button in the interval you want to delete and press the **Delete** key.
- Click on the **Keyboard Controls** link in the Main display for help when setting intervals.

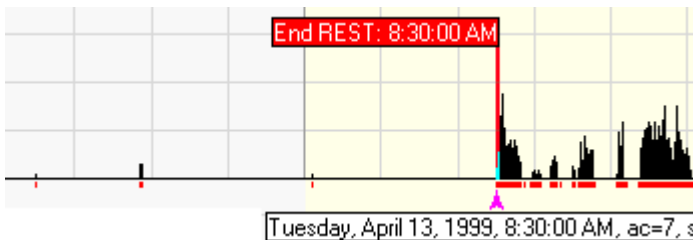
Setting Intervals: Fine Control Method

To get sleep statistics you must create a rest interval.

1. Left-click on the Actogram to place the cursor at the interval start time. (You can adjust the cursor by using the keyboard arrow keys.)
2. When the cursor is properly placed, Press **R**.

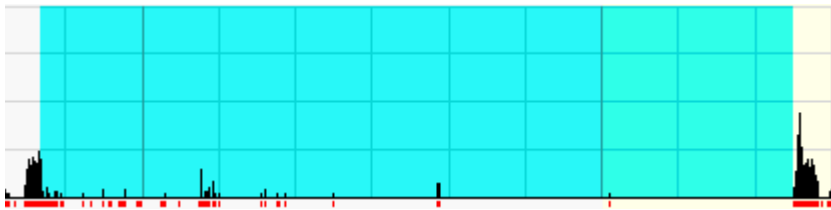


3. Left-click on the Actogram to place the cursor at the interval end time. (You can adjust the cursor by using the keyboard arrow keys.)
4. When the cursor is properly placed, Press **Shift + R** and continue with step 5.



Setting Intervals (continued)

5. Finally, when the Start and End points are correctly placed, create the Rest Interval (shown below), by pressing **Ctrl + R**.



Other Interval Types

You may set a variety of interval types. To set a different type of interval, follow the same steps but press the key (C, E, W, S) shown in the table below.

For example, instead of pressing the **R** key to set a **Rest Interval**, you can press the **E** key to set an **Excluded Interval**.

Interval Start Markers

- **R** = Rest Interval Start
- **C** = Custom Interval Start
- **E** = Excluded Interval Start
- **W** = Forced Wake Interval Start
- **S** = Forced Sleep Interval Start

Interval End Markers

- **SHIFT + R** = Rest Interval End
- **SHIFT + C** = Custom Interval End
- **SHIFT + E** = Excluded Interval End
- **SHIFT + W** = Forced Wake Interval End
- **SHIFT + S** = Forced Sleep Interval End

CREATING REPORTS - STEP 1 - CREATING A STATISTICS TABLE

When the intervals have been set, you may generate a report. This data will appear in the Statistics Table for immediate viewing, or you may generate a printed report (see the next page). Either way, you must first choose the statistics options.

1. Select **Tools > Options > Statistics** from the Main Menu. A portion of the window is shown here.
2. Check all desired boxes.
3. Click OK to save changes.
4. To see the table, select **View > Statistics Table** from the Main Menu.

The statistics checked in this illustration are typical for a report. Your choices will depend on your own unique requirements.

Options

General | Analysis | Actogram/Graph | **Statistics** | Data List

Interval Information

<input checked="" type="checkbox"/> Start Date	<input checked="" type="checkbox"/> End Date
<input checked="" type="checkbox"/> Start Day	<input checked="" type="checkbox"/> End Day
<input checked="" type="checkbox"/> Start Time	<input checked="" type="checkbox"/> End Time
<input checked="" type="checkbox"/> Duration	

On/Off Wrist Status

<input checked="" type="checkbox"/> Off-Wrist	<input checked="" type="checkbox"/> %Off-Wrist
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Activity Statistics

<input checked="" type="checkbox"/> Total AC	<input checked="" type="checkbox"/> Max AC
<input checked="" type="checkbox"/> Avg AC/min	<input checked="" type="checkbox"/> Invalid Time AC
<input checked="" type="checkbox"/> Avg AC/epoch	<input checked="" type="checkbox"/> %Invalid AC
<input checked="" type="checkbox"/> Std AC	

Sleep/Wake Statistics

<input checked="" type="checkbox"/> Sleep Time	<input checked="" type="checkbox"/> Wake Time
<input checked="" type="checkbox"/> %Sleep	<input checked="" type="checkbox"/> %Wake
<input checked="" type="checkbox"/> #Sleep Bouts	<input checked="" type="checkbox"/> #Wake Bouts
<input checked="" type="checkbox"/> Avg Sleep Bout	<input checked="" type="checkbox"/> Avg Wake Bout
<input checked="" type="checkbox"/> Onset Latency	<input checked="" type="checkbox"/> Invalid Time SW
<input checked="" type="checkbox"/> Snooze Time	<input checked="" type="checkbox"/> %Invalid SW
<input checked="" type="checkbox"/> Sleep Efficiency	
<input checked="" type="checkbox"/> WASO	

Mobility Stat

<input checked="" type="checkbox"/> Immobile
<input checked="" type="checkbox"/> %Immob
<input checked="" type="checkbox"/> #Immob
<input checked="" type="checkbox"/> Avg Imm
<input checked="" type="checkbox"/> #1min Ir
<input checked="" type="checkbox"/> %1min Ir

Score Statis

<input checked="" type="checkbox"/> #Scores
<input checked="" type="checkbox"/> #Manua
<input checked="" type="checkbox"/> Avg Soc
<input checked="" type="checkbox"/> Avg Ma
<input checked="" type="checkbox"/> Avg Sch

Light Statist

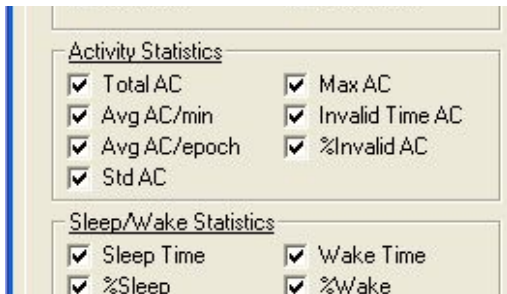
Total Exp
Avg. L
Std. L
Max. L
T,
Invalid Tir
% Invalid Tir

Definitions of Sleep/Wake Statistics

Epoch Length	The period of time that Actiwatch accumulates activity counts before saving collected data to memory. Minimum time is 15 seconds - the maximum time is 5 minutes (15 minutes for legacy Actiwatch devices).
Sleep Time	Total number of epochs in an interval scored as sleep (minutes)
%Sleep	Amount of time in the interval that is scored as sleep
#Sleep Bouts	The number of continuous blocks of sleep
Avg Sleep Bout	Average duration of sleep bouts
Onset Latency	Period of time between Bed Time and Sleep Start
Snooze Time	Time between end of sleep and lights on or get up time
Sleep Efficiency	Percentage of time in bed actually spent sleeping
WASO	Wake After Sleep Onset - the number of epochs in a sleep interval scored as wake
Wake Time	Total number of epochs in interval scored as wake (minutes)
%Wake	The amount of time that in the interval scored as wake
#Wake Bouts	The number of continuous blocks of wake
Avg Wake Bout	Average duration of wake bouts
Invalid Time SW	Amount of time the sleep/wake algorithm did not have enough data to provide a score
%Invalid SW	The amount of invalid sleep/wake data in an interval

Note: When you set a Rest Interval, Actiware automatically generates a Sleep Interval within the Rest Interval. If you have checked Onset Latency, Snooze Time, Sleep Efficiency, and WASO options, they will be shown in the Statistics Table only if there is a Sleep Interval generated.

Definitions of Activity Statistics



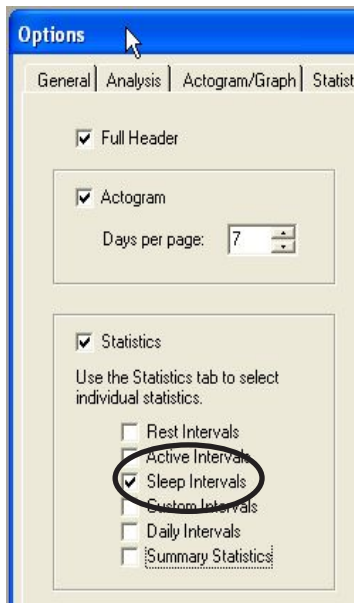
Total AC	Sum of all activity counts in the interval
Avg AC/min	Total activity counts divided by epoch length in minutes
Avg AC/epoch	Total activity counts divided by number of epochs
Std AC	Standard deviation of all activity counts in an interval
Max AC	Largest of any activity count for all epochs in an interval
Invalid Time AC	Total amount of invalid activity data (in minutes) caused by equipment error or manually excluded intervals
%Invalid AC	Ratio of Invalid Time to interval duration

CREATING REPORTS - STEP 2 - PRINTING THE REPORT

You can print a report that includes your Actogram and/or Statistics Table data. To adjust the content of that report follow these steps.

1. Open an analysis.
2. Select **Tools > Options > Print Report** from the Main Menu. You will see the windows shown here.
3. Check all elements you wish to see in the printed report. In the example shown here, sleep intervals is chosen.
4. If displaying an Actogram, select the number of days per page.
5. Click on OK to save your settings.
6. Print the report by selecting **File > Print Report** from the Main Menu.

Note: An analysis must be open to enable report printing.



Sample Report

The appearance of your report may vary depending on your printer and page setup.

Below is a sample report generated from the choices made in the Statistics Table and Print Report Options windows. Because “sleep intervals” was checked in the Print Report Options windows, the sleep interval statistics are shown in this report.

- Each column includes the information chosen on the Statistics Table Options screen.
- Each row is an interval set in the Actogram.

Actiware Print Report

Analysis Name: Rest Intervals
Subject ID: Actiwatch 2 Sample
Data Collection Start: 8/22/2007 12:00:00 PM
Date of Birth: 2/23/1975
Data Collection End: 8/29/2007 8:58:00 AM
Gender: Fem
Actiwatch SN: A29*5

Sleep Interval Statistics

<u>Interval#</u>	<u>Start Date</u>	<u>Start Day</u>	<u>Start Time</u>	<u>End Date</u>	<u>End Day</u>	<u>End Time</u>	<u>Duration (minutes)</u>
1	8/22/2007	Wed	9:39:30 PM	8/23/2007	Thu	4:58:30 AM	439.00
2	8/23/2007	Thu	9:48:00 PM	8/24/2007	Fri	6:38:30 AM	530.50
3	8/24/2007	Fri	11:25:00 AM	8/25/2007	Sat	8:04:00 AM	519.00
4	8/26/2007	Sun	12:53:00 AM	8/26/2007	Sun	9:11:30 AM	498.50
5	8/26/2007	Sun	10:29:30 PM	8/27/2007	Mon	4:19:30 AM	350.00
6	8/27/2007	Mon	10:07:30 PM	8/28/2007	Tue	5:25:30 AM	438.00
7	8/28/2007	Tue	10:12:30 PM	8/29/2007	Wed	5:02:00 AM	409.50

How to Contact Respironics

If you need to contact Respironics directly, call the Respironics Customer Service department at 1-800-345-6443 (US and Canada only) or 1-724-387-4000. You can also use the following address:

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Murrysville, PA 15668
www.respironics.com


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