

Heart Rate (Exercise) Sensor DT298A (for EcoLog XL)



The Exercise Heart Rate sensor is ideal for determining the heart rate of active people by measuring the heart rate **before, during and after exercise**.

The sensor is comprised of a wireless transmitter belt and a Pulse Receiver module. Similarly to the EKG, the Exercise Heart Rate sensor, specifically the transmitter belt, senses the electrical signals generated by the heart. Every heart beat sends an electrical signal to the Receiver module, enabling the heart rate to be determined.

Typical Experiments

- Comparing and evaluating heart rates of different individuals
- Comparing and evaluating the heart rate of athletes versus inactive individuals
- Monitoring the heart rate before, during and after brief vigorous activity (e.g. push ups)
- Monitoring the speed at which the heart rate returns to normal following exercise (recovery rate)

How it Works

The transmitter belt is worn just below the chest and held in place by an elastic strap. The plug-in receiver connects to the EcoLog XL. Two electrodes sense the electrical signals detected by the transmitter. Using a low frequency electromagnetic field, at ECG accuracy, the information is then transmitted to the plug-in Pulse Receiver wirelessly. The receiver then passes a 5 Volt pulse for each heart beat detected to the data logger. The reception range of the plug-in receiver is 80 cm or about 3 feet.



Sensor Specification

Range

Waveform:	0 – 5 V
Transmitter Range:	80 cm
Waveform Resolution:	5 mV
Max. Sampling Rate:	50 samples/sec
Data Logger Input Type:	Digital

Technical Notes

- The transmitter belt contains a non-rechargeable and re-placeable battery, for up to 2,500 hours of wear or use.
- Ensure that the receiver is no more than 80 cm from the Heart Rate Monitor belt.
- To optimize signal reception, keep the receiver in a vertical orientation on the front of the body.
- The Receiver must point to the transmitter in the Heart Rate Monitor belt.
- Remain calm with no talking or erratic breathing to obtain accurate readings.
- Using the sensor or belt around metal or electrical devices may interfere with measurement accuracy.
- If you experience erratic measurements or large fluctuations in the readings, this is probably due to signal loss. The most common causes of signal loss are belt movement, inadequate electrode contact, improper sensor orientation, or the distance between the receiver and transmitter is larger than 80 cm.
- If signal loss occurs, rewet the electrodes, check electrodes contact (tighten the belt) and move the receiver closer to the transmitter.


Equipment List

Exercise Heart Rate complete set (transmitter, receiver and strap)	DT298A
Pulse Receiver only	DT298
T31 transmitter belt only	11634
Elastic strap only	11633



Calibration

The Heart Rate (Exercise) ships fully calibrated. No further calibration is needed.

Using the Heart Rate (Exercise) Sensor with EcoLog XL and EcoLab Software


1. Connect EcoLog XL to the computer.
2. Connect the Heart Rate (Exercise) sensor to the EcoLog XL's sensor input (starting from I/O-1). The sensor is automatically recognized by the EcoLab software.
3. If EcoLog XL is running in one of its stand-alone modes, press the **Stop**  button on the EcoLog XL front panel.
4. Launch EcoLab.
5. In the **Setup** window deactivate the internal sensors by clicking the button next to the sensors' icon and program the EcoLog XL's sample rate and the recording time.

To begin online recording


1. Click **Run**  on the main toolbar.
2. EcoLab automatically opens a graph window displaying the data in real-time, plotting it on the graph as it is recorded.
3. You can stop recording at any time by clicking **Stop**  on the toolbar.

To conduct a remote recording

For remote logging it is necessary to send the setting to EcoLog XL before disconnecting from the computer.



1. In the Setup window deactivate the internal sensors by clicking the button next to the sensors' icon and program the EcoLog XL's sample rate and the recording time.
2. Click **Send Setup**  on the main tool bar, wait until you will see the following message on the EcoLog XL screen:

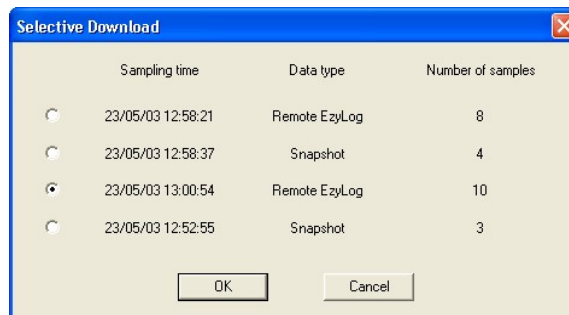
Remote logging
Waiting for Go

3. Disconnect the EcoLog XL from the computer, place the EcoLog XL at the desired recording location and press the **Go**  button on the EcoLog XL front panel.

To download data that was recorded offline

EcoLog XL always stores the last four experiments. To download data that was recorded offline, or while EcoLog XL was not connected to the computer:

1. Connect the EcoLog XL to the computer and. If EcoLog XL is collecting data, click Stop  to end collecting and to return to the main menu.
2. Launch EcoLab.
3. Click **Download**  on the main toolbar to open the **Selective Download** dialog:



The dialog contains details of the stored experiments: the starting time and date, the logging mode and the number of samples taken.

4. Click an option to select the experiment you wish to download, and then click **OK**. This will start the Post-experiment Data Transfer communication mode. Once the transfer is complete, the data will be displayed automatically in the graph window and in the table window.

An Example of using the Heart Rate Sensor

Monitoring heart waveform

Below is a typical graph showing data obtained using a Heart Rate (Exercise) sensor:

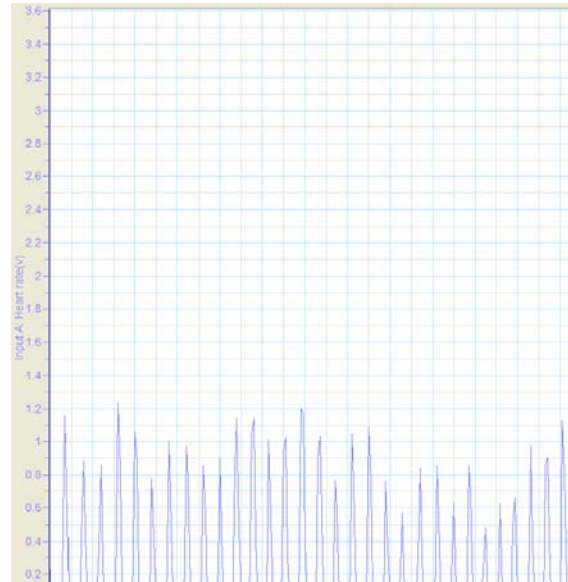


Figure 1: Monitoring heart rate waveform

Technical Support

Please contact Fourier technical support as follows:

Web: http://www.fourier-sys.com/support_support.html

Email: support@fourier-sys.com

Consult the FAQs before contacting technical support:

http://www.fourier-sys.com/support_faq.html

Copyright and Warranty

All standard Fourier Systems sensors carry a one-year warranty, which states that for a period of twelve months after the date of delivery to you, it will be substantially free from significant defects in materials and workmanship.

This Warranty does not cover breakage of the product caused by misuse or abuse.

This Warranty does not cover Fourier Systems consumables such as electrodes, batteries, EKG stickers, cuvettes and storage solutions or buffers.