

# Minnow 2.0T & Minnow 2.0TH User Guide

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### 1. INTRODUCTION TO MINNOW 2.0

The Minnow 2.0 logger is a high accuracy, water resistant, compact, temperature and humidity data logger. The logger features a compact LCD display. The logger comes with a free Windows and MAC application.

This user guide provides basic information about how to use the logger and Windows/MAC applications. Both the logger and the applications have been designed to be intuitive so that you will be up and running with the logger in a matter of minutes.

The Minnow 2.0 comes in two versions; Minnow 2.0T is a temperature only version and Minnow 2.0TH is a temperature and humidity logger. This user guide applies for both versions.



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Figure 1: Senonics Minnow 2.0



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### 2. TECHNICAL SPECIFICATION

For a technical specification of Minnow 2.0 please consult the product overview.

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http://senonics.com/files/Minnow2ProductOverview.pdf



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### 3. USING MINNOW 2.0

Minnow 2.0 logger includes two buttons:

#### START button:

When configured for "Button Press" logger start, this button starts and stops logging. In other configurations, this button is inactive.

#### DISPLAY button:

This button allows the user to cycle through all LCD views.



Figure 2: Buttons, LEDs and LCD

Minnow 2.0 includes two LEDs:

### Status LED:

When the logger starts logging then this LED pulses **green** once for 1 second.

When logging this LED flashes **green** for 7 milliseconds and off for 6 seconds.

When the logger stops then this LED pulses **red** for 1 second then off.

If the logger becomes full this LED flashes **red** for 7 milliseconds and off for 6 seconds.



When a temperature and/or humidity alarm is triggered this LED flashes **red** for 7 milliseconds and off for 6 seconds.

A number of display screens can be stepped through by pressing the "display" button.

The current screen shows current temperature and humidity.



A further screen shows the maximum readings during a logging period.



The third screen shows the minimum readings during a logging period.



There is also a screen to show the average temperature and humidity during logging (from last configuration).



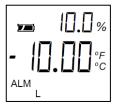


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A screen shows upper alarm settings.



A further screen shows the lower alarm settings.



When the logger is logging the star-like logging indicator **\*** is displayed.



When alarms has been triggered, the alarm indication 0 is displayed.

<b>35.9</b> %
24.32.
CUR



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### 4. PC APPLICATION

Your logger may be controlled from a Windows PC or Mac from USB using a simple application.

To install for Windows download: http://senonics.com/bin/SenonicsPCApplication\_Installer.zip

To install for Mac navigate to: http://senonics.com/mac-installer.html

### 4.1. Senonics GUI Main Screen

The Senonics GUI includes a configuration pane, a graphical pane and a spreadsheet pane. Included also is a connection indication to signify connection or otherwise of a Senonics logger.

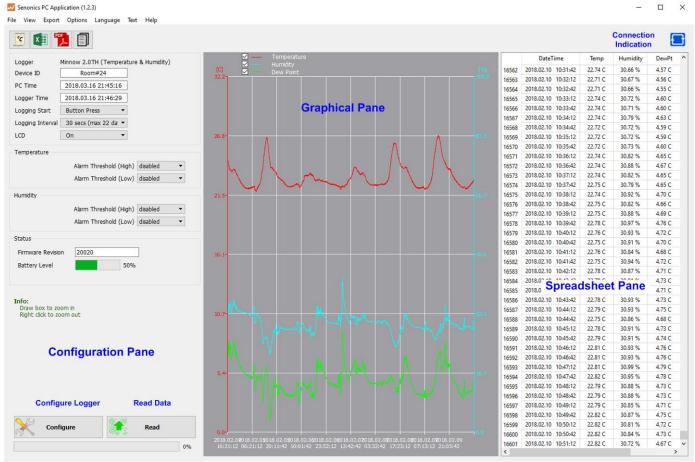


Figure 3: Senonics GUI

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### 4.2. Configuring a Logger

Configuration of the logger is performed with the logger connected.

Update all settings on the configuration pane such as logger name, logger start option (on disconnection, button press or at specified time), logging interval (1 second, 10 seconds, 30 seconds, 1 minute, 10 minutes, 30 minutes or 1 hour), temperature and humidity logging enables, temperature and humidity alarm levels.

When complete press the configure button.



Configure

Wait for the logger to finish configuration (indicated by the busy indication disappearing).



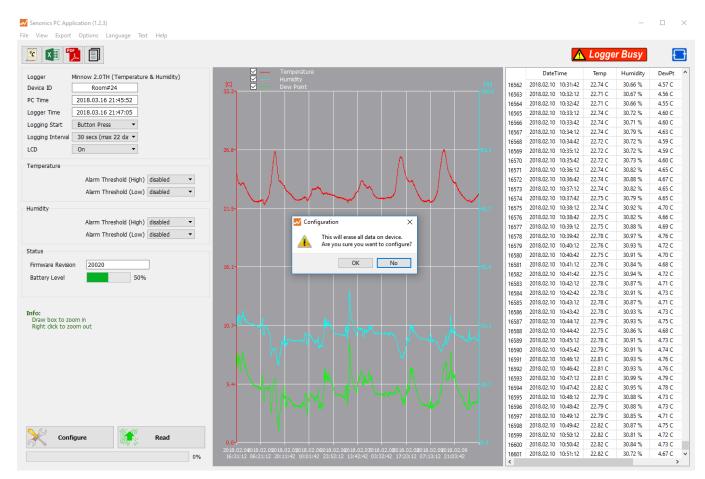


Figure 4: Configuration



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### 4.3. Retrieving Logger Data

Data can be retrieved from the logger by connecting to the logger and then pressing the read button at the bottom left of the GUI. Both the device configuration and logged data will become uploaded and viewable in the configuration, graphical and spreadsheet views.

Senonics PC Application (1.2.3) File View Export Options Language Text Help					-	D X
Logger Minnow 2.0TH (Temperature & Humidity)	✓ — Temperature ✓ — Humidity		DateTime	Temp	Humidity	DewPt ^
Device ID Room#24	C Dew Point (%)	16562	2018.02.10 10:31:42	22.74 C	30.66 %	4.57 C
	32.2	16563	2018.02.10 10:32:12	22.71 C	30.67 %	4.56 C
PC Time 2018.03.16 21:45:16		16564	2018.02.10 10:32:42	22.71 C	30.66 %	4.55 C
Logger Time 2018.03.16 21:46:29		16565	2018.02.10 10:33:12	22.74 C	30.72 %	4.60 C
Logging Start Button Press		16566	2018.02.10 10:33:42	22.74 C	30.71 %	4.60 C
		16567	2018.02.10 10:34:12	22.74 C	30.79 %	4.63 C
Logging Interval 30 secs (max 22 dar 🔻		16568	2018.02.10 10:34:42	22.72 C	30.72 %	4.59 C
LCD On 👻	26.8- A 63.3	16569	2018.02.10 10:35:12	22.72 C	30.72 %	4.59 C
Tamparatura		16570	2018.02.10 10:35:42	22.72 C	30.73 %	4.60 C
Temperature		16571	2018.02.10 10:36:12	22.74 C	30.82 %	4.65 C
Alarm Threshold (High) disabled 🔻		16572	2018.02.10 10:36:42	22.74 C	30.88 %	4.67 C
Alarm Threshold (Low) disabled		16573	2018.02.10 10:37:12	22.74 C	30.82 %	4.65 C
		16574	2018.02.10 10:37:42	22.75 C	30.79 %	4.65 C
Humidity	21.5-	16575	2018.02.10 10:38:12	22.74 C	30.92 %	4.70 C
Alarm Threshold (High) disabled		16576	2018.02.10 10:38:42	22.75 C	30.82 %	4.66 C
		16577	2018.02.10 10:39:12	22.75 C	30.88 %	4.69 C
Alarm Threshold (Low) disabled 🔻		16578	2018.02.10 10:39:42	22.78 C	30.97 %	4.76 C
Status		16579	2018.02.10 10:40:12	22.76 C	30.93 %	4.72 C
		16580	2018.02.10 10:40:42	22.75 C	30.91 %	4.70 C
Firmware Revision 20020	16.1- 50.0	16581	2018.02.10 10:41:12	22.76 C	30.84 %	4.68 C
Battery Level 50%		16582	2018.02.10 10:41:42	22.75 C	30.94 %	4.72 C
		16583	2018.02.10 10:42:12	22.78 C	30.87 %	4.71 C
		16584	2018.02.10 10:42:42	22.78 C	30.91 %	4.73 C
		16585	2018.02.10 10:43:12	22.78 C	30.87 %	4.71 C
Info: Draw box to zoom in		16586	2018.02.10 10:43:42	22.78 C	30.93 %	4.73 C
Right click to zoom out	10.7	16587	2018.02.10 10:44:12	22.79 C	30.93 %	4.75 C
		16588	2018.02.10 10:44:42	22.75 C	30.86 %	4.68 C
		16589	2018.02.10 10:45:12	22.78 C 22.79 C	30.91 %	4.73 C 4.74 C
		16590	2018.02.10 10:45:42 2018.02.10 10:46:12	22.79 C	30.91 % 30.93 %	4.74 C
		16591	2018.02.10 10:46:12	22.81 C	30.93 %	4.76 C
	1 (\)	16592	2018.02.10 10:46:42	22.81 C	30.95 %	4.70 C
	5.4	16593 16594	2018.02.10 10:47:12	22.81 C	30.99 %	4.79 C
	TOTAL AND NOT SAMAN / NI	16595	2018.02.10 10:47:42	22.82 C	30.88 %	4.78 C
		16596	2018.02.10 10:48:12	22.79 C	30.88 %	4.73 C
		16597	2018.02.10 10:48:42	22.79 C	30.85 %	4.75 C
		16598	2018.02.10 10:49:12	22.79 C	30.83 %	4.71 C
		16599	2018.02.10 10:49:42	22.82 C	30.81 %	4.73 C
Configure Read	0.0	16600	2018.02.10 10:50:12	22.82 C	30.81 %	4.72 C
	2018.02.02018.02.02018.02.02018.02.02018.02.02018.02.02018.02.02018.02.02018.02.02018.02.02018.02.02018.02.020	16601	2018.02.10 10:50:42	22.82 C	30.84 %	4.75 C
0%	16:31:12 06:21:12 20:11:42 10:01:42 23:52:12 13:42:42 03:32:42 17:23:12 07:13:12 21:03:42	<	2010/02/10 10/01/12	22.02 0	30.72.78	4.07 C V

Figure 5: Retrieving Logger Data

### 4.4. Saving and Opening CSV

Logger data and configuration may be exported to file in Comma Separated Value (CSV) format. This format can be edited by third party software such as Microsoft Excel or read back into the Logger PC application at a later point.

To write a CSV file navigate **File>Save CSV**.

To read a CSV file back select **File>Open CSV**, and then navigate to the CSV file.



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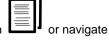
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### 4.5. Cloning Loggers

For customers that expect to configure multiple loggers with the same configuration, Senonics offer the clone feature.

First, press the clone icon **File>Clone Logger**.



You are then presented with two copies of the configuration pane. Enter your configuration in the left-most pane. When you are complete press the "Clone Settings" button. This will copy all settings across to the right-most pane. When you are satisfied press the "Lock Settings" tick-box.

You can then connect loggers to your PC. When you press "Configure" the new logger is programmed each time with the same cloned settings.

Be aware that the Device ID is not cloned, in order to preserve the logger identification. At any time, you can unlock, change settings and then lock again.

He for the part Cytoris Linguige for the part     Logping Minimude 2011fi (Empendure & Humidh)   Downed Jb Room224   Composition Device JD   Logping Start: Station Presi   Logping Start: Amm Threshold (High) Roaded •   Amm Threshold (Log) Roaded • Amm Threshold (Log) Roaded •   Numdfy Amm Threshold (Log) Roaded •   Amm Threshold (Log) Roaded •   Statis   Premare Roaden 2020   Ratter (sreet) Statis   Cone Settings   Cone Settings	Senonics PC Application (1.2.3)		- 🗆 X
Logger       Mnnow 2.011 (Tempenture & Humdhy)         Device ID       Nonm24         PC Tme       2018.03.62 (146.29)         Logger Thme       2018.03.62 (146.29)         Logger Start       Button Press         Logger Start       Button Press         Logger Start       Button Press         Logger Start       Button Press         Log       On         Tempenture       Alam Threshold (Haph)         Alam Threshold (Haph)       Gabled         Battery Level       5trius         Ettors       Cone Sattings         Clone Sattings       Cone Sattings	File View Export Options Language Text Help		
Device ID Boom 24   PC Time 2018.63.62.146.20   Logging Time 2018.63.15.21.147.23   Logging Time Alam Timeshold (Low) disabled     Alam Timeshold (Low) disabled   Alam Timeshold (Low) disabled     Alam Timeshold (Low) disabled   Alam Timeshold (Low) disabled     Status Image: Status   Pittings <td></td> <td></td> <td></td>			
Logong Start Betton Press Logong Interval 39 ses (max 22 di LOD On C Temperature Alam Threshold (High) disabled • Alam Threshold (Low) disabled • Alam Thresho	Device ID         Room#24           PC Time         2018.03.16 21:46:20	Device ID Room#24	
Temperature   Alarm Threshold (Hiph)   Battery Level   20220   Battery Level   20200         Configure	Logging Start Button Press   Logging Interval 30 secs (max 22 da	Logging Interval 30 secs (max 22 da 💌	
Alarm Threshold (Hiph) disabled   Alarm Threshold (Low) disabled   Humdity Alarm Threshold (Hiph)   Alarm Threshold (Hiph) disabled   Alarm Threshold (Low) disabled   Alarm Threshold (Low) disabled   Alarm Threshold (Low) disabled   Alarm Threshold (Low) disabled   Status Icok Settings   Battery Level 50%    Clone Settings			
Alarm Threshold (High) disabled   Alarm Threshold (Low) disabled   Alarm Threshold (Low) disabled     Alarm Threshold (Low) disabled     Alarm Threshold (Low) disabled     Alarm Threshold (Low) disabled     Alarm Threshold (Low) disabled     Alarm Threshold (Low) disabled     Alarm Threshold (Low) disabled     Alarm Threshold (Low) disabled     Alarm Threshold (Low) disabled     Alarm Threshold (Low) disabled     Alarm Threshold (Low) disabled     Alarm Threshold (Low) disabled     Status Lock Settings     Cone Settings     Configure	Alarm Threshold (High) disabled 🔻	Alarm Threshold (High) disabled 🔻	
Firmware Revision   Battery Level   50%	Alarm Threshold (High) disabled 🔻	Alarm Threshold (High) disabled 🔻	
Configure	Firmware Revision 20020	Lock Settings	
Configure			
Configure			
Configure			

Figure 6: Logger Cloning

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### 4.6. Auto Read to File

Some customers like the ability to be able to connect a logger and automatically download and save data to file.

#### Select Options>Read and Save Options.

You are then presented with three options:

- a) to disable auto-reading of the logger (default)
- b) to automatically read the logger data on connection to the Senonics GUI
- c) to automatically read the logger data on connection to the GUI and save to file

In saving to file you can change the order of the date, time and logger ID as they appear in the file name.

Read and save Options X					
None     Auto read on connection     Auto read and save on connection					
Log Folder	C:/Desktop				
Include Fields	<ul> <li>✓ Logger ID</li> <li>✓ Date</li> <li>✓ Time</li> </ul>	Up Down			
	Room#24_20180316_214712.csv				

### 4.7. Opening Excel

It is possible to press the Excel button or navigate **Export>Open Excel** to show the data in Microsoft Excel. During this process the user needs to select if your version of Excel is expecting and "." or "," to represent the number decimal point.

This capability assumes that Microsoft excel is installed on your PC. If not, then the option will not work. This option is not available on the Mac version of the GUI.

# 

Figure 8: Opening Excel

### 4.8. PDF Reports



Open a one-page PDF report by pressing the PDF icon or navigating Export>Save PDF. A PDF is written to summarize the data in the logger by way of statistics and as a graph. The PDF can be written either in US Letter page size of A4 page size.

The user can enter one's own notes at the footer of the PDF. PDFs are written to file and can be opened by any standard PDF reader – like Adobe Acrobat.

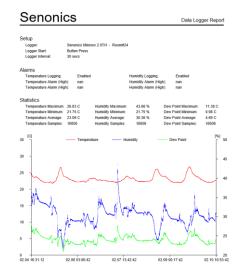


Figure 9: Writing PDF Reports

Figure 7: Read and Save Options

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### 4.9. External Sensors

Minnow 2.0 is capable of working with an external sensor.

- 1. Plug your Minnow 2.0 into the PC with the PC application running. The extension cable will be disconnected.
- 2. Select all desired configuration.
- 3. Select the type of extension cable you have.
- 4. Configure.
- 5. Disconnect the logger
- 6. Connect the extension cable.

The logger will be showing internal (CUR) and external (EXT) readings as one cycles through the display screens.





📈 Senonics PC App	lication (1.2.3)						
File View Export	Options L	anguage	Text H	lelp			
<u></u>		☑ Inter □ Ext S		Show internal sense external sensor dat			
Logger Minnow 2.0TH (Temperature & Humidity)							
Device ID         Room#25           PC Time         2018.03.16 21:54:49							
							Logger Time
Logging Start	Button Pres	s <b>v</b>					
Logging Interval	30 secs (ma	x 22 da 🔻					
LCD	On	•					
Extension Cable		-					
Cable Type	External T/H None		-				
– Temperature (Tyt	External T Ca External T/H						
	Alarm Th	reshold (Hig	n) disa	bled 👻			
	Alarm Th	reshold (Lo	w) disa	bled 👻			
Humidity (Ext Sen	(sor)						
Humany (Exc Sen		and and Auto	h X alter				
		reshold (Hig					
	Alarm Th	reshold (Lo	w) disa	ibled 👻			
Status							
Firmware Revisio	n						
Battery Level			0%	i			
Info: Draw box to zo Right click to zo							
Conf	igure		F	tead			

Figure 10: External Sensor Configuration



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When you are ready to download the data:

- 1. Disconnect the external sensor
- 2. Connect the logger to the PC
- 3. Read the logger. Both internal and external data is downloaded.

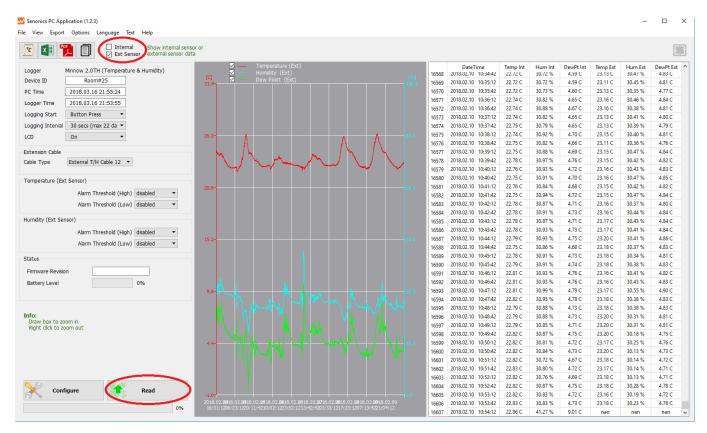


Figure 11: Downloading with an External Sensor

- CVS files and Excel files will contain both sets of data.
- PDF reports are of the external data.
- The PC application graph can show internal data by clicking on the "Internal" checkbox and then "Read". To show the external data click on the "External" checkbox and then "Read".



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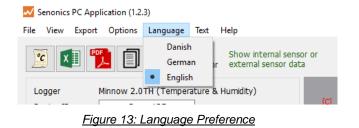
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### 4.10. Text Size

It is possible to change the application text size by selecting from the Text pulldown on the program header. The Auto setting selects one of the sizes based on screen resolution. When the application reopens, text size is remembered.

# 4.11. Language

The GUI application comes with language translation. Today one can select between English, German and Danish from the Language pulldown on the program header. Future versions will support more languages. When the application re-opens, language preference is kept. Senonics PC Application (1.2.3) File Options Language Text Help View Export Small Text Inte sensor or °C х Medium Text 🗹 Ext or data Large Text Loader Minnow 2.0TH (Temper Auto Device ID Room#25 Figure 12: Altering Text Size



## 5. BATTERY REPLACEMENT

The Minnow 2.0 logger runs from two standard coin cell batteries. We recommend a CR2032 240mAH coin cell battery. There are different manufacturers but a good one is Panasonic CR-2032. You can find it easily on the web from different places such as www.digikey.com, www2.mouser.com and probably in your local supermarket. The key thing is to choose a CR2450 battery with high capacity since this will translate into a longer logger battery life.

First remove the Minnow cover by unscrewing the four fastener screws (#1 Philips) at the rear of the logger.

Insert two new batteries as shown being careful not to touch any exposed electronics in the process. Be careful also to connect the batteries in the correct orientation.

Finally re-attach the cover and tighten the fastener screws again (be careful not to over tighten).

## 6. SUPPORT

For technical support regarding your Senonics logger please contact:

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