



Operator's Manual

TrendSenseTM and TrendSense W

TrendSense Data Memory Module and TrendSense Communicator



English



Consult Instructions for Use

Nonin makes no claim for use of the product other than for those uses specified herein and disclaims any liability resulting from other uses. Observe all warnings, cautions and notes.

Unauthorized use, copying, or distribution of this manual is prohibited without written consent from Nonin Medical, Inc.

Nonin Medical, Inc.

13700 1st Avenue North
Plymouth, MN 55441-5443, USA

+1 (763) 553-9968
(800) 356-8874 (USA and Canada)
Fax: +1 (763) 553-7807
E-mail: info@nonin.com

Nonin Medical B.V.

Prins Hendriklaan 26
1075 BD Amsterdam, Netherlands

+31 (0)13 - 79 99 040 (Europe)
Fax: +31 (0)13 - 79 99 042
E-mail: infointl@nonin.com

nonin.com



Authorized EC Representative:

MPS, Medical Product Service GmbH
Borngasse 20
D-35619 Braunfels, Germany

References to “Nonin” in this manual shall imply Nonin Medical, Inc.

TrendSense™ is a trademark of Nonin Medical, Inc. Microsoft® and Windows® are registered trademarks of Microsoft Corporation.

© 2013 Nonin Medical, Inc.
8602-001-03

Contents

Introduction.....	1
About TrendSense (Sens TS)	1
About TrendSense W (Sens TS W).....	1
About TrendSense Communicator	1
Connecting TrendSense	2
Connecting the Module to a Monitor or PC	2
Connecting TrendSense to a Patient Monitor	2
Connecting TrendSense to a PC Serial Port with a Serial Cable	2
TrendSense Compatibility	3
TrendSense Communicator.....	4
TrendSense Communicator Installation	4
Using TrendSense Communicator	4
Getting Started.....	4
Selecting a COM Port	5
Transferring Data from TrendSense	6
Entering Patient Data.....	6
Deleting Data from TrendSense	6
Opening Excel Files	7
Status and Progress Bars	7
Excel Files	8
Description.....	8
Sample Data – TrendSense.....	8
Sample Data – TrendSense W	8
Creating Charts	9
Service, Support, and Warranty	10
Warranty	10
Specifications	11

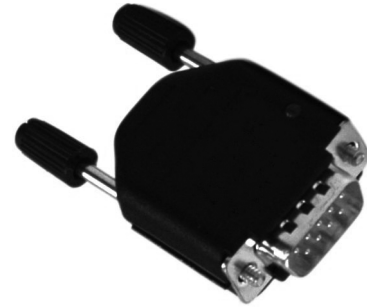
Introduction

About TrendSense (Sens TS)

TrendSense is a data memory module that can be connected to Nonin's LifeSense[®], PulseSense[™], and RespSense[™] monitors. It stores data that is sent from the monitor via the RS232 serial port at a rate of once per second for up to 72 hours.

TrendSense does not require an external power source. Power is supplied from the host system (patient monitor or PC), which allows the patient monitor to be portable and still be able to store data.

TrendSense stops collecting data when disconnected from the monitor or when the monitor is turned off. At start-up or when TrendSense is connected to the monitor, TrendSense identifies new data with the name of the monitor being used (i.e., LifeSense, RespSense, or PulseSense).



About TrendSense W (Sens TS W)

TrendSense W, which is compatible with the LifeSense and RespSense monitors, functions the same as TrendSense, but has the added capability of generating a capnogram in the Microsoft Excel[®] chart. TrendSense W stores data that is sent from the monitor via the RS232 serial port at a rate of four times per second for up to 36 hours.

About TrendSense Communicator

TrendSense Communicator is the PC software that is used to transfer or delete stored data from the TrendSense data memory module. When the data is transferred from the memory module, it is automatically stored as a Microsoft Excel file for analysis.

Connecting TrendSense

Connecting the Module to a Monitor or PC

To collect data, connect the TrendSense data memory module to the monitor's serial port. To transfer or delete data, use the provided serial cable to connect TrendSense to a PC serial port.

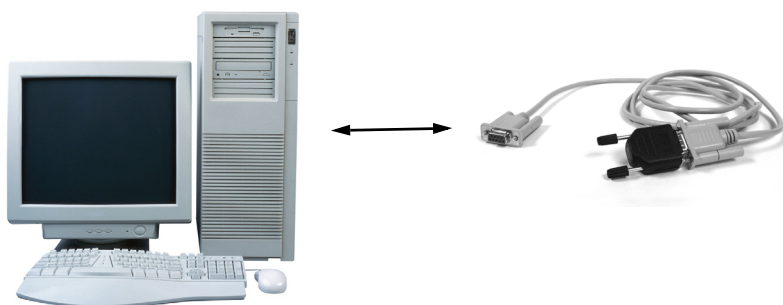
Connecting TrendSense to a Patient Monitor

Use the screws on the TrendSense module to firmly connect the module to the monitor.

NOTE: Do not disconnect TrendSense from the monitor until the monitor is turned off. Data may be lost if TrendSense is disconnected while the monitor is on.



Connecting TrendSense to a PC Serial Port with a Serial Cable



TrendSense Compatibility

The TrendSense data memory module is compatible with the following patient monitors:

- LifeSense (TrendSense/TrendSense W)
- RespSense (TrendSense/TrendSense W)
- PulseSense (TrendSense)

The minimum and recommended PC performance is as follows:

Specification	Minimum	Recommended
Processor (CPU)	PIII 600 MHz	PIII 1 GHz
Memory (RAM)	128 MB	256 MB
Hard drive space	20 MB	200 MB
Operating system	Windows® XP	Windows XP, 7, or 8
Other	CD drive, serial port	CD/DVD/BR drive, serial port

TrendSense Communicator

TrendSense Communicator Installation

Before installing, make sure that you have closed all programs running on your PC.

To install TrendSense Communicator on your PC, put the installation disk into the CD/DVD drive. The setup program should start automatically.

1. When the Setup Welcome screen appears, click **Next** to continue.
2. Choose the program's installation path. Click **Next** to continue.
3. Choose the Start Menu Folder for the program's shortcut. The recommended default is "Nonin" (path: Start/Programs/Nonin). Click **Next** to continue.
4. Select any additional tasks that should be performed during Setup. Click **Next** to continue.
5. Click **Install**. Files are copied to your hard drive and the message "Setup has finished installing TrendSense Communicator" displays.
6. Click **Finish** to exit Setup.

If automatic installation does not occur, go to your Desktop and click on **My Computer**. You will see an icon of a serial cable on your CD/DVD drive and the text "TrendSense." **Right click** on the icon and then select **Install TrendSense Communicator**.

If you see a warning message that you have already installed TrendSense Communicator, delete the previous installation before proceeding or cancel the setup.

NOTE: Before installing the software, make sure that you have deleted all previous installations. This can be done from the **Add or Remove Programs** which is located in the **Control Panel** under **Start/Settings**.

NOTE: If you are prompted to restart your computer during the installation, do so and then run the installation program again.

NOTE: If there is a problem during the copying of files, make sure that you are installing to a directory where you have full access. If this does not solve the problem, verify that the file has not already been copied and in use.

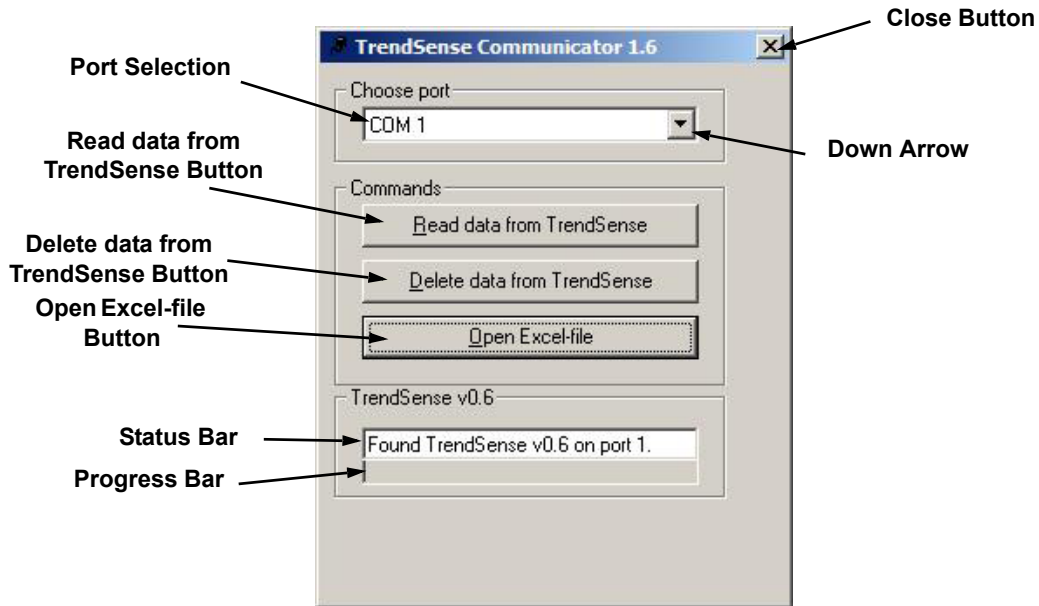
Using TrendSense Communicator

Getting Started

To start the program:

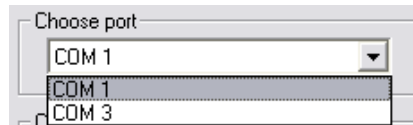
1. Click **Start**.
2. Click **Programs**.
3. Select the program group folder (default "Nonin Medical, Inc.").
4. Click **TrendSense Communicator**.

5. TrendSense Communicator opens.

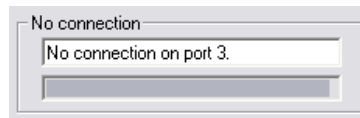


Selecting a COM Port

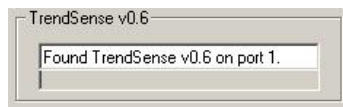
Connect the TrendSense data memory module to a PC using the cable that is provided with the module. Using the down arrow to view a list of available ports, select the COM port to which the module is connected.



If the wrong COM port is chosen, a message appears in the status bar that the software was unable to connect.



If the correct COM port is selected, the status bar displays the version of TrendSense and the "Read data from TrendSense" and "Delete data from TrendSense" buttons are available.



Transferring Data from TrendSense

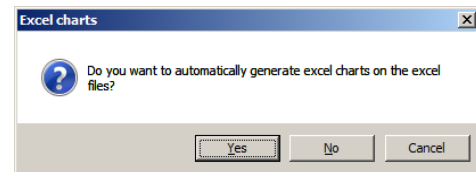
To transfer data from the module, click the **Read data from TrendSense** button or press Alt+R.

Read data from TrendSense

Before the data is transferred, you will be asked to select a filename for the Excel file that will be created.

After the data has been transferred and stored as an Excel file, a message box displays and asks if you want to automatically generate Excel charts.

- Click **Yes** – a Patient Data window will display for each record on the TrendSense module (see Entering Patient Data).
- Click **No** or **Cancel** – data transfers without opening the Patient Data window.



Entering Patient Data

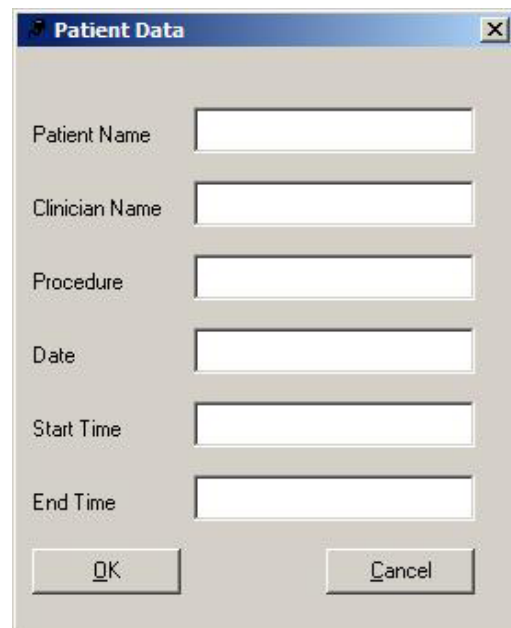
NOTE: The Patient Data window only displays if **Yes** is clicked when the user is asked "Do you want to automatically generate Excel charts in the Excel file?"

When multiple records are on the TrendSense module, a blank Patient Data window will display for each record. Patient data cannot be associated with multiple records.

Records are output from oldest to newest, so the information entered in the first Patient Data window will attach to the first (oldest) record. The next Patient Data window will attach to the second record, etc.

The information entered in this window displays in the Excel chart header. The Patient Name, Clinician Name, and Procedure fields allow for a maximum of 32 characters. The Date, Start Time, and End Time fields allow for a maximum of 16 characters.

After entering desired information, click **OK**. If patient information is not needed, click **Cancel**.

A window titled "Patient Data" with a close button (X) in the top right corner. It contains six text input fields: "Patient Name", "Clinician Name", "Procedure", "Date", "Start Time", and "End Time". At the bottom, there are two buttons: "OK" and "Cancel".

Deleting Data from TrendSense

To delete data on the TrendSense module, click the **Delete data from TrendSense** button or press Alt+D.

Delete data from TrendSense

Before deleting data, a message box displays and asks you to confirm deletion of all data on the TrendSense module. To confirm, click **OK**. The delete command takes 20 seconds to complete.

Opening Excel Files

Microsoft Excel must be installed on the PC to open stored data Excel files. To open files, click the **Open Excel-file** button or press Alt+O.

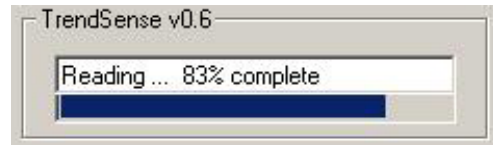


TrendSense does not have to be connected to the PC to open stored data files.

Status and Progress Bars

The status bar displays text messages on what has occurred.

The progress bar indicates status progress while deleting or transferring data from the module. The progress bar also indicates how much memory is available on the module. A solid blue bar indicates that the memory is full; a gray bar indicates the memory is empty.



Excel Files

Description

The Excel files created by the TrendSense Communicator are automatically renamed to YourFileName_Logg1_Part1.xls.

The Log number will change to the next consecutive number each time the TrendSense module is connected to a monitor. Each Excel part is limited to 32,000 rows, which is almost 9 hours of data when using TrendSense and 2.2 hours of data when using TrendSense W. Once this is exceeded, the Part number will change to the next consecutive number. Time is reset for each new log.

Sample Data – TrendSense

	Column A Time (data sent once per second)	Column B EtCO ₂ Value	Column C Pulse Rate	Column D %SpO ₂	Column E Respiration Rate	Monitor			
1	Time	EtCO ₂	Pulse	SpO ₂	RR	LifeSense version 9 mmHg			
2	00:00:01	46	75	99	14				
3	00:00:02	46	75	99	14				
4	00:00:03	46	75	99	14				
5	00:00:04	46	75	99	14				

Sample Data – TrendSense W

	Column A Time (data sent four times per second)	Column B EtCO ₂ Value	Column C Pulse Rate	Column D %SpO ₂	Column E Capno – see note below	Column F Respiration Rate	Monitor			
1	Time	EtCO ₂	Pulse	SpO ₂	Capno	RR	LifeSense version 9 mmHg			
2	00:00:00.00	46	75	99	10	14				
3	00:00:00.25	46	75	99	7	14				
4	00:00:00.50	46	75	99	6	14				
5	00:00:00.75	46	75	99	6	14				
6	00:00:01.00	46	75	99	6	14				

NOTE: The Capno column contains the data that is used to generate a capnogram in the Excel charts. This column may be hidden when working with the raw data in Excel.

Creating Charts

To create a chart in Microsoft Excel, select columns A to E and use the Excel chart guide (Inserts/Charts). Choose a linear chart and then click **Finish**.

NOTE: Excel charts can be automatically created by the TrendSense Communicator software. Excel files with charts use more disk space than Excel files without charts.



Service, Support, and Warranty

A return authorization number is required before returning any product to Nonin. To obtain this return authorization number, contact Nonin Technical Service:

Nonin Medical, Inc.
13700 1st Avenue North
Plymouth, Minnesota, 55441-5443 USA

(800) 356-8874 (USA and Canada)
+1 (763) 553-9968 (outside USA and Canada)
Fax: +1 (763) 553-7807
E-mail: technicalservice@nonin.com

Nonin Medical B.V.
Prins Hendriklaan 26
1075 BD Amsterdam, Netherlands

+31 (0)13 - 79 99 040 (Europe)
Fax: +31 (0)13 - 79 99 042
E-mail: technicalserviceintl@nonin.com

nonin.com

Warranty

NONIN MEDICAL, INCORPORATED, (Nonin) warrants to the purchaser, for a period of 1 year from the date of purchase, each TrendSense memory module and TrendSense communicator. Please consult your local Nonin distributor for additional information.

Nonin shall repair or replace any TrendSense found to be defective in accordance with this warranty, free of charge, for which Nonin has been notified by the purchaser by serial number that there is a defect, provided said notification occurs within the applicable warranty period. This warranty shall be the sole and exclusive remedy by the purchaser hereunder for any TrendSense delivered to the purchaser which is found to be defective in any manner, whether such remedies be in contract, tort, or by law.

This warranty excludes cost of delivery to Nonin. Nonin reserves the right to charge a fee for return shipping. All repaired units shall be shipped Ex Works Nonin Medical, Inc., Plymouth, MN. Nonin reserves the right to charge a fee for a warranty repair request on any TrendSense that is found to be within specifications.

The TrendSense is a precision electronic instrument and must be repaired by knowledgeable and specially trained Nonin personnel only.

Accordingly, any sign or evidence of opening the TrendSense, field service by non-Nonin personnel, tampering, or any kind of misuse or abuse of the TrendSense, shall void the warranty in its entirety. All non-warranty work shall be done according to Nonin standard rates and charges in effect at the time of delivery to Nonin.

DISCLAIMER/EXCLUSIVITY OF WARRANTY:

THE EXPRESS WARRANTIES SET FORTH IN THIS MANUAL ARE EXCLUSIVE AND NO OTHER WARRANTIES OF ANY KIND, WHETHER STATUTORY, WRITTEN, ORAL, OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, SHALL APPLY.

Specifications

Power Data
Power Consumption: < 85 mW from monitor Input Voltage: 7.7 VDC from monitor
Physical Data
Dimensions: 38 x 32 x 17 mm Weight: 11 g
Environment
Working Temperature: 5 °C to 40 °C (41 °F to 104 °F) Storage Temperature: -20 °C to 50 °C (-4 °F to 122 °F) Humidity: 10 – 90% relative humidity (non-condensing) Atmospheric Pressure: 645 – 795 mmHg
Memory Data
Log Interval: 1 time/second (TrendSense) 4 times/second (TrendSense W) Interval Accuracy: ±1% Total Log Time: 72 hours (TrendSense) 36 hours (TrendSense W) Total Time Accuracy: ±2%

NOTE: Specifications subject to change without notice.
