



Operator's Manual

Model 8500P
Printer Module

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Precautions for Use

Warnings

- Do not operate in an explosive atmosphere.
- Do not operate in a magnetic resonance imaging (MRI) environment.
- There are no user serviceable parts inside. Refer technical service requirements to qualified NONIN personnel.
- The use of the Model 8500P may result in increased emissions or decreased immunity of the pulse oximeter to which it is connected.

Cautions

- Do not use caustic or abrasive cleaning agents.
- Do not allow any fluids to leak inside the printer; sensitive electronic components can be damaged.
- Use extreme care when attempting to remove paper around the ceramic head assembly.
- Operating the printer without any paper could damage the thermal print head.
- In compliance with the European Directive on Waste Electrical and Electronic Equipment (WEEE) 2002/96/EC, do not dispose of this product as unsorted municipal waste. This device contains WEEE materials; please contact your distributor regarding take-back or recycling of the device. If you are unsure how to reach your distributor, please call Nonin for your distributor's contact information.

Introduction

The 8500P Printer Module facilitates real-time data output printing from the Nonin 8500 Series Pulse Oximeter. The data is transmitted via direct connection through the 9 pin connector. The hard copy output is available in up to 7 different formats, based on the mode selected on the 8500 Pulse Oximeter.

The 8500P requires no batteries. It receives power from the 8500 Pulse Oximeter through the 9 pin connector.

The system is powered on when the "1" switch on the 8500 Pulse Oximeter is pressed.

Printing

Actuation of the 8500 "1" switch initiates printing per the mode selected by the user on the Model 8500. Mode selection range is from 00 - 15. Only modes 00 - 05 and 15 are operational at this time. Modes 06 - 14 are reserved for future use. (See Table 1)

WARNING! The use of the Model 8500P may result in increased emissions or decreased immunity of the pulse oximeter to which it is connected.

Header and Format

When the Model 8500 is turned on, the 8500P will print a header. (See "8500 Setup Mode.")

```
NONIN MODEL 8500  RXXX
HH:MM:SS DD MMM YY
MODE - XX
Patient _____
```

The print format :

```
HH:MM:SS SpO2 = XXX HR = XXX
```

Real Time Print Modes

Real-time print mode allows users to record oxygen saturation and pulse rate values directly from the Model 8500 while the oximeter is connected to the patient. Printout from the 8500M memory unit is not available using the 8500P. (See notes on Table 1.)

In modes 0, 1, and 2, the 8500P prints one line of oximeter data at programmed time intervals. In modes 3, 4, and 5, the 8500P prints two lines of oximeter data at programmed time intervals. The first printed line indicates the minimum SpO₂ since the last printed line. The second printed line indicates the actual SpO₂ data at the programmed time interval.

Touch Print

When mode 15 is selected, no printing occurs until the user initiates a print cycle by pressing the "1" switch on the Model 8500. In addition, Touch Print can be activated at any time in all the other print modes by pressing the "1" switch.

Table 1. Real Time Print Modes

00	10 seconds per data point				(plus touch print)
01	30 seconds per data point			"	"
02	2 minutes per data point			"	"
03	10 seconds per data point (plus a minimum SpO ₂)			"	"
04	30 seconds per data point	"	"	"	"
05	2 minutes per data point	"	"	"	"
06	Reserved - duplicate mode 0				
07	Reserved - duplicate mode 1				
08	Reserved - duplicate mode 2				
09	Reserved - duplicate mode 0				
10	Reserved - duplicate mode 1				
11	Reserved - duplicate mode 2				
12	Reserved - duplicate mode 0 *				
13	Reserved - duplicate mode 1 *				
14	Reserved - duplicate mode 2 *				
15	Touch print only				

* These modes will not respond to 8500 unit with software version "R134" or below.

Notes:

1. The 8500P will not print 8500M memory data. The Memory Dump function will operate with 8586PI printer interface.

8500 Setup Mode

The setup mode is initiated by holding the arrow key while turning on the unit with the "1" key. The "1" key is used to advance to the next setup entry, and the arrow key is used to advance the optional value of this entry.

Printer and Clock Settings

"Prn" will appear in the left-hand display, indicating print setup mode. Select the print mode by pressing the arrow switch until the mode on the right-hand display indicates the desired mode. Advance to the clock setting mode by pressing the "1" switch. Each time the arrow switch is pressed, the number on the right-hand display will increment, starting with the value for the current parameter stored in memory. When the correct value appears in the right-hand display, pressing the "1" switch will advance the left-hand display to the next sequential parameter listed in Table 1. This process is continued until all parameters are set. The settings can be checked easily, since the first value displayed for each parameter represents the current setting. When the setting sequence is complete, the 8500 oximeter exits the clock setting modes and begins normal operation.

Operation

Setup

Disconnect the sensor or patient cable from the Model 8500. Slide the 8500P printer module onto the Model 8500 until it is firmly seated on and plugged into the sensor connector. Connect the sensor to the printer. The printer is then ready for operation. (See Figure 1.)

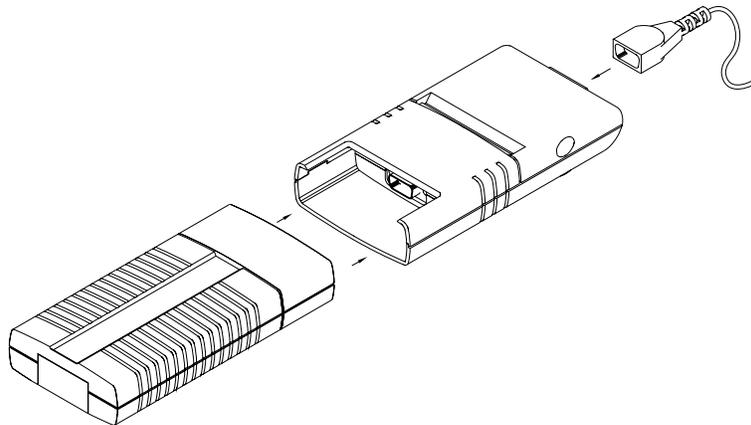


Figure 1. Setting up the Printer.

WARNING! The use of the Model 8500P may result in increased emissions or decreased immunity of the pulse oximeter to which it is connected.

NOTE: Disconnecting the 8500P printer from the 8500 pulse oximeter during operations will cause the 8500P printer to turn OFF.

Loading Paper

First prepare the paper edge by cutting an arrow point as shown in Figure 2. Remove the top paper cover at the rear of the printer module by pulling the cover from the printer, and slide the cut paper edge into the bottom opening on the printer inside the module. Place the roll carefully in the module case. Pull the paper out the top about 2 inches (5 cm), and close the paper cover. (See Figure 2.)

CAUTION: Failing to prepare the paper edge by cutting an arrow point (as shown on Figure 2) can result in paper jams.

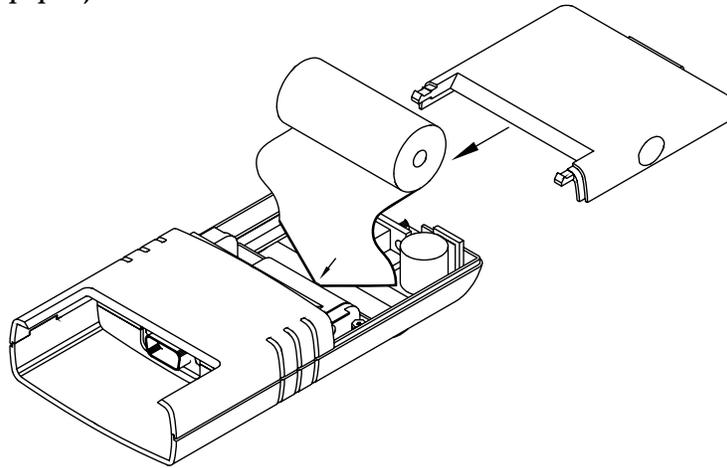


Figure 2. Loading Paper into the Printer.

Cleaning

The outside of the printer module may be cleaned with a cloth dampened with a mild detergent. The inside of the printer may be cleaned of paper debris or dust by using a camera style dust blower.

CAUTION: Do not allow any fluids to leak inside the printer; damage can occur to sensitive components.

CAUTION: Use extreme care when attempting to remove paper around the ceramic head assembly.

Specifications

1. Temperature

- a) Operating + 0 to +45 degrees C
- b) Non Operating - 20 to +45 degrees C

2. Humidity

- a) Operating 10 to 90 % Non Condensing
- b) Non Operating 10 to 95 % Non Condensing

3. Dimensions

3.2"W x 6.0"H x 1.1"D

4. Weight

- a) Printer 6.5 ounces
- b) Printer plus 8500 1.1 pounds

5. Paper Roll Size

7/8" OD x 2 1/4" W x 236" L
(24mm) x (57mm) x (6M)

6. Recording Capacity (per roll)

- @ max. print rate (mode 3) 3.25 Hrs
- @ min. print rate (mode 2) 75.0 Hrs

7. Power Consumption:

- @ max. print rate (mode 3) 80% reduction of 8500 battery life
- @ min. print rate (mode 2) 20% reduction of 8500 battery life

NOTE: The 8500 pulse oximeter typically operates for 100 hours continuously from a new set of alkaline batteries when used without the 8500P Printer.

Service and Maintenance

The solid state circuitry within the Model 8500P printer requires no periodic maintenance or calibration. The outside of the model 8500P enclosure may be cleaned with a soft cloth dampened with a mild detergent. *Do not use caustic or abrasive cleaning agents.* The inside of the model 8500P printer may be cleaned of paper debris or dust by using a camera style dust blower.

CAUTION: Use extreme care when attempting to remove paper around the ceramic head assembly.

Nonin does not recommend field repair of the Model 8500P. Nonin will repair out of warranty Printers for a nominal hourly rate plus parts costs. All repairs include complete retest.

If you choose to repair the printer, observe the following cautions:

CAUTION: To prevent damage to the electronic circuitry, perform repair on an anti-static workstation, use a ground strap and grounded repair equipment.

CAUTION: After any soldering, thoroughly clean the circuit board with a safe and industry standard board cleaning agent.

After any repairs are made, the printer must be tested to ensure correct operation.

Warranty

NONIN MEDICAL, INC. (Nonin) warrants to the purchaser, for a period of one year from the date of delivery, that each 8500P printer when properly used shall perform to specifications supplied within this manual. Nonin shall repair all systems or accessories 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 here under for any systems or accessories delivered to the purchaser that are found to be defective in any manner, whether such remedies be in contract, tort or by law.

This warranty excludes cost of delivery to and from NONIN. All repaired units shall be received by the purchaser at NONIN's place of business. NONIN reserves the right to charge a fee for a warranty repair request on any device that is found to be within specifications.

These systems and accessories are sensitive and must be repaired by knowledgeable and specially trained personnel only. Accordingly, any sign or evidence of opening the system, field service by non-Nonin personnel, tampering or any kind of misuse or abuse of the system or accessories, shall void the warranty in its entirety.

All non-warranty work shall be done according to Nonin standard rate 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.

Accessories

The following accessories are provided with the 8500P printer.

- Thermal Paper Roll (5 rolls with unit)

The following accessories are available for the 8500P printer.

- Model 8500P-PAP Thermal Paper Roll (20/ box)
- Model 8500P-CC Carrying Case

For more information, contact:

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