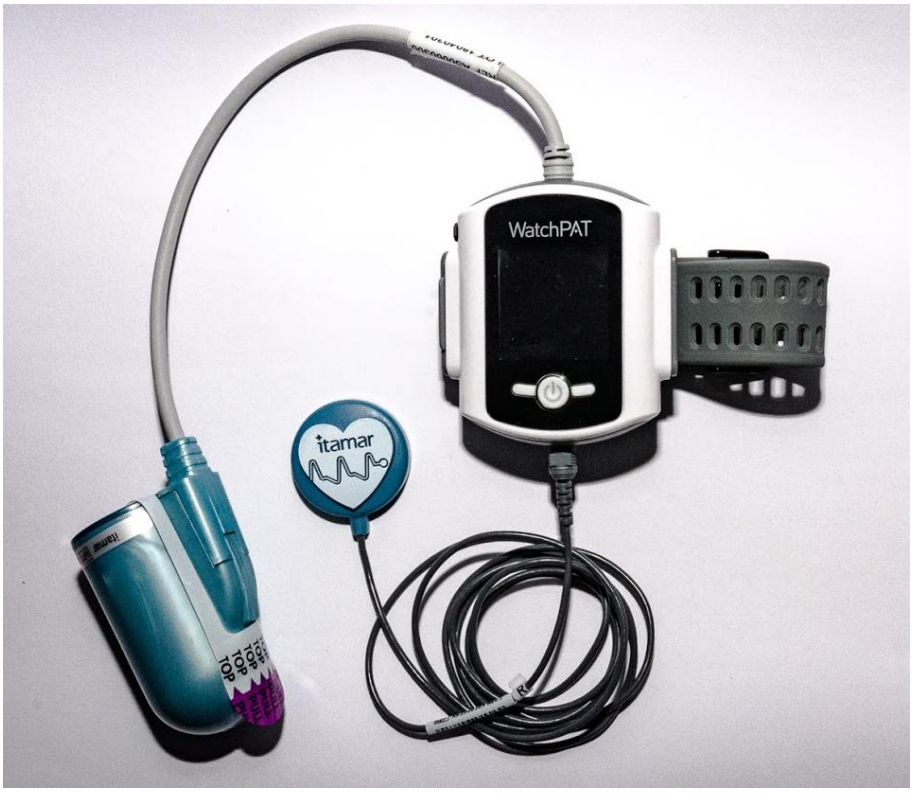
WatchPAT™300

Operation Manual

Itamar Medical REF OM2196380



℞only **Caution: Federal law restricts this device to sale by or on the order of a licensed healthcare practitioner**

DISCLAIMER

Itamar Medical Ltd. shall not be held responsible in any manner for any bodily injury and/or property damage arising from operation or use of this WatchPAT™ other than that which adheres strictly to the instructions and safety precautions contained herein and in all supplements hereto and according to the terms of the warranty provided in the License Agreement available at www.itamar-medical.com/lmages/licensewp.pdf.

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This product and/or method of use, is covered by one or more of the following US patents: 6319205, 6322515, 6461305, 6488633, 6916289, 6939304, 7374540, as well as any pending US patent applications and corresponding patents and/or applications filed in other countries.

CE
2797

EN ISO 13485:2016
See appendix D for contact information of the regulatory authorized representative

Record of Editions

Edition	Date	Description	Chapter	Pages
1	September 2017	Initial	All	All
2	Oct 2017	Added labels	1.13	9
3	Feb 2018	Change photos Update Note Update standard list Update device label Remove note re self-diagnostic test from zzzPAT SW Update 'patient test' messages Remove noting primary/secondary from battery type Update maintenance and cleaning Minor updates to the language in patient training Update device dimensions Update regulatory EU representative Update: manufacturing declaration according to IEC 60601-1 & 60601-1-263 Update SpO2 accuracy in the WP300 Add note re AHIc and CSR	All 1.7 1.13 2.4.1, 3.7 2.4.3 3.1.1 6 7, 8 10 Appendix D Appendix F Appendix G Appendix H	All ii 4 9 16, 23 19 20 31 37, 41 46 63 61 66 69
4	Sep 2018	Change photos	All	All
5	Feb 2019	Update sec exclusion criteria Update list of standards Replace NRTL certified body - TUV + adding CE mark Update Product Label Adding clarification Update Operator tests Adding RESBP Update text Update zzzPAT info Adding zzzPAT Hardware Requirements section Deleting App. H Update Spare parts list	1.3 1.7 1.8 1.12, 1.13 2.1 2.4.1 6 7 App A App H App I	2 4 5 8, 9 11 15-16 30 34 47 65 66
6	Sep 2019	Update standards Updating Device Label Update Tamper-Proof Bracelet instructions Updating Specification table - dimensions Update EU REP address	1.7 1.13 4.2 10 App D	4 9 27-28 46 55
7	Jan 2020	Reducing graphics and tables	All	All

Note:

- Latest version of the WatchPAT™ system Operation Manual is available at:
  
  http://www.itamar-medical.com/Support/Downloads.html
- zzzPAT Software Manual is also available on the zzzPAT installation CD and is installed as part of the software installation.

Printed copy will be provided within 7 calendar days if requested at no additional cost.

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1 GENERAL INFORMATION

This manual is part of the WatchPAT™300 system.

1.1 Intended Use / Indications for Use

The WatchPAT™300 (WP300) device is a non-invasive home care device for use with patients suspected to have sleep related breathing disorders. The WP300 is a diagnostic aid for the detection of sleep related breathing disorders, sleep staging (Rapid Eye Movement (REM) Sleep, Light Sleep, Deep Sleep and Wake), snoring level and body position. The WP300 generates a peripheral arterial tonometry ("PAT") Respiratory Disturbance Index ("PRDI"), Apnea-Hypopnea index ("PAHI"), Central Apnea-Hypopnea index ("PAHIc"), PAT sleep staging identification (PSTAGES) and optional snoring level and body position discrete states from an external integrated snoring and body position sensor. The WP300's PSTAGES and snoring level and body position provide supplemental information to its PRDI/PAHI/PAHIc. The WP300's PSTAGES and snoring level and body position are not intended to be used as the sole or primary basis for diagnosing any sleep related breathing disorder, prescribing treatment, or determining whether additional diagnostic assessment is warranted.

PAHIc is indicated for use in patients 17 years and older. All other parameters are indicated for 12 years and older.

1.2 Restrictions for Use

1. The WP300 should be used only in accordance with physician's instructions. For exclusion criteria see Section 1.3.
2. Only qualified medical personnel may authorize the use of the WP300.
3. Qualified medical personnel must instruct the patients (and accompanying individual if needed) how to attach and use the WP300 prior to use.
4. In the event of equipment malfunction all repairs should be executed by authorized Itamar Medical Ltd. personnel or licensed service agents.
5. The eligibility of a patient for a PAT® study is entirely at the discretion of a physician, and is generally based upon the patient's medical status.
6. The WP300 system in whole, or in part, may not be modified in any way.
7. The WP300 is used as an aid for diagnostic purposes only, and should not be used for monitoring.
8. Only suitably trained and qualified personnel should be authorized to prepare the WP300 equipment prior to use.
9. The WP300 Operation Manual should be carefully studied by the authorized operators, and kept where it is easily accessible. Periodic review of the Manual is recommended.
10. Itamar Medical Ltd. makes no representation whatsoever, that the act of reading the Manual renders the reader qualified to operate, test or calibrate the system.

11. The tracings and calculations provided by the WP300 system are intended as tools for the competent diagnostician. They are explicitly not to be regarded as a sole incontrovertible basis for clinical diagnosis.
12. In the event that the system does not operate properly, or if it fails to respond to the controls in the manner described in this Manual, the operator should refer to the Troubleshooting section. If necessary, contact our service office to report the incident, and to receive further instructions.
13. The "Step-by-Step Reference Guide" for the patient should be carefully followed when attaching the unit to the patient.
14. The WP300 is not indicated for patient with injuries, deformities or abnormalities that may prevent proper application of the WP300 device.
15. The WP300 is not indicated for children less than 12 years old.

1.3 Exclusion Criteria

The WatchPAT™300 should not be used in the following cases:

1. Use of one of the following medications: alpha blockers, short acting nitrates (less than 3 hours before the study).
2. Permanent pacemaker: atrial pacing or VVI without sinus rhythm.
3. Sustained* non-sinus cardiac arrhythmias.
   ** In cases of patient having accumulative time of regular R-R intervals of less than 1.5 hours, the WatchPAT™300 system will not have sufficient valid PAT® signal as required to generate a sleep report.*
   The WatchPAT™300 is not indicated for children who weigh less than 65 lbs.

1.4 Additional Precautions specific to pediatric use

The WatchPAT™300 is indicated for use in patients 12 years and above.
The following Precautions and Notes are referring to pediatric aged 12-17 years.
Precautions:

1. Pediatric patients with severe comorbidities such as Down syndrome, neuromuscular disease, underlying lung disease or obesity hypoventilation should be considered for sleep study in a laboratory polysomnograph (PSG) rather than a home sleep testing (HST).
2. It is recommended that the physician makes sure that the patient and his/her guardian are aware that the use of specific drugs and other substances used to treat ADHD, antidepressants, corticosteroids, anticonvulsants, use of caffeine, nicotine, alcohol and other stimulants might interfere with sleep and affect the sleep study's conditions.

Notes:

1. PAT Respiratory Disturbance Index (PRDI) is indicated for patients 17 years of age or greater
2. The snoring and body position safety and effectiveness was not validated on pediatric patients

3. Special attention on training the pediatric patient and / or his accompanying individual on use and placement of the device prior to initiating a sleep study with the WatchPAT™ device (for further details see section 7 and section 8)

1.5 Data Generated by the WatchPAT™300

The WatchPAT™300 generates a PAT respiratory disturbance index (“PRDI”) , PAT Apnea-Hypopnea Index (“PAHI”), PAT central Apnea-Hypopnea Index (pAHIc), percentage of total sleep time with Cheyne-Stokes Respiration pattern (%CSR) and PAT sleep staging identification ("PSTAGES"). The WP300 respiratory indices and sleep stages are estimates of conventional values and stages identification that are produced by polysomnography (“PSG”). The WatchPAT™300 also generates optional acoustic decibel detector used for snoring level and body position discrete states from an external integrated snoring and body position (SBP/RESBP) sensor.
PRDI and PAHIc are indicated for patients 17 years of age or greater.

1.6 Equipment Classification

The **WP300** is a Class IIa medical device under MDD 93/42 EEC: 1993 & Amm. 2007/47/EC Annex IX rule 10.

1.7 Quality Assurance System: EN ISO 13485

The Itamar Medical WP300 is compliant to the following standards.

	STANDARD	#
1.	Medical electrical equipment – Part 1: General requirements for basic safety and essential performance	IEC 60601-1:2005 + CORR.1:2006 + CORR.2:2007 + AM1:2012
		ANSI/AAMI ES60601-1:2005/(R) 2012 and A1:2012, C1:2009/(R) 2012 and A2:2010/(R) 2012
		CAN/CSA -C22.2 No.60601-1 :08 + amendment 1
2.	Medical electrical equipment - Part 1-2: General requirements for basic safety and essential performance - Collateral Standard: Electromagnetic disturbances - Requirements and tests	IEC 60601-1-2:2014
3.	Medical Device Software – Software Life Cycle Processes	IEC 62304:2006 + AMD1:2015
4.	Medical electrical equipment -- Part 1-11: General requirements for basic safety and essential performance -- Collateral standard: Requirements for medical electrical equipment and medical electrical systems used in the home healthcare environment	IEC 60601-1-11:2015
	Degrees of protection provided by enclosures (IP Code) – IP22	IEC 60529 Ed 2.2 + COR2
5.	Medical devices - Application of usability engineering to medical devices	IEC 62366:2007 + A1:2014
6.	Medical electrical equipment - Part 1-6: General requirements for basic safety and essential performance - Collateral standard: Usability	IEC 60601-1-6:2010 + A1:2013
7.	Medical devices. Application of risk management to medical devices	EN ISO 14971:2012
8.	Medical devices. Symbols to be used with medical device labels, labelling and information to be supplied. General requirements	ISO 15223-1:2016
9.	Graphical symbols for electrical equipment in medical practice	PD IEC/TR 60878:2015
10.	Graphical symbols - Safety colours and safety signs -- Registered safety signs; refer to instruction manual/ booklet	ISO 7010:2011 (M002)
11.	Information supplied by the manufacture with medical devices	EN 1041:2008 + A1:2013
12.	Biological evaluation of medical devices - Part 1: Evaluation and testing	ISO 10993-1 : 2009/Technical Corrigendum1 2010
13.	Medical electrical equipment - Part 2-61: Particular requirements for basic safety and essential performance of pulse oximeter equipment	ISO 80601-2-61:2011

	STANDARD	#
14.	FDA Quality Systems Regulation (QSR)	21 CFR part 820
15.	Medical devices. Quality management systems. Requirements for regulatory purposes	EN ISO 13485:2016
16.	Commission Regulation (EU) on electronic instructions for use of medical devices	EU 207/2012
17.	Medical Device Directive	MDD 93/42 EEC MDD 2007/47/EC
18.	Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment	RoHS Directive 2011/65/EU (RoHS 2)

1.8 CE and TÜV RHEINLAND Compliance

The product complies with MDD 93/42 EEC: 1993 & Amm. 2007/47/EC (Medical Device Directive) requirements and CE approved.

The product is marked with the CE logo.

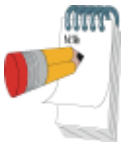
The product is certified by TÜV RHEINLAND.

1.9 Conventions Used in this Manual

Note: Throughout this document, the references WatchPAT™, WatchPAT™300,WP and WP300 device are used to refer to the WatchPAT™300 device.
Note: Throughout this document, the reference Snore & Body Position sensor is referring to both SBP sensor and RESBP sensor unless specified otherwise.
Note: Central+ is a WatchPAT™ module that enables identification of central apnea. Central+ functionality can be achieved when using the WatchPAT™ with the RESBP sensor and compatible software.

	**Warnings** are used to identify conditions or actions, which - if the instructions are ignored - may violate patient safety, or cause damage/malfunction to the system, resulting in non recoverable loss of data. **Les avertissements** sont utilises pour identifier les conditions ou les actions qui- si elles sont ignorées- peuvent porter atteinte à la sécurité des patients ou causer des dommages au système et résulter à une perte irréversible des données.

	**Cautions** are used to identify conditions or actions, which could cause interference with data acquisition and/or impair study results. **Les précautions** sont utilisées affin d'identifier les conditions ou les actions qui peuvent interférer avec le ramassage de données et provoquer des résultats équivoque.

	**Notes** are used to identify an explanation, or to provide additional information for purposes of clarification. **Les notes** sont utilisées pour identifier les explications et pour donner des informations supplémentaires dans le but de clarifier.

1.10 Warnings, Cautions and Notes

The WP300 is powered with one off-the-shelf AAA battery.
The WP300 is portable with continuous operation.
The WP300 uses BF patient applied parts.
The WP300 should only be transported in its original case.
There are no serviceable parts inside the WP300 except for cables.
Environmental conditions during transportation & storage: See Specifications section.
Environmental conditions during operation: See Specifications section.
To avoid risk of battery leakage, the WP300 device should not be stored from prolonged period with a battery inserted in the battery compartment.
Sleep professionals (other than patients) using the WP300 should read the Operation Manual.

1.11 Safety Precautions

WARNINGS

Do not let the unit get wet.

Avoid placing food or water on any part of the system.

In the event of fire use only fire extinguishers approved for use on electrical fires.

Handle unit with care. This unit is sensitive to extreme movements and to falling.

Do not attempt to connect or disconnect any part of the unit.

Do not try to introduce any foreign object into the unit.

The WP300 MUST be removed from the patient BEFORE connecting it to a PC!

AVERTISSEMENTS

Ne pas mouiller l'unité.

Éloigner le dispositif de toute source d'eau ou nourriture.

En cas d'incendie, utiliser uniquement des extincteurs homologués pour l'utilisation en cas d'un incendie dû à une source électrique.

Manier avec précaution. L'unité est fragile : éviter les mouvements soudains et chute.

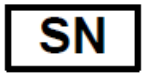
Ne pas tenter de brancher ou débrancher une des parties de l'unité.

Ne pas introduire un corps étranger a l'intérieur de l'unité.

Le système WP300 **doit** être rechargé **uniquement** après avoir été détaché de la main du patient.

Il est impératif de détacher le système WP300 de la main du patient **avant** de le relier à l'ordinateur.

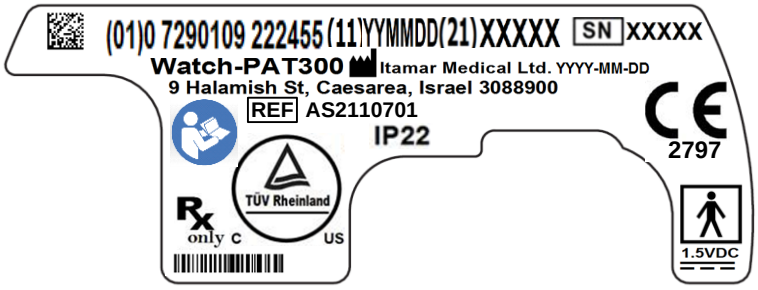
1.12 Symbols Used on the Product Labels

	Follow instructions for use
	Type BF applied part
	The product is certified by TÜV RHEINLAND
	The product is marked with the CE logo 2797 for BSI
	Date of manufacture
	Battery Operating Voltage
	Single use, do not re-use
	Temperature limit
	Use-by date
	Medical device Manufacturer
	Catalogue Number
	Serial Number

IP22	Ingress protection The device is protected against insertion of fingers and vertically dripping water shall have no harmful effect when the device is tilted at an angle up to 15° from its normal position
EC REP	Authorized representative in the European Community
Rx only	Caution: Federal law restricts this device to sale by or on the order of a licensed healthcare practitioner
	According to the WEEE Directive 2012/19/EU, all waste electrical and electronic equipment (EEE) should be collected separately and not disposed of with regular household waste. Please dispose this product and all of its parts in a responsible and environmentally friendly way.

1.13 WatchPAT™300 Device Labels

The following label is located on the back side of the device



1.14 FDA information

The WatchPAT™300 is cleared by the FDA under K180775, trade name Watch-PAT 300 (WP300)

2 OVERVIEW

Sleep apnea syndrome is considered a major public health problem. The prevalence of the syndrome is estimated at 2% to 5% in the adult population. Obstructive sleep apnea is characterized by recurrent events of complete or partial obstruction of the upper airways during sleep with the presence of breathing effort, while Central Sleep apnea is characterized by no respiratory effort. Both conditions often lead to hypoxemia, and/or arousals associated with sympathetic nervous system activation. The diagnosis and assessment of the sleep apnea patient is usually based on the apnea-hypopnea index (AHI – the number of Apneas, and Hypopneas per hour of sleep) and / or the Respiratory Disturbance Index (RDI) which is AHI plus Respiratory Effort Related Arousals (RERA), along with sleep architecture. The common consequences of this sleep disruption are daytime sleepiness, poor daytime performance and increased vulnerability to accidents. Cardiovascular complications such as systemic/pulmonary hypertension, ischemic heart disease and arrhythmias are the major sequel of sleep apnea in the adult population.

The WP300 is worn on the wrist and utilizes a plethysmographic based finger–mounted probe that measures the PAT® (Peripheral Arterial Tone) signal. The PAT® signal is a measurement of the pulsatile volume changes in the fingertip arteries which reflects the relative state of the arterial vasomotor activity, and thus indirectly the level of sympathetic activation. Peripheral arterial vasoconstriction, which mirrors sympathetic activation, is shown as attenuation in the PAT® signal amplitude.
The same probe measures RED and IR channels used for the measurement of SpO2 signal. The PAT® and SpO2 signals are recorded continuously and stored on an embedded flash memory, together with data from a built-in actigraph (monitor for human rest/activity cycles, embedded in the WP300). Snoring and Body Position signals are generated from the SBP/RESBP integrated sensor (optional). The RESBP (Respiratory Effort Snoring and Body Position) sensor records the subject's chest movement signal in addition to the snoring and body position signals that are included with the SBP sensor.
Following the sleep study, the recordings are automatically downloaded and analyzed in an offline procedure using the proprietary zzzPAT software.

The zzzPAT algorithms use the WP300 channels for the detection of sleep related breathing disorders and sleep staging (Rapid Eye Movement (REM), Light Sleep, Deep Sleep and Wake). Further identification of central apnea the respiratory movement channel generated from the RESBP sensor is used in the zzzPAT algorithm in addition to the other channels. The zzzPAT uses WP300's snoring and body position channels to generate snoring level and body position discrete states. The use of SBP/RESBP is optional and according to physician preference.

The software issues comprehensive reports of the study, with statistics and graphic presentation of the results. The whole night data can be viewed and the automatically detected events can be revised manually.

2.1 System Description

The WP300 system is comprised of the following items:

- WP300 device that includes:
    - Embedded actigraph
    - Embedded CPU and electrical circuit card
    - Embedded flash memory
    - AAA Battery
    - OLED display
- Unified PAT and Pulse Oximeter Probe (uPAT probe) (includes oximetry)
- uPAT probe connection cable
- Wrist Strap
- Snore and Body Position sensor (SBP/RESBP) – optional
- Cable for Tamper-Proof Bracelet and Tamper-Proof Bracelet – optional
- USB cable
- Step-by-Step Reference Guide (to be used in conjunction with Section 7)
- Quick Reference Cards (to be used in conjunction with Section 8)
- Carrying case

Figure 1 – Packed Device

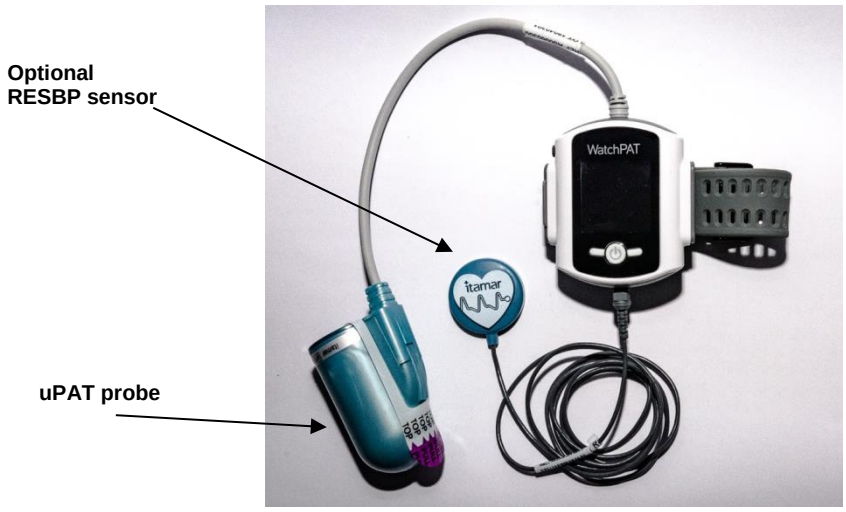


Figure 2 – WatchPAT™300 Device with Sensors

An additional item required for the operation of the system is the zzzPAT kit. zzzPAT is a proprietary PC software for initializing the study, retrieving, analyzing and displaying the data. For more information, refer to the zzzPAT Software Manual.

2.2 User Interaction with the WatchPAT™ Device Keys

The WatchPAT™300 has the following keys (see Figure 3):

- Central On/Enter key to power on the WatchPAT™
- Horizontal buttons (left and right) that may be used by the Operator for entering the diagnostic mode and navigating through the diagnostic menu. These buttons are hidden from the patient.

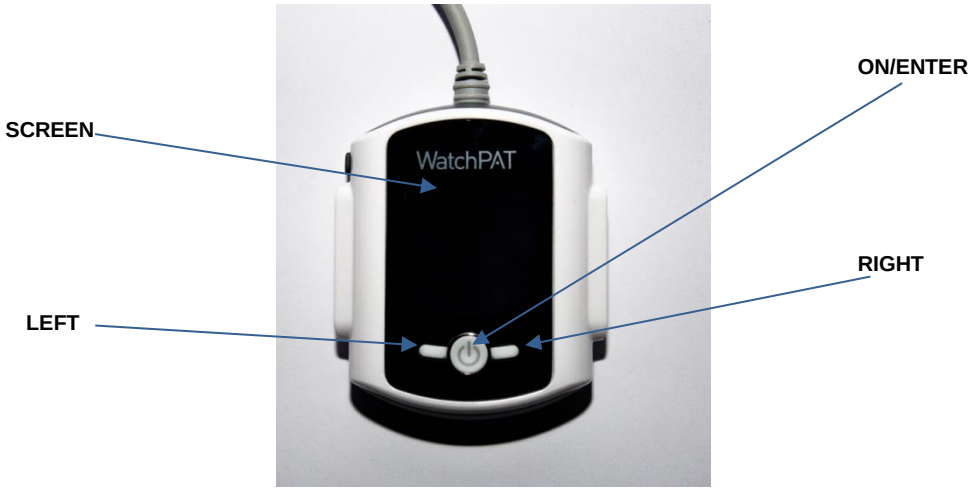


Figure 3 – The Buttons and Display

Display

The display is used for reading status and error messages. The display is divided to three sections: Title, Info and Status.

- Title (first line): Current operational mode and time
  - PATIENT mode while recording night study
  - DIAGNOSTIC mode while testing device
  - PC HOST while connecting to PC
- Info (2^{nd}-7^{th} line): Specific information depending on operational mode
- Status (last line): Message indicating device status depending on operational mode

Service Ports and Peripherals

The WatchPAT™ device has 4 ports that are used for sensor connections, a battery compartment with a cover for battery replacement and a cable connector compartment with a cover for uPAT cable servicing. (see Figure 4).

- The bracelet port is used for connecting the tamper-proof bracelet which is covered by a lid.

- Internal uPAT probe port is used for connecting the uPAT probe. The port's compartment can be accessed through a lid in order to replace the cable.
- A port for connecting the optional Snore & Body Position sensor.
- The USB port is used for connecting to the PC to initialize the device and download the recording.
- Battery compartment, covered by a lid

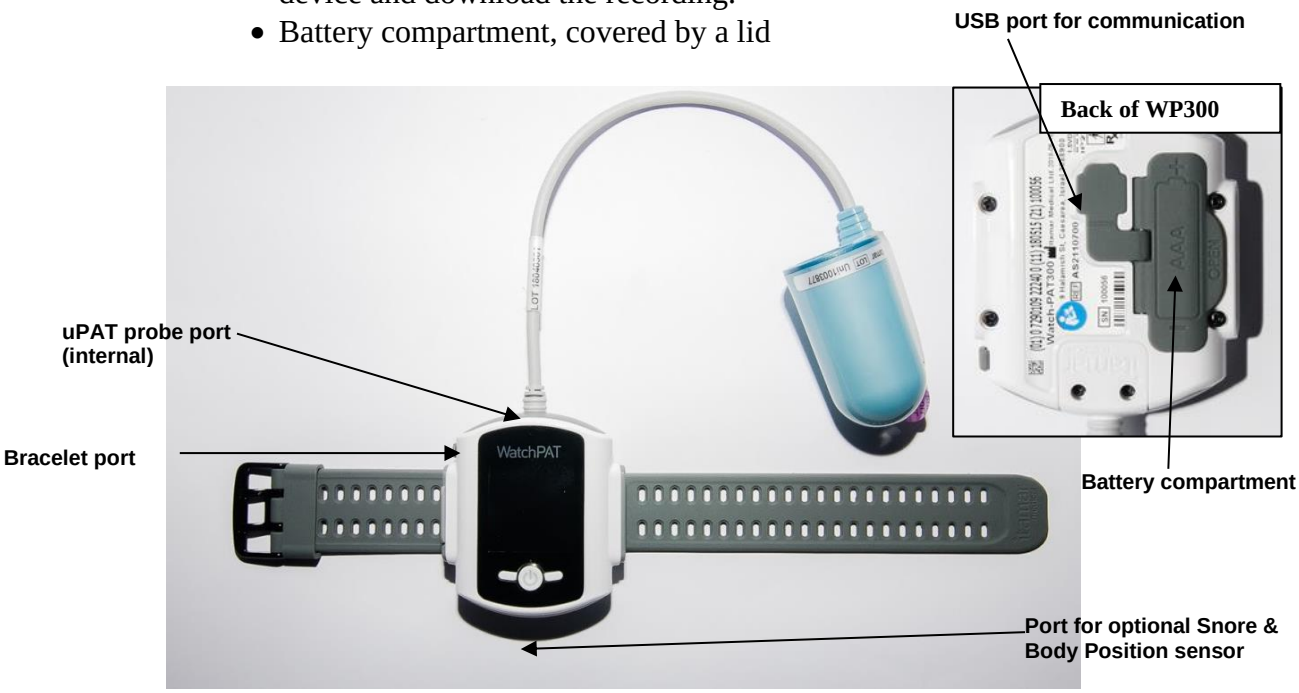


Figure 4 – Service Ports and Peripherals

2.3 WatchPAT™ Device Function

The WatchPAT™ records the following channels:

- PAT® Signal
- Oxygen saturation
- Actigraphy (movement)
- Acoustic decibel detector for Snoring evaluation (optional)
- Body Position (optional)
- Chest movement signal (optional)

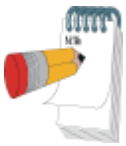
See Extended and illustrated guidance for detailed description

2.4 Built-In Self-Diagnostic Procedures

2.4.1 Operator Tests

The WatchPAT™300 contains a comprehensive built-in self-diagnostic procedure. This procedure is available to the operator. The procedure can be accessed if the right and left buttons (see Figure 3) are pressed simultaneously after the device is powered ON (during the first 30 seconds only after the device is powered ON). The procedure performs the following test:

- Device Test – tests the WatchPAT™ for errors before performing a night study (make sure all sensors are connected before initiating this test)

	**Note** In all times, the current time is shown in the upper right hand corner of the display.

To run the self-diagnostic procedure:

- Press the ENTER button (round center key) for 2 seconds till the power up screen appears on the screen
- Immediately press the **RIGHT+LEFT** buttons only (see Figure 3) simultaneously for 1 second

The following screen will be displayed:

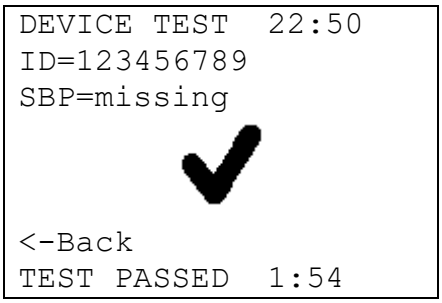
```
DIAGNOSTIC   22:40
4.0.0000 20-May-18
ID=123456789
  * device xxxxxx
    set language
    set battery
    end testing
Select test ->
```

- First line displays title and current time
- Second line displays current embedded S/W version and current date
- Third line displays patient ID
- Fourth line displays option for running device test (serial number of device)
- Fifth line for setting the language
- Sixth line for setting the battery type

- Seventh line for exiting the testing mode and turning device off. If no test is selected within 3 minutes the WatchPAT™ device will automatically shut down
- The right and left buttons will navigate between the lines.
- An asterisk will indicate current selection. It is recommended that you perform the Device test every time you prepare the WatchPAT™ for a night study.

2.4.2 Device Test

At the completion of the device test, a **TEST PASSED** indicates that the device is ready for the night study.



At the completion of the device test, a **TEST FAILED** indicates a problem that should be taken care of before the device is released for a night study.
Review the error message and correct the WatchPAT device accordingly, then run the test again.

See Extended and illustrated guidance for detailed description

2.4.3 Patient Test

When the patient (and accompanying individual if needed) turns on the WatchPAT™ device by pushing the On/Enter key (round center button) for about 2 seconds a self-diagnostic test is automatically performed.
See Extended and illustrated guidance for detailed description

3 PREPARATION FOR SLEEP STUDY

3.1 Inserting the Battery

To insert the battery to the WP300 device:

1. Remove the WP300 device out of the wrist strap by unsnapping the left side of the WP300 strap (the one with higher edge).
2. Open the battery compartment on the back of the device (see Figure 5) and remove the battery from the device (if there is one).
3. Insert a new disposable (or fully charged rechargeable) AAA battery in the compartment. The direction of '+' and '–'is illustrated on the battery lid and inside the compartment.

3.1.1 Battery information

The WP300 is powered by one off-the-shelf AAA battery. The battery can be alkaline or rechargeable NiMH. Use a new or fully charged battery for each study.

1. See Extended and illustrated guidance for detailed description

Battery	One Off The Shelf 1.5V Alkaline AAA battery **OR** One Off The Shelf rechargeable AAA 1.2V NiMH battery
Capacity	> 700 mAh
Cell Type	Alkaline **OR** Nickel-metal hydride battery rechargeable (NiMH)

Figure 5 – Battery Compartment

3.2 Preparing the Snore and Body Position Sensor

Attach the small round double sided adhesive sticker to the Snore and Body Position sensor on the back side (front side has an image), by peeling off the cover on one side of the sticker.
See Extended and illustrated guidance for detailed description

3.3 Preparing the Wrist Strap

The wrist strap requires no special preparation other than ensuring its cleanliness. You may clean it if needed. See section 6.1 for detailed cleaning instructions.

3.4 Mounting the WatchPAT™ on the Wrist Strap

Mount the WatchPAT™ device on the wrist strap, when the face of the device aligned with the engraved image on the base of the strap.

3.5 Replacing the uPAT Probe

	Warning
	The uPAT probe connector is very sensitive and therefore should never be left exposed. **Keep the connector connected to the probe at all times, especially during cleaning**. Replace the probe just before performing the Device test.

Remove a used probe by pressing the small tab (clip) marked by the arrow in Figure 6, and then, holding the connector's slider, gently slide it away from the probe – do not pull the slider off by pulling the cord, as it may damage the wiring. Properly dispose of used probes.

Figure 6 – Disconnecting the Probe

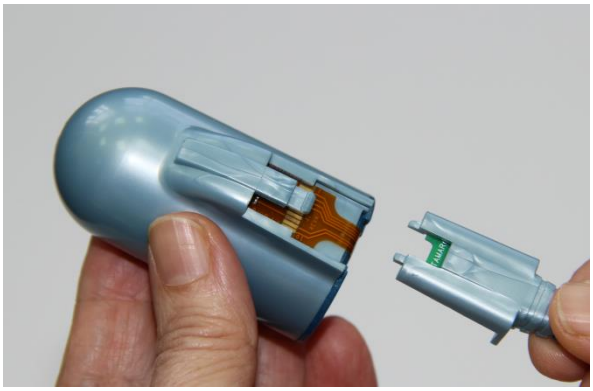


Figure 7 – Probe Disconnected

Connect a new probe by inserting the blue slider to the probe until the blue tab of the probe clicks into its place.

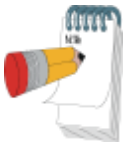
	**Note** Take care when inserting the blue slider to insure proper seating in the probe.

Figure 8 – WatchPAT™ Fully Prepared

3.6 Preparing the WatchPAT™ Device for a New Study

Refer to the zzzPAT Software Manual for preparation of the WP300 for a new study.

3.7 Testing the WatchPAT™ Device

Run the built-in self-diagnostic facility as described in Section 2.4 above.

The WatchPAT™ device is now ready for performance of a sleep study by the patient (Figure 8).

3.8 WP300 Self-diagnostic Test Results and Trouble-shooting

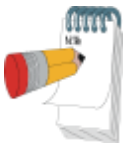
Should any of the self-diagnostic tests fail or report error messages,

see Extended and illustrated guidance for detailed description

3.9 Packing the Carrying Case

The following items must be placed inside the carrying case, in their respective compartments (see Figure 1 – Packed Device):

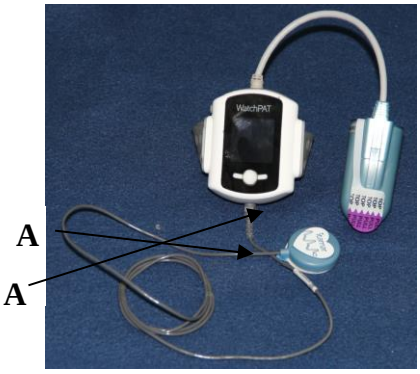
- The WatchPAT™ device mounted in the Wrist strap with the uPAT probe attached.
- Step-by-Step Reference Guide to the WatchPAT™ device.
- Body Position and Snore sensor (optional)
- Cable for bracelet (optional for patient identification)
- For multi-night only: extra uPAT probes and batteries.

	**Note** Demonstrating the use of the WatchPAT™ device to the patient (and accompanying individual if needed) is important for obtaining reliable recordings and improving patient confidence.

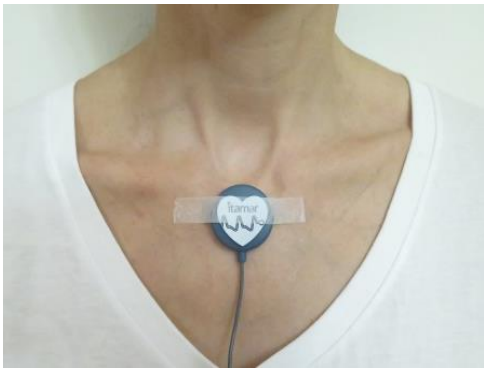
4 OPTIONAL FUNCTIONS

4.1 Using the integrated Snore & Body Position Sensor

The integrated sensor consists internally of two sensors: a snore sensor and a body position sensor.



A - Integrated RESBP sensor



RESBP Sensor Attachment

See Extended and illustrated guidance for detailed description

4.2 Tamper-Proof Testing with WatchPAT™ Device

See Extended and illustrated guidance for detailed description

4.3 Multi-night study

See Extended and illustrated guidance for detailed description

5 DATA DOWNLOAD AND ANALYSIS

Following the sleep study the WatchPAT™ device is returned to the referring sleep clinic for data downloading and analysis by the zzzPAT software.

To download and analyze the study data:

1. Connect the USB port of the WatchPAT™ device to the computer (see Figure 4). The WatchPAT™ device will switch off.
2. Activate the zzzPAT software to download and analyze the study data.

See the zzzPAT Software Manual for detailed instructions.

6 MAINTENANCE

The WatchPAT™ device has been designed and manufactured to meet all safety requirements applicable to medical equipment. To ensure maximum safety of operation, the system should be used and maintained in strict compliance with the safety precautions, warnings and operating instructions provided in this Manual.

In order to prevent unnecessary failures while patient is using the device, we recommend performing the routine maintenance recommendations as well as the preventive maintenance recommendations as described in this section.

Routine maintenance recommendations

a) Cleaning the device, wrist strap and SBP/RESBP sensor.
b) Device should be inspected for possible defects, in the device, cables and sensors. The product must be serviced on any case of damage.
c) PAT cable's electrical connectors should be visually inspected while replacing a probe. The product should be serviced in case any damage to the connector is found.
d) The following items should be visually inspected and replaced if found damaged: strap, carrying case and all accessories.
e) Complete technician test must be done and passed with no errors prior to handing the product to a patient.
f) The product should be stored in its carrying case while not in use.

Preventive maintenance recommendations

a) Battery – replace battery before each sleep study. Remove battery from the WP300 device if the device is not used for prolonged time.
b) PAT Cable – replace the PAT cable after 200 sleep studies, after 1 year or when it is found broken on any of its components.
c) SBP/RESBP Sensor – replace if its connector is broken, if the cable near the connector is peeling off or if it is found broken on any of its components.

See sections 6.1,6.2, 6.3 and 6.4 bellow for detailed instruction on Cleaning and replacing the uPAT cable and the battery respectively.

See Extended and illustrated guidance for detailed description

6.1 Cleaning

The various components of the WatchPAT™ device have different cleaning requirements:

- The WatchPAT™ device
- The wrist strap
- The Snore & Body Position sensor (SBP/RESBP)

6.1.1 Cleaning the WatchPAT™ Device

In order to clean the WatchPAT™ device and Carrying Case proceed as follows:

- Wipe parts with a clean, lint-free cloth lightly moistened with 70% ethyl alcohol or isopropyl alcohol (IPA).

	**Warning** Clean the WatchPAT™ device only with the uPAT probe attached.

6.1.2 Cleaning the Wrist Strap

You may clean the wrist strap with lint free cloth lightly moistened with 70% ethyl alcohol or isopropyl alcohol (IPA).

In order to disinfect the wrist strap by immersing into disinfecting liquid follow the steps:

- Remove WatchPAT™ device from wrist strap
- Immerse wrist strap in 70% ethyl alcohol or isopropyl alcohol (IPA)

6.1.3 The uPAT Probe

The uPAT probe is designed for a single use only. It may not be cleaned and must be discarded and replaced before each study.

6.1.4 The Snore & Body Position Sensor

Using 70% ethyl alcohol, thoroughly clean both sensor and cable.

6.2 Handling

Handle with care:

- Use only the designated case for transportation
- Store at room temperature, and avoid direct sun light
- Do not expose the WatchPAT™ device to extreme temperature or humidity conditions (such as storing in a car or bathroom)

6.3 Replacing the uPAT Probe Cable

See Extended and illustrated guidance for detailed description

	**Warning** Use only the original screws that belong to the WatchPAT™ device. Using different screws could harm the device.

6.4 Setting the Time and Date of the WatchPAT™ device

The WatchPAT™ device Time and Date can be set through the zzzPAT application. Refer to the zzzPAT Software Manual for preparation of the WatchPAT™ device for a new study.

6.5 Storing the WatchPAT™ device

- The WatchPAT™ device should be stored in its carrying case at room temperature and low humidity.
- To avoid risk of leakage, battery should not be stored in the WP300 for a prolonged period of time.

7 APPLYING THE WATCHPAT™ DEVICE

The following detailed instructions are written as if the reader is the patient using the WatchPAT™ device.

7.1 Preparing for Use of the WatchPAT™ Device

See Extended and illustrated Patient Step by Step guidance for detailed description.

7.2 Applying the WatchPAT™ Device

See Extended and illustrated Patient Step by Step guidance for detailed description

7.3 Attaching the uPAT Probe

See Extended and illustrated Patient Step by Step guidance for detailed description

7.4 Switching On the WatchPAT™ device

See Extended and illustrated Patient Step by Step guidance for detailed description

7.5 When You Wake Up

See Extended and illustrated Patient Step by Step guidance for detailed description

7.6 Important Notes

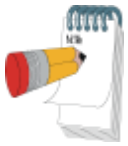
Wearing the WatchPAT™ device should not cause any discomfort or pain. If you experience wrist or arm discomfort, loosen up the wrist strap. If the discomfort is not alleviated immediately, call the service number.

- Do not attempt to connect or disconnect any part of the unit.
- Do not try to introduce any foreign object into the unit.
- Do not try to connect the WatchPAT to an electrical supply or any other device, machine or computer.
- If any part appears disconnected or does not resemble the illustrations, call the service number for assistance.
- Do not, under any circumstances, attempt to fix the problem yourself.

If you have any questions about using the machine, before, during or after your at-home recording session, call the service number.

8 PATIENT TRAINING – GUIDELINES

Instruct the patients (and accompanying individual if needed) how to attach and use the WP300 prior to use.

	**Note** In the case of pediatric patient, special attention on training the patient and / or his accompanying individual on use and placement of the device prior to initiating a sleep study with the WatchPAT™ device.

8.1 Walk Through the Process of Using the WatchPAT™ device

See Extended and illustrated guidance for detailed description

8.2 Product Introduction

See Extended and illustrated guidance for detailed description

8.3 Applying the WatchPAT™ device

See Extended and illustrated guidance for detailed description

8.4 Switching on the WatchPAT™ Device

See Extended and illustrated guidance for detailed description

8.5 Removing the WatchPAT™ Device

See Extended and illustrated guidance for detailed description

8.6 Patient Training

See Extended and illustrated guidance for detailed description

8.7 Review Safety, General and Functional Issues

- Avoid exposing the WatchPAT™ device to extreme conditions (high temperature, high humidity)
- Provide a telephone number to call in case of questions or problems.

9 TROUBLESHOOTING GUIDE

See Extended and illustrated guidance for detailed description

9.1 Operator Error Messages

If an error message is displayed while performing the self-diagnostic tests, take the actions specified below. If the problem persists contact Itamar or an authorized representative.

Table 1 – Operator Troubleshooting

Error	Possible Reason	Action
File error		
Not loaded	Study not initialized for new patient	Connect device to PC and perform New Study in zzzPAT
Battery error % full	Battery defective or uncharged	Replace battery
Device does not turn ON	Battery low, defective or not properly inserted	Replace battery or insert battery properly
Probe error		
Used	Probe previously used	Replace probe
Missing	Probe absent	Attach probe
Bad	Probe is defective	Replace probe
Hardware status error code	WatchPAT™ device defective	Consult Itamar or authorized representative
SBP/RESBP disconnected even if it is connected	WatchPAT™ device or SBP/RESBP sensor defective	Consult Itamar or authorized representative
RTC faulty	WatchPAT™ device defective	Consult Itamar or authorized representative
The display does not power up while connecting to PC or device cannot communicate with zzzPAT.	Depleted battery may prevent device from powering up.	Disconnect from PC, remove the battery from device and reconnect to PC.
Short recording time	Patient removed the WP300 or probe from hand prematurely	Explain proper use to patient
	Insufficient battery charge caused early termination of recording	Replace battery or Recharge rechargeable battery and try again
	Damaged WatchPAT™ device	Contact your authorized sales representative

9.2 Patient Error Messages

If an error message is displayed when the patient powers on the WatchPAT™ device, the patient should take the actions specified below. If the problem persists the patient may contact Itamar or an authorized representative directly.

Table 2 – Patient Troubleshooting

Error	Possible Reason	Action
WatchPAT™ device doesn't switch on	ON button not activated	Press the ON button firmly for at least 3 seconds
	uPAT probe not connected	Ensure probe is connected and try again
Probe disconnected	Probe may not be connected, or may be a used probe	Check connection of probe to cable and cable to the WatchPAT™ device; check if probe has been previously used and replace with new probe if necessary
Hardware code	WatchPAT™ device failure	Contact Itamar or authorized representative

10 SPECIFICATIONS

Table 3 – WatchPAT™300 Specifications

Properties		Description
uPAT Probe		Itamar's proprietary probe. Measures PAT and Oximetry.
Recording Time		Approx. 10 hours
Channels		Measuring 4-7 signals: PAT, Pulse rate, Oximetry, Actigraphy, Snoring (optional), Body Position (optional), Chest Movement (optional)
Sample Resolution		PAT and Actigraphy – 12 bit, oximetry – 1% Snoring – 12 bit, Chest Movements – 12bit x 3 axes, Body Position – 5 discrete states
User Interface		OLED display
Accuracy	*Pulse rate* *Amplitude* *Oximetry*	30-150 ± 1 bpm 0-0.5V ± 10% Arms ≤ 3% (in range 70%-100%)
PAT Channel	*Bandwidth*	0.1-10 Hz
Data Storage	*Media*	NOR SPI Flash
	Capacity	128 MB (minimum)
Power Supply	*Battery*	One OTS 1.5V Alkaline AAA battery **OR** One OTS rechargeable AAA 1.2V NiMH battery
Operating Voltage		3.3 V
Temperature	*Operation*	0^0C to 40 ^{0}C
	Storage (Device)	-20^0C to 40 ^{0}C
	Storage (Probe)	0^0C to 40 ^{0}C
	Transport (Device & Probe)	-20^0C to 60 ^{0}C
Humidity	*Operating*	10% – 93% (non-condensing)
	Storage & Transport	0% – 93% (non-condensing)
Atmospheric pressure	*Operating & Storage*	10 – 15 psi
	Transport	8 – 15 psi
Dimensions	*L x W x H*	69mm*59mm*17mm
	Weight	98 gr (excluding uPAT probe weight of 20 gr)

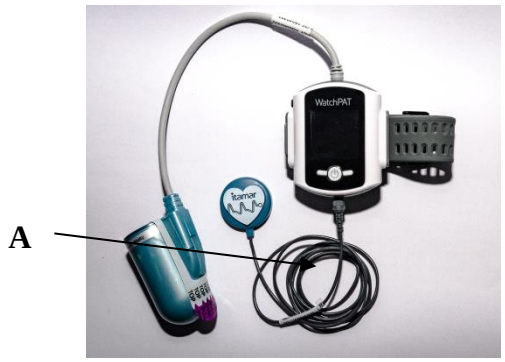
APPENDIX A: **WatchPAT™ Integrated snoring + Body Positioning Sensor Operating Instructions (SBP/RESBP)**

RESBP/SBP must be used with zzzPAT v 5.0 and above.

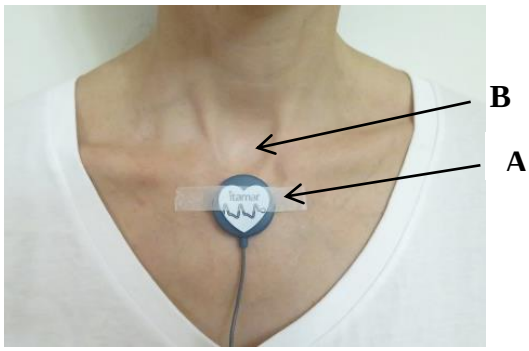
Thank you for purchasing an Integrated Snore & Body Position Sensor (SBP) or Respiratory Effort Snore & Body Position Sensor (RESBP).

Description

The integrated sensor consists internally of two sensors: a snore sensor and a body position sensor.



A - Integrated RESBP sensor



A-RESBP Sensor Attachment
B-Sternal notch

The integrated sensor is powered by the WatchPAT™ device and does not require a battery. It is automatically activated by the WatchPAT™ when plugged into the Snore & Body position port.

The **snore sensor** is an acoustic decibel detector.

The **body position** sensor uses a 3-axis accelerometer that provides a signal directly proportional to the patient's sleeping posture (supine, prone, right, left and sit).

For RESBP only: The **chest movement signal** uses the same 3-axis accelerometer to provide raw chest movement signal data for measuring subject's breathing during the night.

Indications of use

The integrated Snoring & Body position sensor is an accessory of the WatchPAT™ home care device for use with patients suspected to have sleep related breathing disorders. The integrated sensor monitors the snoring level, which aids in the evaluation of the severity of sleep related breathing disorders, and the body position which aids in the evaluation of the type of sleep related breathing disorders. The RESBP sensor also provides raw chest movement signal data to measure the subjects breathing during the night.

Preparing the sensor

- Attach the round double sided adhesive sticker to the blue side of the sensor.

Applying the sensor
See Extended and illustrated guidance for detailed description

Cleaning the sensor
Using 70% ethyl alcohol, thoroughly clean both sensor and cable.

SPECIFICATIONS		
Snoring Sensor Technology	Sensitive microphone	
Body Position and Chest Movement (for RESBP only) Sensor Technology	3-axis Accelerometer	
Signal Amplitude	0-3.3 V	
Connector Type	1 mm medical safety connector plug from Plastics1 *Wire Length:* 3.2 foot (100 cm)	
Physical Size	1.3 inch diameter (32 mm diameter)	
Weight	12 gr	
Warranty	6 months	
Temperature	*Operation*	0 to 40 ^{0}C
	Storage	-20 to 40 ^{0}C
	Transport	-20 to 60 ^{0}C
Humidity	*Operating, Storage & Transport*	0% – 93% (non-condensing)
Atmospheric pressure	*Operating, & Storage* *Transport*	10 – 15 psi 8 – 15 psi

Snoring and Body Position Accuracy
See Extended and illustrated guidance for detailed description

APPENDIX B: Tamper-proof testing with WatchPAT™

See Extended and illustrated guidance for detailed description

APPENDIX C: LICENSE AGREEMENT

This License Agreement represents the complete and exclusive understanding between you and Itamar Medical. The document can be viewed at
https://www.itamar-medical.com/lmages/licensewp.pdf

Should you have any questions concerning this License Agreement, or if you desire to contact Itamar Medical for any reason, please write to:

USA:
Itamar Medical Inc.
3290 Cumberland Club Drive, Suite 100
Atlanta, Georgia 30339, USA
Tel: 1 888 748 2627

Worldwide:
Itamar Medical Ltd.
9 Halamish St., P.O.Box 3579
Caesarea Ind. Park, 3088900, Israel
Tel: +972 4 617 7000

APPENDIX D: REGULATORY REPRESENTATIVE

Itamar Medical's authorized regulatory representative is:

Arazy Group GmbH

The Squaire 12, Am Flughafen,
60549 Frankfurt am Main,
Germany

APPENDIX E: DESCRIPTION OF THE WATCHPAT™300 UPAT PROBE

The WatchPAT uPAT probe is an opto-pneumatic finger-mounted probe.
Its role is to continuously measure the relative state of the vasomotor activity in the distal part of the finger based on a plethysmographic method, as well as
changes in absorbance of the finger at both red and infrared light at peak wavelengths of 660nm and 910nm respectively, for measurement of oximetry signal
See Extended and illustrated guidance for detailed description

APPENDIX F: MANUFACTURING DECLARATIONS ACCORDING TO IEC 60601-1 & 60601-1-2

Notes

• The WatchPAT™300 (WP300) requires special precautions with regard to electromagnetic compatibility.
• It must be installed and prepared for use as described in section 11 - Preparation for Sleep Study.
• Certain types of mobile telecommunication devices such as mobile telephones are likely to interfere with the WP300.
• The recommended separation distances in this section must therefore be complied with.
• The WP300 must not be used near or on top of another device. If this cannot be avoided, it is necessary – before clinical use – to check the equipment for correct operation under the conditions of use.
• The use of accessories other than those specified or sold by Itamar Medical as replacement parts may have the consequence of increasing the emissions or decreasing the immunity of the unit.
• To ensure "Isolation means" disconnect the power supply.

Electromagnetic Compatibility

Electromagnetic Emissions

- WP300 is intended for use in the electromagnetic environment specified in the following tables 1, 2, 4 and 6 below.
- The user and/or installer of the unit must ensure that it is used in such an environment.

Table 1 – from IEC 60601-1-2:2014		
Guidance and manufacturer's declaration – electromagnetic emissions – WP300		
The **WP300** is intended for use in the electromagnetic environment specified below; The customer or the user of the **WP300** should assure that it is used in such an environment.		
Emissions test	**Compliance**	**Electromagnetic environment - guidance**
RF emissions CISPR 11	Group 1	The **WP300** uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The **WP300** is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic Emissions IEC 61000-3-2	Not applicable	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Not applicable	

Table 2 - from IEC 60601-1-2:2014
Guidance and manufacturer's declaration – electromagnetic immunity – WP300

The **WP300** is intended for use in the electromagnetic environment specified below; The customer or the user of the **WP300** should assure that it is used in such an environment.			
Immunity test	**IEC 60601-1-2** **Test level**	**Compliance level**	**Electromagnetic environment - guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	±8 kV contact ± 2 kV, +4 kV, + 8 kV, +15 kV air	±8 kV contact ± 2 kV, +4 kV, + 8 kV, +15 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical public low-voltage power supply network that supplies buildings used for domestic purposes, commercial or hospital, clinic environment.
NOTE: UT is the a.c. mains voltage prior to application of the test level.			

Table 4 - from IEC 60601-1-2:2014

Guidance and manufacturer's declaration – electromagnetic immunity – WP300

The **WP300** is intended for use in the electromagnetic environment specified below; The customer or the user of the **WP300** should assure that it is used in such an environment.

Immunity test	**IEC 60601-1-2** **Test level**	**Compliance level**	**Electromagnetic environment - guidance**
			Portable and mobile RF communications equipment should be used no closer to any part of the **WP300**, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter **Recommended separation distance**
Conducted RF IEC 61000-4-6	3V 0.15-80 MHz Outside ISM Bands 6V 0.15-80 MHz Inside ISM Bands	Not applicable Not applicable	
Radiated RF IEC 61000-4-3	10 V/m 80 MHz to 2,7 GHz	 10 V/m	$d = 1.2\sqrt{P}$ 80 M Hz t o 800 MHz $d = 2.3\sqrt{P}$ 800 MHz t o 2,7 GHz where P i s the maximum output power rating of the transmitter in watts (W)according to the transmitter manufacturer and d i s the recommended separation Distance in meters (m). Field strengths from fixed R F transmitters, as determined by an electromagnetic site survey ,[a] should be less than the compliance level in each frequency range .[b] Interference may occur in the vicinity of equipment marked with the following symbol: 

NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations .Electromagnetic propagation is affected by absorption And reflection from structures objects and people.

a
Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the **WP300** is used exceeds the applicable RF compliance level above, the **WP300** should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the **WP300**.

b
Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 10 V/m.

Recommended Separation Distances

The WP300 is intended for use in an electromagnetic environment in which radiated radiofrequency disturbances are controlled.
The user and/or installer of the unit can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile radiofrequency communications equipment (emitters) and the WP300, according to the maximum output power of the equipment, as recommended in the table below.

	Table 6 - from IEC 60601-1-2:2014			
	Recommended separation distances between portable and mobile RF communications equipment and the WP300			
Rated maximum output power of transmitter **Watts [W]**		**Separation distance according to frequency of transmitter (in meters)** **Meters [m]**		
	150kHz to 80MHz outside ISM Bands $d = 1.17\sqrt{P}$	**150kHz to 80MHz** **inside ISM Bands** $d = 2\sqrt{P}$	**80MHz to 800MHz** $d = 1.2\sqrt{P}$	**800MHz to 2.7GHz** $d = 2.3\sqrt{P}$
0.01	0.12	0.2	0.12	0.23
0.1	0.37	0.63	0.37	0.73
1	1.17	2.0	1.17	2.3
10	3.7	6.32	3.7	7.3
100	11.7	20	11.7	23
	For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer. NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies. NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.			

IEC 60601-1-2: 2014 4th Edition							
Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment							
Test Frequency (MHz)	**Band [a] (MHz)**	**Service [a]**	**Modulation [a]**	**Maximum Power (W)**	**Distance (m)**	**Immunity Test Level (V/m)**	**Compliance Level (V/m)**
385	380-390	TETRA 400	Pulse modulation [b] 18Hz	1.8	0.3	27	27
450	430-470	GMRS 460 FRS 460	FM [c] ± 5 kHz deviation 1 kHz sine	2	0.3	28	28
710	704-787	LTE Band 13, 17	Pulse modulation [b] 217 Hz	0.2	0.3	9	9
745							
780							
810	800-960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation [b] 18 Hz	2	0.3	28	28
870							
930							
1720	1700-1990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation [b] 217 Hz	2	0.3	28	28
1845							
1970							
2450	2400-2570	Bluetooth, WLAN 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation [b] 217 Hz	2	0.3	28	28
5240	5100-5800	WLAN 802.11 a/n	Pulse modulation [b] 217 Hz	0.2	0.3	9	9
5500							
5785							

NOTE If necessary to achieve the IMMUNITY TEST LEVEL, the distance between the transmitting antenna and the ME EQUIPMENT or ME SYSTEM may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3.

[a] For some services, only the uplink frequencies are included.

[b] The carrier shall be modulated using a 50 % duty cycle square wave signal.

[c] As an alternative to FM modulation, 50 % pulse modulation at 18 Hz may be used because while it does not represent actual modulation, it would be worst case.

APPENDIX G: SPO2 ACCURACY IN THE WATCHPAT™300

The WatchPAT™300 device uses Itamar Medical Pulse Oximetry system for the measurement of functional oxygen saturation of arterial haemoglobin (SpO2). This appendix includes information regarding the accuracy of these measurements following a clinical study of Itamar Medical Pulse Oximetry.

1. Overall, the Arms is estimated to be 1.9 for the range 70-100%

2. The next table shows SpO2 Accuracy Results:

Comparison to Reference CO-Oximetry					
WP300	* 70—100	90--100	80--<90	67--<80	A_{RMS} Spec 3% for range of 70-100%
# pts	1350	415	460	475	**Pass**
Bias	0.4	-0.4	0.6	0.9	
A_{RMS}	1.88	1.10	1.62	2.54	

* Note: The range of 70% to 100% includes reference data down to 67%

See Extended and illustrated guidance for detailed description

APPENDIX H: ZZZPAT HARDWARE REQUIREMENTS

Hardware configuration:

Computer Pentium 4 3GHz or higher
1 available USB port
XGA screen resolution (minimum 1024 x 768 pixels)
RAM 1GB or higher

Disk space requirements:

- **Standalone installation**
  - 10GB minimum / 60GB recommended disk space on Files folder and at least 1.2GB on boot drive
- **Shared installation**
  - SQL DB drive – 1.2GB if using our default MS SQL Express installation and enough for 1 year worth of studies (500 KB / study).
  - Shared Files folder for raw data signal files - enough for 1 year worth of studies (30 MB / study).

Operating System:

Windows Server 2008 Service Pack 1 and above
Windows 7 with Service Pack 1
Windows 8
Windows 10

APPENDIX I: SPARE PARTS LIST

See Extended and illustrated guidance for detailed description