# WSN4Life Telemedicine

# **USER GUIDE**

VER. 17\_REV. 01-ENG



### WSN4Life.

# Topics covered.

- Introduction.
- Description of the kit in use.
- Pre-Requirements.
- Rugged suitcase for transport.
- Medical Device in use.
- Software User Manual.

Android .apk installation and User Guide
 Windows .exe installation.
 Windows Software User Guide.

- Declaration of conformity.
- Contacts.



# INTRODUCTION.







# Preconditions.

- All information provided in this User Guide are extracted from each individual Product Manual, to which reader should always refer to, and which can be downloaded from the Company's corporate website [<u>www.wsn4life.com</u>] or requested directely.
- The use of the kit is for an experienced and trained user in the medical field, while the reporting of the ECG document must be done by a specialist cardiologist.
- The company is available for any request for clarification or additional information (please refer to the "Contacts" page).



# Scope of the supply. WSN4Life

- User is provided with a working KIT, composed of the following individual components [ONE (1) PIECE EACH]:
  - □ Rugged suitcase, for transport.
  - □ USB key, containing the Android .apk and Windows .exe version of the software, the present Guide in the latest version available, in electronic format.
  - □ Medical Device COR12, including ECG 10-wire cable.
  - □ Bag to protect Medical Device.
  - □ Windows Tablet, with carrying case.
  - □ Software interface, for Windows.
  - □ Android Tablet.
  - □ Software interface, for Android.
- Optional accessories (not included) are:
  - □ ECG Electrodes, mono-use.
  - □ Alkaline battery, type AA.





# Pre-Requisites.

 Before using the KIT supplied and having read the Prerequisites, user must check the Pre-Requirements, as indicated below.

□ The energy level of the battery in use of the medical device and the tablet must be sufficient to support the recording. Both the Medical Device (including the ECG cable) and the Tablet must be in good condition.

 $\square$  PC must be connected to the internet.

- If in doubt, please do not hesitate to contact the Head of the Service or directly the Company (refer to the "Contacts" page).
- Good work!







# RUGGED SUITCASE FOR TRANSPORT.

### WSN4Life.

## Description.



- Rugged briefcase, with hermetic seal and automatic pressurization valve.
- External dimensions: 336 x 300 x H 148 mm.
- Internal dimensions: 300 x 225 x H 132 mm.
- Hermetic seal, IP67, dustproof, waterproof.
- Safety double-step latches for easy opening.
- Soft handle with a special compound to improve grip and comfort.
- Double lock predisposition.
- Ready for shoulder belt and doming belt.
- Very thick walls to ensure crashworthiness.
- Zipper along the entire profile of the suitcase.
- Nylon pins, to avoid corrosion problems.







# MEDICAL DEVICE IN USE.



### PATIENT PREPARATION.

- We provide an electrocardiograph, "COR12," which automatically connects to the medical software interface, via Bluetooth interface to the Tablet.
- For patient preparation, before recording, please refer to the Product Manual of the Medical Device.
- For the positioning of the electrodes on the patient's body, refer to the next slide.
- For any further request, please do not hesitate to contact the service manager, or the company directly.



### WSN4Life

### ELECTRODES PLACEMENT.





 Having read the prerequisites, please place the electrodes according to the following color code (possibly over a bony area) also shown on the contact button.

Ref.	COLOR	POSITION
R	RED	RIGHT ARM.
L	YELLOW	LEFT ARM.
F	GREEN	LEFT LEG (TORAX).
Ν	BLACK	RIGHT LEG ( <i>TORAX</i> )
C1	RED	V1
C 2	YELLOW	V2
С3	GREEN	V3
C4	BROWN	V4
C 5	BLACK	V 5
C6	VIOLET	V6



### ECG CABLE.

### The ECG cable is firmly joined to the body of the device, please do NOT not try to remove it.







### POWER SUPPLY OF THE DEVICE.





- The medical device is powered by one battery, AA type alkaline.
- Turn the screw with a coin [1] to open the rear flap.
- Insert the battery in the position [2]
   respecting the polarity.
   Close the rear cover, by turning the plug [1], before starting work.



### How to switch ON/OFF the device.



- Briefly press the button in position [1] TO TURN ON the device.
- Blue LED will light up.
- It will switch off automatically after 120s of inactivity.
- Please, refer to the next page, for the light signals of the device (LED).



### WSN4Life.

# LED signals.

- To switch the device on, briefly press the central button.
   The LED turns blue = the device is "ready.
- "Press the center button for 6 seconds, to make it "visible".
   "The LED will start flashing with a high frequency (3 Hz) = Bluetooth device is visible.
- It's time to start the synchronization process with the PC.
   At the end of the synchronization process, the LED flashes with low frequency (1Hz) = the device is connected with the PC.
- NOTES ON SYNCHRONIZATION.
  - □ The device shuts down if within 120s it does not receive any command; user needs to re-turn it on, even in the event of a synchronization process that lasts more than 120s.
  - □ The synchronization process with the PC determines the generation of two virtual ports on the Tablet (IN / OUT); user need only to confirm Bluetooth association request, not to choose the COM port, that is decided automatically.







# LOGGER, ANDROID VERSION.

# System Requirements. WSN4Life

The program can be installed on an Android 6.0 device (Smart Phone or Tablet); in case it is a tablet, we suggest the following minimum characteristics.

<pre>Screen Size</pre>	10.1 inches
□ Screen Resolution	1024×600
Processor Speed	1.2 GHz
🗖 RAM Size	1 GB
Connectivity	Bluetooth
<b>0</b> .5.	Android 6.0

INTERNET CONNECTIVITY IS REQUIRED TO SEND REMOTELY THE REPORT.



# Installer App COR12. WSN4Life

WSN4Life(Cor12)



WSN4Life\_Cor12\_v1\_0\_0.APK



1.1 Search for the "installation .apk" application files in Windows device file. 1.2 Click on it once.

# Do you want to install this application? It will get access to: PRIVACY approximate location (network-based) precise location (GPS and network-based) modify or delete the contents of your SD card DEVICE ACCESS full network access access Bluetooth settings pair with Bluetooth devices INSTALL TO SD INSTALL

### Click on "Install".





# Installation - I.

### Installing...



Installing...

### ... please, wait



WSN4Life.

# Installation – II. WSN4Life

Installation concluded = APP INSTALLED.



Click "Done" if you want to close the screen without opening the application right away, while click "Open" to open the application directly.

![](_page_19_Picture_4.jpeg)

# Starting Apk COR12. WSN4Life

Open the list of applications installed on the device, there will be the start icon APK COR12.

![](_page_20_Picture_2.jpeg)

### Start the application by clicking once on the icon.

![](_page_20_Picture_4.jpeg)

# COR12 synchronization WSN4Life - Step I and II.

Insert the AA battery into the battery compartment of COR12.

Note 1	Make sure that Bluetooth on device is turned on.
Note 2	Make sure no other Bluetooth devices are turned on nearby.
Note 3	Follow the advices listed in "Signals" page.

![](_page_21_Picture_3.jpeg)

![](_page_21_Picture_4.jpeg)

# COR12 synchronization WSN4Life - Step III.

Hold down the middle button [1] of COR12 for 6 seconds; the center blue LED will begin to flash rapidly: this means that the COR12 is detectable by the tablet.

![](_page_22_Picture_2.jpeg)

![](_page_22_Picture_3.jpeg)

# COR12 synchronization WSN4Life - Step IV.

Start the app and COR12 will be discoverable on the screen (for example: COR12\_SN20001) during device search; click on the device with a name like "COR12\_SN: xxxxx" (xxxxxx with the serial number of the device in possession); see the arrow.

	* 🖹 着 16:51
<ul> <li>Searching for Bluetooth devices</li> </ul>	ទ
COR12_SN:20001	0

![](_page_23_Picture_3.jpeg)

# COR12 synchronization WSN4Life - Step V.

1. Click on "OK", to accept to use the selected device [1].

### Attention

Do you really want to use the selected device?

2. Click on "ACCOPPIA" to sincronize COR12 with the Tablet [2].

### Associer avec COR12\_SN:20001 ?

Saisissez le code d'association, puis appuyez sur Retour ou Entrée.

Autoriser COR12\_SN:20001 à accéder à vos contacts et à l'historique des appels

ANNULER

ANNULER

OK

ASSOCIER

![](_page_24_Picture_8.jpeg)

## COR12 synchronization WSN4Life. - Step VI.

This step, the ECG trace is visible: [1].

![](_page_25_Picture_2.jpeg)

From now on, this procedure will not be necessary and each time the COR12 will automatically connect to the tablet with which it was associated.

The symbol in on the upper right of display [2] is used to retry the connection in case of error, ensuring that the COR12 is on.

![](_page_25_Picture_5.jpeg)

### REGISTRATION - STEP I.

![](_page_26_Picture_1.jpeg)

CLICK ON SYMBOL  $\longrightarrow$  ABOVE RIGHT TO START REGISTRATION  $\rightarrow$  APK MOVES ON THE REGISTRATION OF PATIENT'S DATA.

### INSERT PATIENT DATA:

- 1. ID
- 2. FIRST NAME
- 3. LAST NAME
- 4. BIRTH DATE
- 5. GENDER

### Duration of recording (sec)

Patient id Enter a patient id

First name	Last name
Enter a name	Enter a name
BIRTH DATE Annotation	Gender ◉ Male ○ Female Address
Enter annotation	Enter an address
	ANNULER START RECORDING

![](_page_26_Picture_12.jpeg)

# REGISTRATION – STEP II. WSN4Life.

![](_page_27_Figure_1.jpeg)

CONFIRM DATA AND START REGISTRATION CLICKING ON "START RECORDING".

![](_page_27_Picture_3.jpeg)

### REGISTRATION - STEP III.

### ECG RECORDING...

![](_page_28_Figure_2.jpeg)

![](_page_28_Picture_3.jpeg)

WSN4Life.

### REGISTRATION - STEP IV.

![](_page_29_Picture_1.jpeg)

AT THE END OF REGISTRATION, IT IS POSSIBLE TO SEND REGISTRATION OF ECG VIA EMAIL.

![](_page_29_Picture_3.jpeg)

![](_page_29_Picture_5.jpeg)

### REGISTRATION - STEP V.

![](_page_30_Picture_1.jpeg)

IT IS POSSIBLE TO SEND COMPRESSED REPORT ATTACHED TO THE EMAIL, AUTOMATICALLY.

![](_page_30_Figure_3.jpeg)

![](_page_31_Picture_0.jpeg)

![](_page_31_Picture_1.jpeg)

# LOGGER, WINDOWS VERSION.

# System Requirements. WSN4Life

 The program (in *France language*) can be installed on a Windows PC with the following characteristics.

OPERATING SYSTEM:
RAM:
SCREEN RESOLUTION:
BLUETOOTH CONNECTIVITY:
INTERNET CONNECTIVITY:

Windows 8. 2 GB. 1024 x 768. Requested. Requested.

![](_page_32_Picture_4.jpeg)

# Installation - I.

Double-click on the installer icon of Logger COR12 [1].

![](_page_33_Picture_2.jpeg)

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# Installation - II. WSN4Life

Pre-defined path where to install the program. To avoid problems, please DO NOT change it.

![](_page_34_Picture_2.jpeg)

![](_page_34_Picture_3.jpeg)

# Installation - III. WSN4Life

Name of Start Menu Folder, where to find the program's start-up files. To avoid problems, please DO NOT change it.

Select Start Menu Folder			
Where should Setup place the program	n's shortcuts?		C
Setup will create the program	a's shortcuts in the following s	tart Menu fold	er
			сı.
To continue, click Next. If you would li	ke to select a different folder	, click Browse.	
Wsnl odder		Desugar	
woneogger		browse.	•••
		browse.	
	< Back Nex	t >	Cance

![](_page_35_Picture_3.jpeg)
# Installation - IV. WSN4Life

#### Now, all is ready for installation.

ady to Install		
Setup is now ready to begin installing WSN Monitor Logger Co computer.	OR12 on your	(
Click Install to continue with the installation, or click Back if yo change any settings.	ou want to revie	w or
Destination location: C:\Program Files (x86)\WsnLoggerCOR12		~
Start Menu folder:		
WanLogger		
		~
1		2



#### Click on "INSTALL".



# Installation - V.

#### Installing...

🔂 Setup - WSN Monitor Logger COR12

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#### Installing

Please wait while Setup installs WSN Monitor Logger COR 12 on your computer.



Extracting files...

C:\Program Files (x86)\WsnLoggerCOR 12\itextsharp.dll

Cancel





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# Installation - VI.

#### Installation completed...

🛃 Setup - WSN Monitor Logger COR12



#### Completing the WSN Monitor Logger COR12 Setup Wizard

Setup has finished installing WSN Monitor Logger COR 12 on your computer. The application may be launched by selecting the installed icons.

X

Click Finish to exit Setup.

Start WsnLoggerCOR 12 after finishing installation

Finish

#### ... click on "FINISH".



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# Logger COR12 start. WSN4Life

In the list of programs, from Start Menu, User will find "WsnLoggerCOR12".





# Synchronization COR12 - I and II.

WJN4LIte.	W	S	N	4	LH	<b>e</b>
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NOTE 1	MAKE SURE THAT THE BLUETOOTH TABLET IS TURNED ON.
NOTE 2	MAKE SURE THAT DURING THE PROCEDURE OF SYNCRONIZATION, NO OTHER DEVICE IS TURNED ON NEARBY (THE TABLET).

Start the Logger on the tablet and insert the AA battery into COR12 compartment.







# Synchronization COR12 - III.

- Turn on the device, briefly pressing the central button; then, press and hold it again for 6 seconds; the center blue LED will begin to flash rapidly: this means that the COR12 is detectable by the tablet.
- Wait until on the Tablet a notification appears (top right of the screen) to request for Bluetooth pairing. Click on it to confirm. (If an association code type is requested, type in "1111").
- Make sure the blue LED starts blinking slowly; this means that the COR12 has connected to the tablet.



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# Synchronization COR12 - IV.



It can be observed on the logger the ECG trace, in real time.



From now on this procedure will not be necessary and each time the COR12 will automatically connect to the PC with which it was previously associated.





# WINDOWS SOFTWARE INTERFACE GENERALITIES.



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WSN4Life

#### LAUNCH OF THE APPLICATION.









#### HOW TO SAVE LOCALLY THE RECORDS.



In the "PDF" folder are automatically saved ECG reports generated by the application, if properly configured destination the folder in the "settings" of the program.





## HOME PAGE, WITH DEVICE NOT CONNECTED.







## MENU, WITH DEVICE NOT CONNECTED.





### SETTING REMOTE CONNECTION.



Of the two options, select "Enable email attachment" and [1] fill in the field of "Email address" [the report destination] and "Password" that will be used by the specialist to open the attachment.

- To confirm, press
  "Update" [2].
- The [3] box is to cancel the existing settings.



### MENU, WITH DEVICE CONNECTED.

- Prepare the patient and the device for recording as specified by the Product Manual.
- When device is connected to the Tablet it emits a "beep" and the ECG strip, 12 leads, in real time, appears on the display, as it is shown in the next slide.
- User has to fill in the "Record Date", to associate ECG recording to the patient, uniquely.





## DATA RECORD - PERSONAL DATA.







#### DATA RECORD - MEASUREMENTS.





#### DATA RECORD - ANAMNESIS.





#### DATA RECORD - NOTES.













# MENU, WITH DEVICE CONNECTED.





## MENU, IN DEPTH ANALYSIS.



- [1] To go to the archive of the data and from there, to send a selection of ECG report to print ("deferred print").
- [2] To print immediately, the ECG report on the screen ("instant print").
- [3] To change the data record.
- [4] To exit the application.

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### **N**EW WORKING SESSION - **I**.









### NEW WORKING SESSION- II.







### NEW WORKING SESSION- III.





#### NEW WORKING SESSION- IV.







# TO EXIT APPLICATION - I.









# TO EXIT APPLICATION- II.









### HOW TO PRINT AND STORE LOCALLY, IN .PDF FORMAT, ECG REPORT AND HOW TO SEND IT BY E-MAIL TO THE SPECIALIST.



#### **INTRODUCTION**.

- With the immediate print or deferred one (refer to the following pages) user can generate a printout, in PDF format, of ECG shown on the display:
  - □ Instant Print = pressing a button on the display, a printout is generated.
  - Deferred Print = pressing a button on the display, in a subsequent page, user can choose a portion of the ECG recording accumulated up to that moment by scrolling the registration bar and then s/he can generate a print.
- The .pdf format prints are stored in "PDF" folder and automatically sent to the specialist via email, if (Pre-Requirements):
  - 1. (if) the "PDF" folder has been created;
  - 2. (if) the email address has been set correctly;
  - 3. (if) the tablet is connected to the Internet.





## INSTANT PRINT - STEP I.







# INSTANT PRINT- STEP II.







### DEFERRED PRINT - STEP I.







# DEFERRED PRINT- STEP II.







## DEFERRED PRINT- STEP III.







#### AMPLITUDE MODIFICATION.







### SPEED MODIFICATION.






### DEFERRED PRINT - STEP IV/A.







### DEFERRED PRINT - STEP IV/B.





### SENT CONFIRMATION TO THE SERVER WSN4Life. AFTER PRINTING.





#### WSN4Life.



### WHAT THE SPECIALIST GETS AND HOW SHOULD S/HE OPEN THE REPORT.



#### PREMISES.

- The specialist receives an automatic E-Mail, from the logger, with an attachment, in .zip format, that can be opened only with the password entered in the Logger Settings (please refer to page "Parameters -Connection").
- The report is generated by the application in one of two printing options available ("deferred" or "immediate").



### WSN4Life

## E-MAIL EXAMPLE.

Portale	Posta Rubrica Calendario Attività		0 D C 🔅 🛞 register
Cerca		Componi 🦘 🦘 🖻 🙆 🗮	≡ - Vis
	Posta in arrivo 2	<ul> <li>Seleziona tutto</li> <li>Ordina per</li> </ul>	
È	Bozze	smtp@wsn4life.com 14:41	Device: 00A096369178
1	Messaggi inviati	☑ Device: 00A096369178	
0	Posta indesiderata	smtp@wsn4life.com 13:55	A test@wsn4life.com 13:55 ≡ A test@wsn4life.com
Û	Cestino	<b>Device: 00A096369178</b>	
▼ Le mie cartelle			Stallegato Apri nel browser Scarica
			Sent by WSN Monitor Logger BT12-3.60 S/N:HF1R-64B0-6409-404D-874D-6364-1AFE-25CB
Aggi	iungi un account di posta		







### E-MAIL BODY.

1: Bluetooth address of the medical device.

- 2: Destination email address of of report, .zip.
- 3: Hour and Minute, when the report is received by the server.







#### HOW TO OPEN THE REPORT.







# DECLARATION OF CONFORMITY.





### CONTACTS.

### Wireless Sensor Networks S.r.l. Via A. Ponchielli, 5 20833 Giussano (MB) - ITALY. (T) +39 (0) 362311245 (F) +39 (0) 362310237 info@wsn4life.com - www.wsn4life.com

# Thanks for your Attention!