Spir-0

User Manual - Quick Guide

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Revisions

Date	Revision	Modifications carried out
05-Mar-20	A	First release
07-Aug-20	B	SOM-Board integration release, sound integration
15-Dec-20	C	Added §8.1 on connecting optical fibre + grammatical corrections
23-Dec-20	D	Clarified shutdown and restart procedure in §5 + minor corrections
08-Feb-21	E	Extended the §9 Audio module
23-Oct-21	F	General update all sections incl. LED colours, browser link, new visualization, data recording & warranty; Incl. note re "Sounds" folder on USB/mSD cards;
24-Nov-21	G	Clarified LED colours, states & visualization §7.5; Removed forced shutdown; Added §7.2 Placing OF in nasal adapter & §10 Software update; Minor updates;

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1 Introduction

1.1 General Information

The contents of this document are the intellectual property of CyNexo srl, and any reproduction of this document, in whole or in part, is prohibited, unless otherwise specifically authorized in writing by CyNexo srl.

2 Quick start guide warnings

Please read this section carefully BEFORE you start any operations with your new equipment. If at any time you identify damage to or an abnormal condition of the product, please STOP, safely disconnect the equipment from ALL power sources and contact us immediately through the channels provided in the Contact Details section of this document.

Please read ALL labels and warnings prior to using this product. If in doubt, please do not proceed and contact us for clarifications.

3 Definitions and terminology adopted in this manual

3.1 Definition of CAUTION and NOTE

CAUTION
This term refers to a procedure, a condition for which the non-compliance of the rules indicated may result in damage to the system or its components, or cause injury to the user.

NOTE
This term draws the reader's attention to particular aspects of the procedure described herein.

3.2 General definitions related to safety

USER
User means the person authorized to perform the activities within his/her competence in running the system, including the task of recognizing any possible hazards to oneself and/or to exposed persons, as well as to avoid any risks involved. Generally, authorization to run one or more systems is given following the operator's ability to demonstrate such competence, resulting from his/her previous capabilities, experience and training.

TECHNICIAN
See specialized personnel.

MAINTENANCE OPERATOR
See specialized personnel.

SPECIALIZED PERSONNEL

Specialized personnel means the person or persons having specific expertise in one or more specific fields, capable of carrying out any maintenance operation other than routine service operations. The specialized personnel may be the manufacturer's employee or an employee of an external company who is specifically authorized by the manufacturer.

EXPOSED PERSON

An exposed person is any person who, for whatever reason, happens to be completely or partially in a hazardous area.

HAZARDOUS AREA

A hazardous area is the whole area within which the presence of an exposed person may create possible risks to his/her health and safety.

HAZARD

A hazard is a situation or a reason to which one or more elements that can cause the death of or serious injury to the user or to any exposed persons present.

RISK

Risk means the possibility of a hazard and, consequently, the possibility for a user or person exposed to suffer an injury.

3.3 Short forms / Abbreviations

Following a list of terms that will be abbreviated when used inside of this manual.

Comma Separated Values	CSV
Human Machine Interface	HMI
Electromagnetic compatibility	EMC
Electroencephalography	EEG
Magnetic Resonance Imaging	MRI
Functional Magnetic Resonance Imaging	fMRI
Functional Near-InfraRed Spectroscopy	fNIRS
Transistor–transistor logic	TTL

4 System layout

The next two paragraphs will visually describe the front and rear connections on the enclosure.

4.1 Device front panel connections
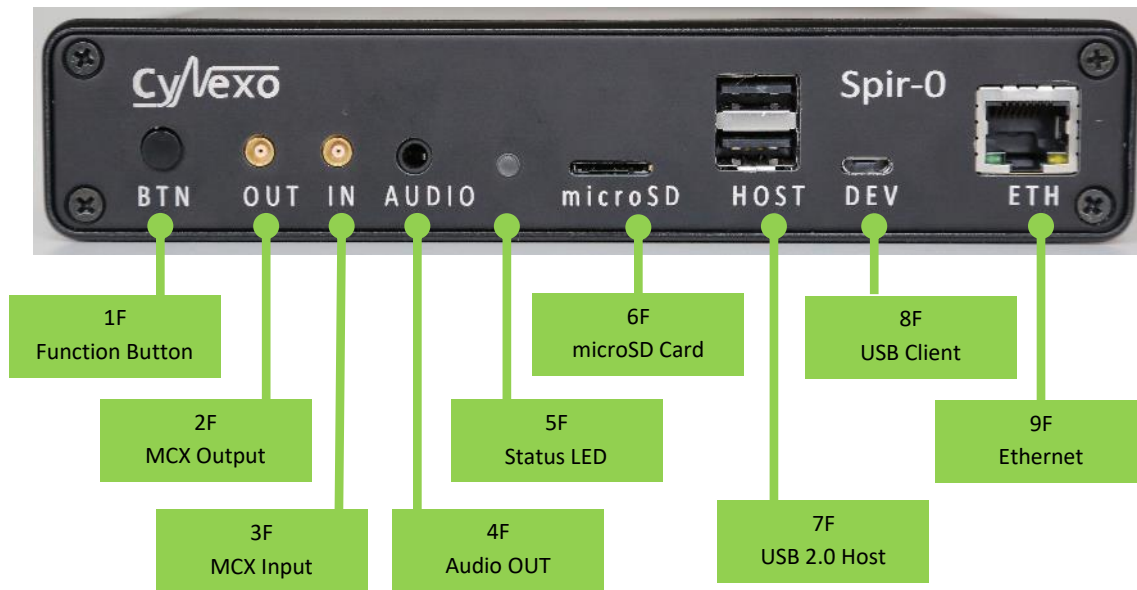
Figure 1: Front panel

Connector #	Function	Description
1F	HMI	Function button
2F	Digital OUT	Opto-isolated Digital Output 0-5V (TTL compliant)
3F	Digital IN	Opto-isolated Digital Input 0-5V (TTL compliant)
4F	Audio OUT	Headphone or speaker Output
5F	HMI	Status LED
6F	MicroSD Card	Micro SD Card Slot
7F	USB	2x USB-A host Connector (Pen-drive connection)
8F	USB	Micro-USB device Connector (cable connection device to host PC)
9F	Ethernet	RJ45 ethernet socket (10/100 LAN connection)

Table 1: Spir-0 front panel elements

4.2 Device rear panel connections

Figure 2: Rear panel

Connector #	Function	Description
1R	Optical IN	FC socket connector
2R	Power IN	Power Connector (12V 15W max) ◇-ⓒ-◇
3R	Power Button	ON/OFF button

Table 2: Spir-0 rear panel elements

5   System power ON/OFF

Your Spir-0 device comes with a medical grade CE certified 12V 15W standard power adapter.

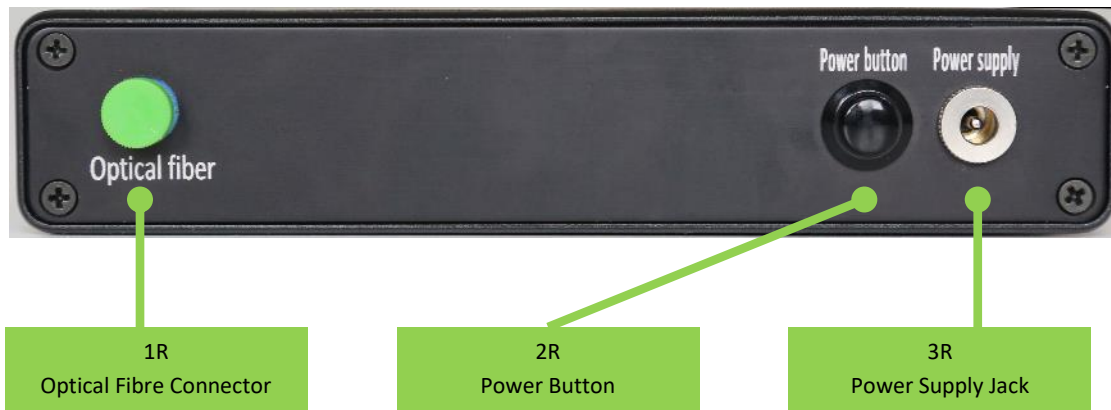WARNING: Only use provided 12 V power adapter with a min. power rating of 15W and center-pin positive polarity.

5.1 Switching the device ON

Prior to switching the device ON, we recommend plugging in all peripherals to the device, such as USB pen drive, microSD card, trigger I/O cables and USB or Ethernet based device to host PC cable.

To switch ON the device, please follow the sequence below:
- Plug the power adapter into a wall socket and connect the 12V plug to the rear power jack (Jack 2R)
- Push the "power button" (Button 2R) for 1 second: the LED on the front panel will blink YELLOW for a few seconds to indicate it is booting up. When the system is ready to start calibration the front LED will switch to blinking BLUE.
- At this point you may remove the plastic protective caps from the optical fibre cable and the rear optical connector on the unit (1R) and connect the optical fibre to the rear FC connector (see section "Connecting the optical fibre cable") paying careful attention to avoid dirt entering the connector.

- Once the fibre cable is connected, push the "function button" (Button 1F) on the front panel. This will activate the calibration phase during which the LED will light up BLUE. When finished the LED will start blinking YELLOW slowly (every few seconds) until an edge is detected based on the flow of air passing over the tip of the optical fibre cable during the normal breathing. Once an edge is detected the LED it will alternate between GREEN (during inhalation) and RED (during exhalation).
- Should you place the device in "Pause" during the measurement phase by pressing the "function button" (Button 1F) on the front panel, the LED will blink GREEN until it is un-paused again.

5.2 Switching the device OFF

To switch OFF the device follow the sequence below:
- Push the rear button for about 1 second (Power Button 3R): the front LED (LED 5F) will blink RED for a few seconds as it shuts down and then remain off.
- Once the LED has turned off, unplug the rear power jack plug from the socket (Jack 2R) and the power adapter as necessary.
- Unplug the optical fibre cable from the rear connector (1R). DON'T forget to apply the plastic caps to both the optical fibre cable and optical fibre connector on Spir-0 (1R): NOTE: dust and dirt can obstruct the light transmission to/from the spectrometer and thus impact correct operation.
- Unplug all other peripherals to the device, such as USB pen drive, microSD card (if necessary), trigger I/O cables and USB cable to PC as appropriate.

NOTE: Should your Spir-0 device fail to respond for at least 60 seconds to your pressing any single button, and the LED does not show any signs of life, please force the system to reboot by disconnecting the power supply for about 10 seconds, then reconnect and power Spir-0 up as usual. Please beware that this procedure might cause the file system to be corrupted, and so should only be used as a last resort, if possible only after having contacted our support team.

6   Connecting to Spir-0

6.1 Direct connection via USB cable

The most straightforward way to connect the device to a PC is to plug the USB-A to micro-USB cable provided from the micro-USB connector (8F) on the Spir-0 front panel to any USB-A port your Windows 7/10 PC: the device will then open a RNDIS connection simulating an ethernet network over USB.
Once connected the Device Manager will add a new Network adapter as "Remote NDIS Compatible Device":
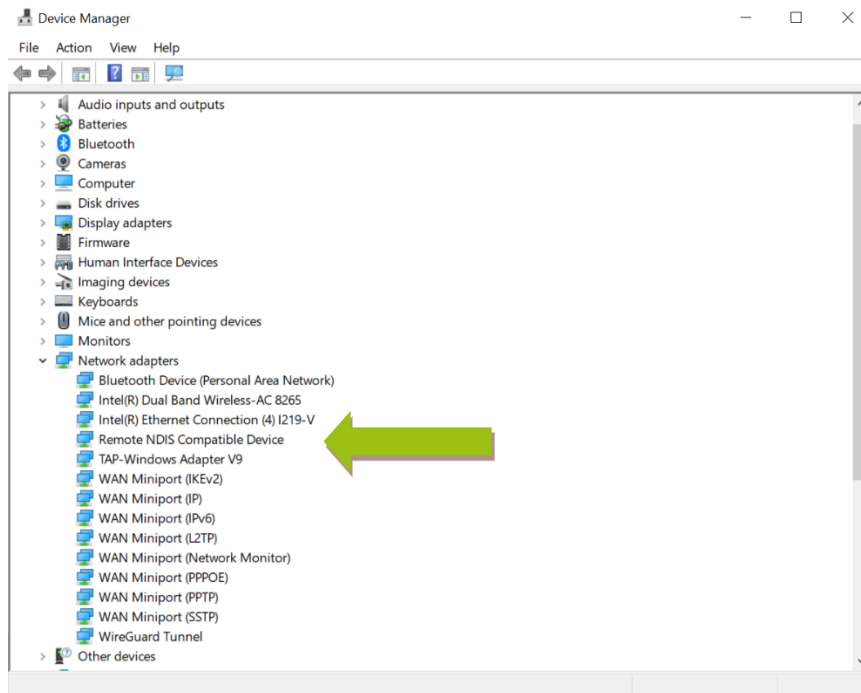
Figure 3: Windows PC - device manager

That will create a new network connection that will appear in the Network Manager panel:
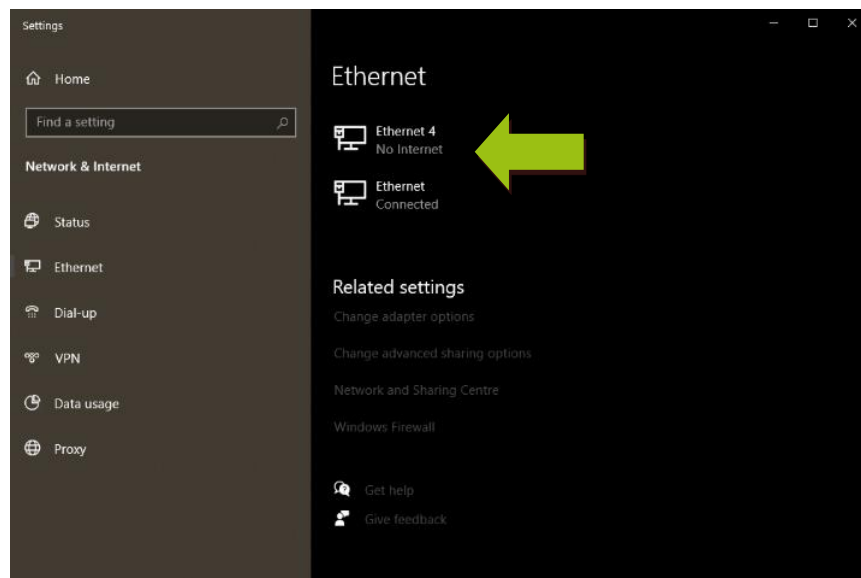
Figure 4: Windows PC - network settings window

For Windows 7 and most versions of Windows 10, the virtual network IP port will be configurated automatically and you will be able to access the device through the following URL:

http://192.168.11.1:5000

Alternatively, it may be necessary to manually configure the IP port of the virtual network on your PC following these steps:

Open the "Network and Sharing Centre":
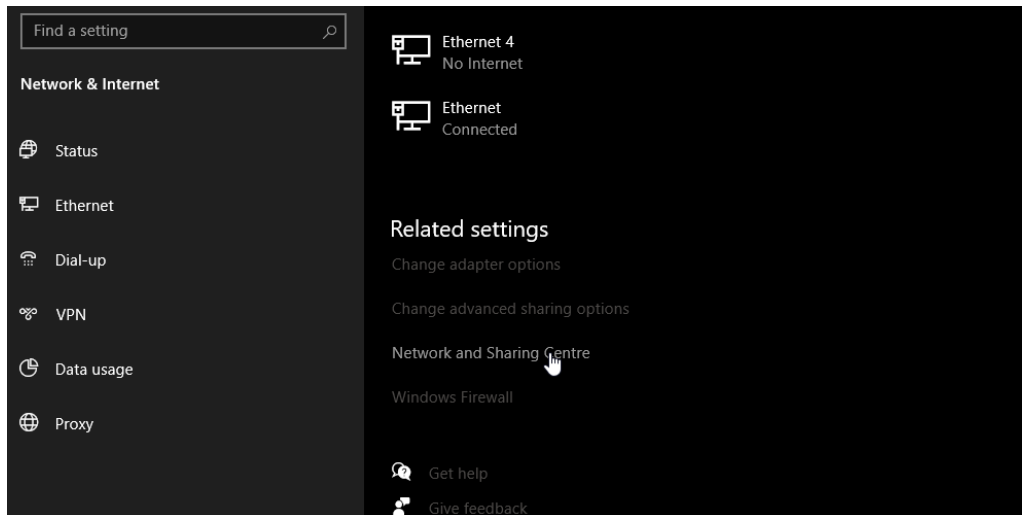
Figure 5: Windows PC - network settings window

Then select the newly created network (in our example "Ethernet 4"):
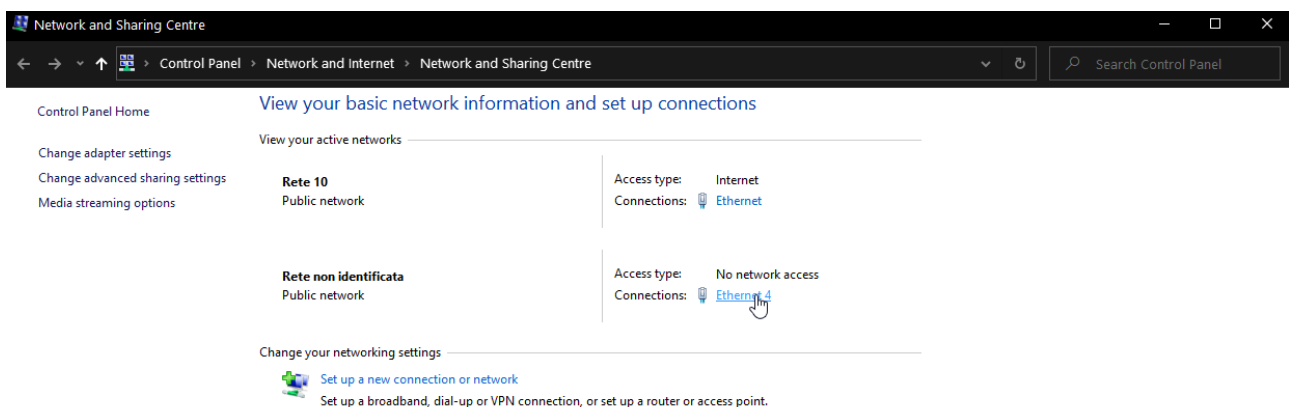
Figure 6: Windows PC - select newly created unidentified network

Select "Properties":
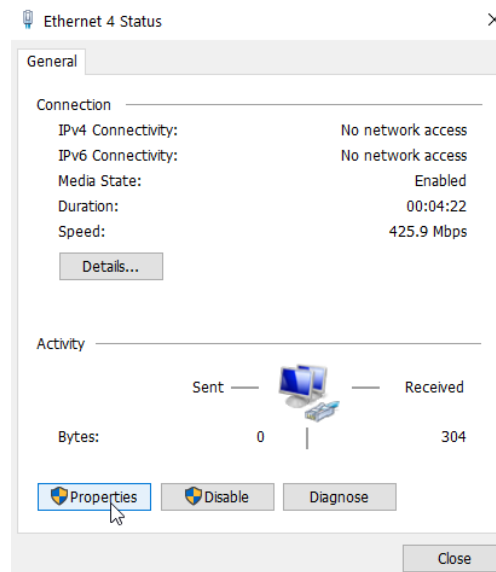
Figure 7: Windows PC - network settings select network properties

Then select "Internet Protocol Version 4 (TCP/IPv4)" and click on "Properties":
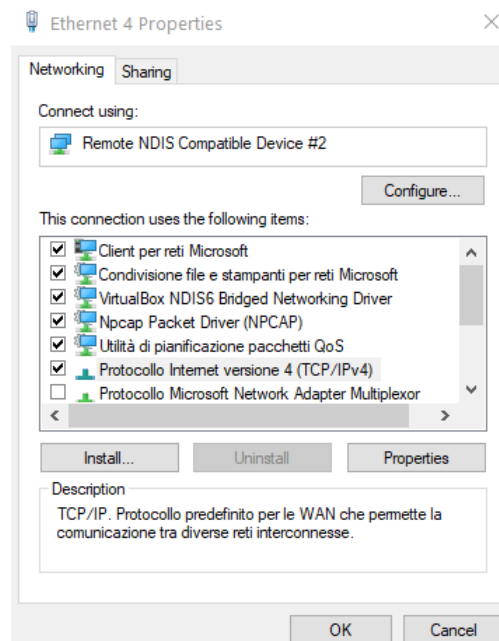
Figure 8: Windows PC - network settings select TCP/IPv4 properties

Now manually set the IP address to **192.168.11.xxx** (where xxx is a number different from 1 as this is reserved for your Spir-0 device) and the subnet mask to **255.255.255.0** as below. You may leave the default gateway, DNS server and other fields blank.
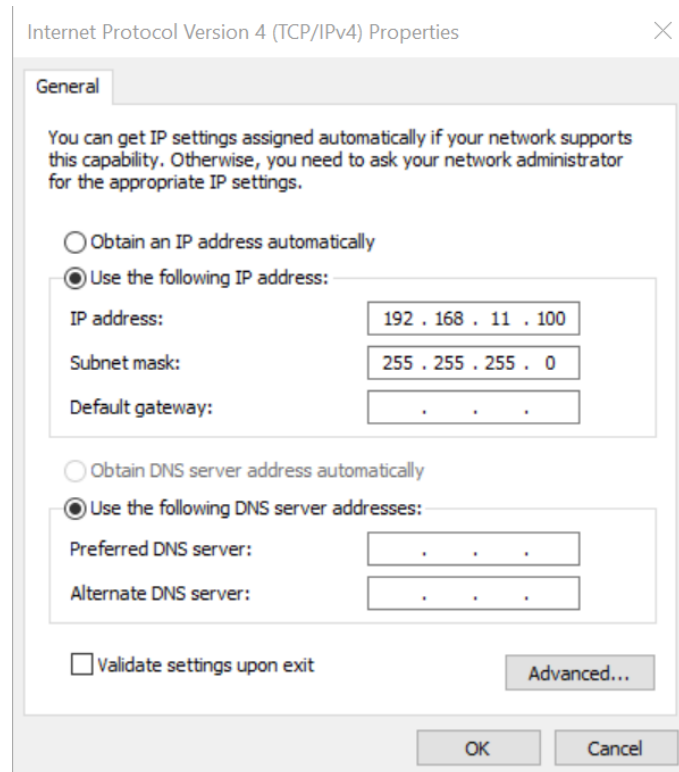
Figure 9: Windows PC - network settings set IP address and subnet mask

Once done you will be able access the device through the following URL:

http://192.168.11.1:5000

6.2 Ethernet network connection to Spir-0

By plugging the device into a network using the Ethernet connector (9F) on the front panel of the system, the device will be assigned an IP address and be configured by the network's DHCP server. Depending on your network settings, the system will be reachable through the IP-NUMBER assigned by your DHCP server. You can connect to the home page of your Spir-0 device using the following URL:

http://IP-NUMBER:5000

where "IP-NUMBER" is the IP address assigned by your networks DHCP server, followed by ":5000" to indicate the port to be used.

NOTE: Please refer to your network administrator if you don't know the actual address assigned to Spir-0 or the range of IP addresses provided by your DHCP server.

6.3 Web interface

The above links will bring you to a local webpage for the Spir-0 device from which you can access the Spir-0 Breathing monitor and Audio modules respectively.

On your first access to this page, the device will synchronise its internal clock to that of your browser/PC.

NOTE: Should your PC have an incorrect date or time set, this will be copied over to Spir-0 as well.
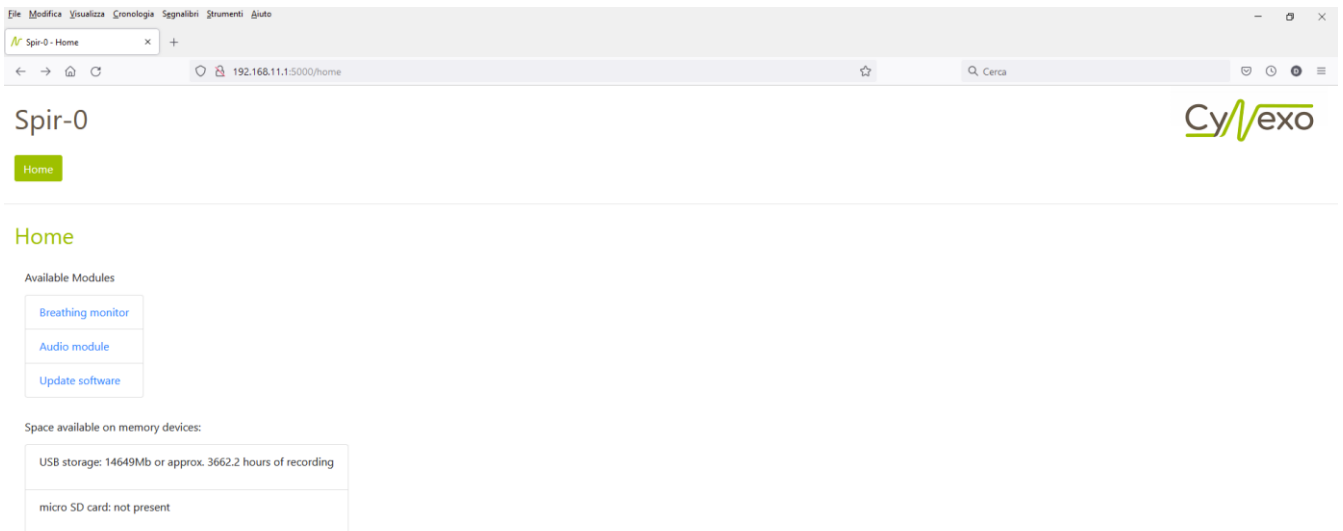
Figure 10: Spir-0 device web interface landing page

On this page you will also find the currently available space on each of the memory devices plugged into your Spir-0, as well as an estimate of the number of hours of recording you can save to each memory device.

You can always return to this initial landing page by clicking on the HOME button located in the top left corner of the window, below "Spir-0".

NOTE: Should you not have enough space on your device to complete the planned recording, please substitute the memory device or free up some space on this device.

7   Breathing Monitor

7.1 Connecting the optical fibre cable

Prior to calibrating the system, ensure the optical fibre is properly connected to the unit. To do so:

  (a) remove the caps from both the receptacle on the unit and on the optical fibre connector, placing them in a safe location, and being careful not to touch the fibre core with your fingers.
  (b) Carefully insert in the connector as seen below, ensuring the notch on the fibre cable connector is properly aligned to the slot on the receptacle, then gently push the connector in all the way.
  (c) When the notch is snugly fitting into the slot, go ahead and gently tighten the threaded lock ring to ensure a snug fit of the optical fibre.
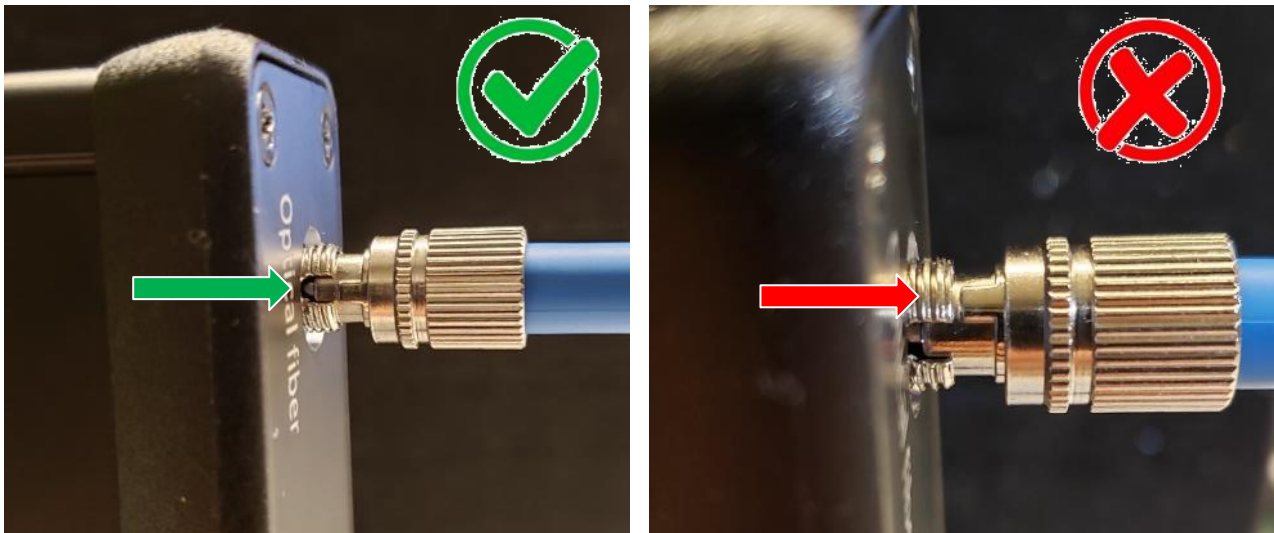
Figure 11: Correct optical fibre insertion

Should you have trouble obtaining good reading during the calibration phase, please return to this section and repeat the optical fibre cable connection steps, ensuring no dirt or other contaminants have entered the connection or deposited on the fibre core.

7.2 Placing the fibre optical sensor in the nasal adapter

The fibre optical sensor is located on the exposed tip of the fibre optical cable provided, and can be identified by the red marking as seen in the image below.

NOTE: Beware that while the fibre optical cable is quite robust it can still be easily damaged if bent to radiuses below 100mm or pinched in any way. The exposed tip of the fibre optical sensor is particularly sensitive and should always be handled with the utmost care. When applying tape to the fibre optical cable always make sure to pull it off parallel along its length and towards the tip of the cable and never across or backwards.

Carefully slide the exposed end of the fibre optical cable through the plastic sheath on the nasal adapter tube and then place the end of the fibre optical cable in the slot carved out of the nasal adapter such that the sensor sits just below the tip of the adapter.
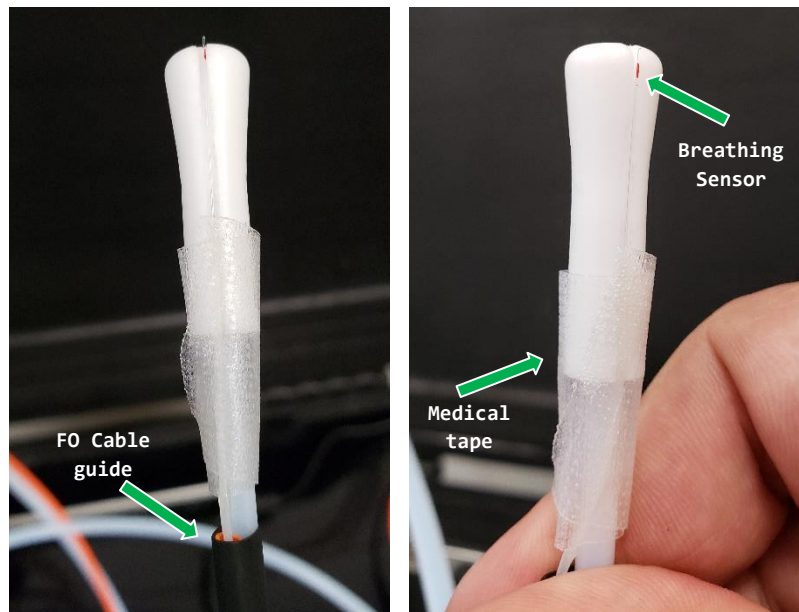
Figure 12: Placing fibre optical cable in nasal adapter

In order to hold the optical fibre in place, we recommend applying a small piece of medical tape to the body of the nasal adapter. You may also want to do the same lower down on the manifold to ensure the fibre optical cable cannot easily be pulled out of position.

7.3 Setting the task name

By clicking on the 'Breathing monitor' link you will first be asked to enter a name for the task you are about to perform. This will be the name used to save the log file of the current task and can be any combination of alpha-numerical characters, the dash "-" and underscore "_" special characters. The date and time will automatically be added to the end of the file name in the format of "_YYYYMMDD_HHMMSS" so if the task name you have entered was "John_Doe-Task1" and today's date and time was 13:59:59 on June 1st 2021, the file name would be "John_Doe-Task1_20210601_135959".

Figure 13: Inserting Task Name

If unacceptable characters are used in the name, an error will be generated, and you will need to enter a new task name using only the accepted characters mention above before you may proceed.

7.4 Calibration

Before you can start visualizing the breathing cycle, you will need to calibrate the unit as follows:
- After starting the device up and once the LED has started blinking BLUE, you can trigger the calibration process by briefly pressing the "function" button on the front panel (1F).
- Place the tip of the optical fibre cable within a few millimetres of your nose and directly in the airstream from one nostril created when breathing through your nose. During calibration the LED will turn solid BLUE. This process generally takes around 30 seconds (NOTE: the live visualization will remain black until the calibration process is completed).
- When the calibration process is finished, the LED will switch from BLUE to a slow YELLOW heartbeat blink until an edge is detected, after which it will alternate between GREEN (inhalation) and RED (exhalation) based on the measurements taken during the normal breathing cycle.

If during the calibration process the front panel "function button" is held for LESS than 2 seconds, the calibration process will be PAUSED and the BLUE LED will now start to blink. Calibration will recommence when you press the button again.

If during the calibration process the front panel "function button" is held for MORE than 2 seconds, the calibration process will be immediately RESTARTED.

NOTE: During the calibration operation the TTL trigger OUT will oscillate between high and low states at about 10Hz so that in case of a calibration process being started during an experiment, it is clearly distinguishable from any normal breathing cycle triggers.

Once the calibration process is finished, the device will automatically enter monitoring mode and start logging all details. The LED will now slowly blink YELLOW until an edge is detected, at which point it will alternate between GREEN and RED depending on the breathing phase.

NOTE: No details are logged during the calibration and paused phases.

7.5 Breathing cycle visualization

Once powered on and connected, having accessed the system via the web interface (see section "Connecting to Spir-0"), entered the breathing monitor and defined a task name, you will be taken to the breathing cycle monitor screen. After calibration, this screen will provide a live graphical representation of the breathing cycle as detected at the tip of the optical fibre cable (portion marked in red).
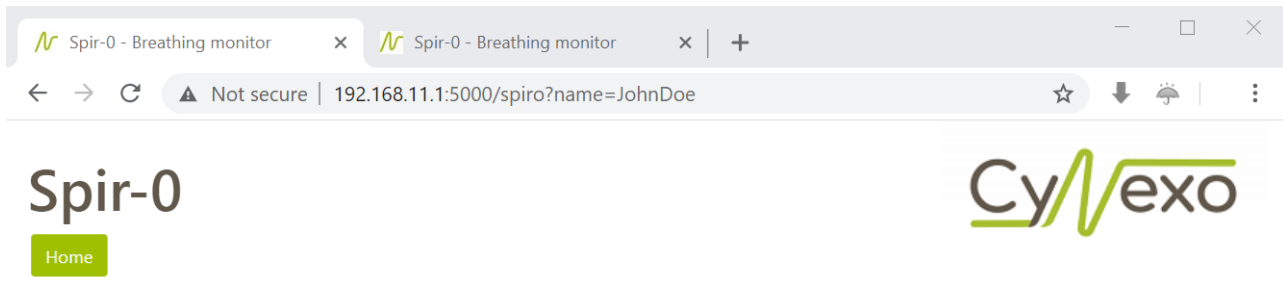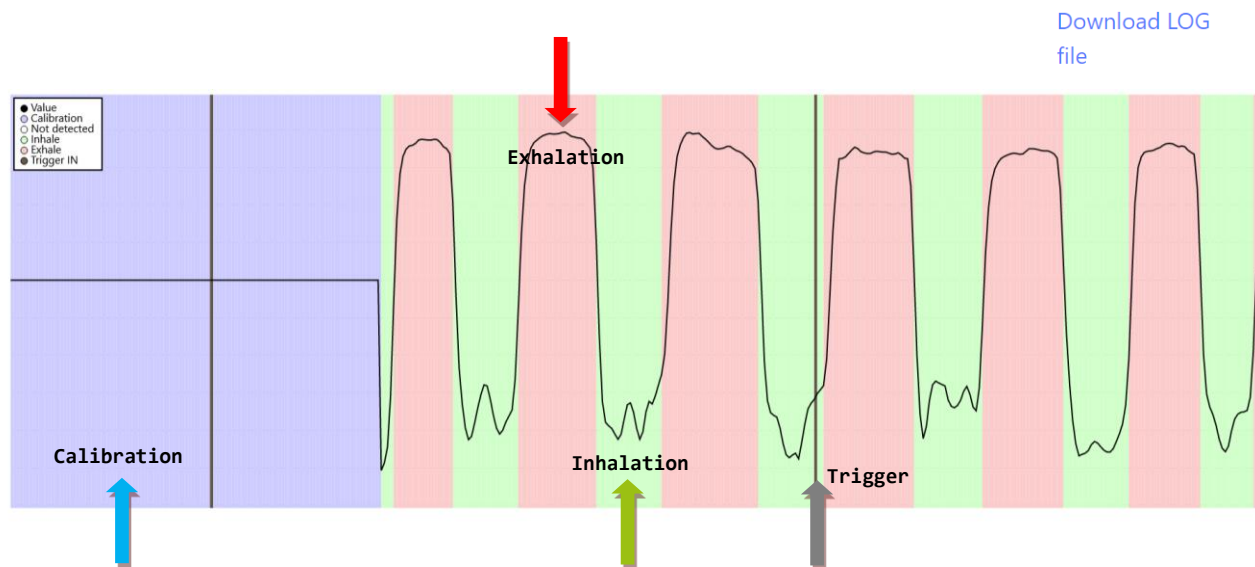
Figure 14: Web-based breathing cycle visualization

The web page will graphically display the fluctuations in the inhaled and exhaled air, indicating four possible conditions based on the page background colour (see arrows):

- Light blue: calibration operation in progress (blue LED)
- Light red: exhaling phase (red LED)
- Light green: inhaling phase (green LED)
- Dark Grey: maker indicating a trigger IN has been received (not LED activity)

NOTE: You can start and stop (pause) the breathing recognition by pushing the "function button" (1F) on the front panel for LESS than 2 seconds. Pushing the button for MORE than 2 seconds will activate the system calibration phase.

7.6 Inhalation trigger OUT

The start of each inhalation phase will lead to a low logic level (i.e. becomes 0 when triggered) TTL trigger OUT being generated, and the start of each exhalation phase will lead to a high logic level TTL trigger OUT. You can use this trigger OUT signal for recording or to trigger another device such as Sniff-0 by connecting the output MCX connector (2F) to the respective Trigger IN BNC connector on Sniff-0 (see your Sniff-0 manual for more details).

NOTE: During the calibration operation the TTL trigger OUT will oscillate between high and low states at about 10Hz so that in case of a calibration process being started during an experiment it is clearly distinguishable from any normal breathing cycle triggers.

8 Recording of breathing data

The complete raw data session including breathing cycles and trigger events is constantly being saved as a CSV (comma separated values) formatted LOG table, which can be particularly helpful for further post processing operations.

8.1 Log file format

The format of the data will be as follows: "time,signal,triggerOUT,triggerIN" where decimal values indicated with a decimal point, for example "123.45".

time => **time** in seconds from the start of the session (i.e. start of first calibration)
signal => **measured value** where 0 is the rolling average of the measured data (of last 50ms)
triggerOUT => **3, 2, 1, 0, -1**

      3 = no edge detected (only possible directly after calibration)

      2 = in calibration

      1 = exhalation front

      0 = stable condition*

      -1 = inhalation front

triggerIN => **0, 1**

      0 = no trigger;

      1 = trigger received

* stable condition = the previous state applies as long as measurements are stable and no inverse edge has yet been detected.

NOTE: Spir-0 is only able to record data internally using volatile memory for the current session. Powering off or resetting the device will cause your device to lose any data and log file held in this volatile memory and normally accessible via the browser. A new log file will be created for each new session.

NOTE: We recommend you always insert a USB pen drive and/or microSD card in the device, so that the log files will however also be saved to these on a continuous basis and remain accessible after powering off or resetting the device. See the section Recording to a USB or SD device below for more details.

8.2 On-board recording

By default, the above-mentioned CSV format log file is recorded to the device's internal memory. Onboard memory is sufficient to record single sessions lasting more than 24 hours.

You can access this file by clicking on the "Download LOG file" link in the top right-hand corner of the web interface. Clicking this link will cause the log file, named "Spir-0_Log_Download_YYMMDD_HHMMSS.csv", to be downloaded to your PC's default download directory as defined in the settings of your browser. This log file will contain all data from the whole session, irrespective of the number of tasks named and initiated during the session.

8.3 Recording to a USB or SD device

For your convenience, in addition to saving the log file to local memory from where it can be downloaded, your Spir-0 device will also attempt to record the breathing and trigger log data to a CSV file located on an external USB pen drive or microSD card. To do this you must follow these steps:

a) Please ensure the memory device you plan to use contains a single partition, is formatted as FAT32 and has sufficient free space (you will need about 3MB per hour of data).
NOTE: We recommend only using good quality memory devices designed for fast/frequent writing operations as these may otherwise fail due to the intense writing activities.

b) Should you wish to use the Audio function, please make sure that on your memory device you have created a folder under the root directory called "Sounds". You will find more details in the Audio Module section of this document.

c) Plug the USB pen drive or microSD card into the port on Spir-0's front panel (7F) or (6F).
NOTE: Please only insert one USB pen drive at a time as your Spir-0 device will only recognize the first USB pen drive to have been inserted or registered by the device.
NOTE: It is generally better to plug the USB and/or SD devices in before switching the system ON. You can also plug them in while the system is paused (please wait few second before un-pausing). If you insert a USB pen drive during recording, the device will ONLY record subsequent data to the pen drive. The whole data set for the session can however be downloaded from the web interface.

d) Prior to removing the USB device or SD card, please execute the shutdown of Spir-0 as indicated in the System power ON/OFF section of this document. This will avoid any accidental data corruption.

On the USB pen drive, the system will save a separate file for each task session. The name of this log file will be the task name you assigned at the beginning of the task (see the Setting the task name section) followed by the date and time in the format of "_YYYYMMDD_HHMMSS". If no task name was used, it will be named "Task_YYYYMMDD_HHMMSS.csv".

On the other hand and if available, the system will save to the microSD card a single log file containing all recorded data and triggers for all tasks carried out for the whole session, i.e. since the system was last reset/powered on. This log file will be named "Spir-0_Log_YYYYMMDD_HHMMSS.csv" where the date and time stamp are those at the time of shutting down.

NOTE: We recommend using both a microSD card and a USB pen drive. If you permanently leave the microSD card in the device, this will always act as a back-up saving location in case no USB pen drive was inserted or it failed. Please remember to check the amount of space available on the microSD card on a regular basis based on the frequency of use and duration of the sessions.

9   Audio module

In order to have Spir-0 play an audio file of your choice you must first make these files available to the device as follows:

a)   Create a folder named "Sounds" on a clean FAT32 formatted USB or SD device and then copy your sound file into this folder

   NOTE: only ".WAV" files with this explicit file extension to the name are supported at this time

   Example:

   Removable Disk (E:)
     └ Sounds
       └ test1.wav
       └ test2.wav

b)   Plug the USB and/or SD devices into Spir-0

   NOTE: The USB device has the highest priority; If both are inserted, Spir-0 will look for the audio "Sounds" folder containing the audio files on the USB device first. If no such folder is found, it will then look in the SD device. If a "Sounds" folder is found but is empty, Spir-0 will simply not show any audio files as being available.

c)   Switch Spir-0 ON as indicated in the System power ON/OFF section of this document
d)   Click on 'Audio module' on the home page after which you will see the available sounds displayed
e)   Enter the following URL in the address bar of your browser:

   http://**IP-ADDRESS**:5000/audio.py?sound=**SOUND**&task=**TASK**

   Replacing only the parts in **BOLD italics** as follow:

   IP-ADDRESS is 192.168.11.1 if you use the direct connection via USB cable.
   If you are using the Ethernet connection, ask your network admin for the correct IP address.
   Please make sure you always add the ":5000" port number after the IP address.
   SOUND is the name of your audio file (NOTE: Filename must include the ".wav" file extension)
   TASK is
   - **sv:** if the trigger for the sound is to arrive BEFORE the trigger for the odour valve (the sound will start upon the first trigger IN received)

- **vs**: if the trigger for the sound is to arrive AFTER the trigger for the odour valve (the sound will start upon receipt of the second trigger IN)

  e.g.: http://192.168.11.1:5000/audio.py?sound=test1.wav&task=sv

During the playback of any single audio file, Spir-0 will not recognise or react to any input triggers. This will occur only after the audio file has finished playback.

After the sound has been played, the audio module will go into standby and wait for a new command, that is it will not react to any further triggers until a new command is given, unless additional commands have previously been queued in which case they will be executed sequentially.

Should you wish to execute more than one sound in series without the use of additional triggers, you will need to prepare a single WAV file containing all sounds in the desired sequence and appropriate timings.

10 Software Update

Should it be necessary to update your devices software, we will let you know, or you can contact us through our customer service through the channels indicated in the Contact Details section of this document.

In order to perform the software update, we will provide you with the necessary digitally signed update file, such as "Update_210601.tar.gz.signed". Only authenticated files will be accepted by the device. Should an error occur due to a missing, incompatible or unauthenticated file, an "Invalid file" error will be shown and the update will be interrupted.

After selecting the "Update software" button on the home screen, you will be asked to select the update file and proceed. If the file is authenticated, the update process will proceed automatically by performing a controlled shutdown, executing the update and then restarting.

NOTE: All log files in the devices' memory will be lost. If you have a USB and/or SD device plugged in, the log files will be saved as usual to these devices. We recommend saving all necessary files prior to initializing the software update.

11 Spare parts codes

We offer a wide range of replacement, spare and add-on parts for all our equipment. Below is a table with some of those most applicable to this device:

CyNexo Code	Description
1O000007A	Fiber optical sensor cable for Spir-0 (length to be specified)
2P000015A	Nasal adapter PTFE for Spir-0 (pair of 2 pieces)
1A000277A	Power supply 12V 2.5A 30W medical grade

Table 3: List of most common spare parts

For any of the above items as well as other spare parts or custom solutions, please contact CyNexo directly. You will find our contact details in the Contact Details section of this document.

12 System maintenance

12.1 Cleaning and maintenance

! Don't use sharp objects on the device that can scratch or damage surfaces or cables.

✓ Any standard glass cleaner can be used to clean the surface, but avoid products containing ammonia, acetone, alcohol, or other solvents. Alternatively you may use warm water and a light detergent.

✓ Depending on dust environmental conditions, we recommend cleaning exposed surfaces at least once a month using a damp cloth.

Exposure to heat sources, thinners, corrosive or other chemical substances as well as strong electromagnetic or other forms of irradiation should be avoided both while cleaning the device and its components and in general, unless expressly indicated otherwise in this manual.

13 System installation, handling and dismantling

13.1   General Information

Before installation, make sure that the area on which the system will be installed is completely clear from any type of sharp, abrasive or hot surfaces.

Always ensure the device is lifted safely. In the case of heavier items, please ensure two or more people execute the lift. In case of doubt contact your health and safety officer or contact us for advice.

13.2   Set up for system installation

13.2.1   Unpacking

Before installing the system, we recommend checking its general condition by following these instructions:

- Make sure that the external enclosure has not been damaged due to transportation or storage
- Remove any stains and marks from the plastic surfaces using a soft, non-abrasive lint free cloth dampened with glass cleaner. To avoid scratches or deposits, do not use any other materials.
- Check external and internal surfaces searching for any scratches or damage

The packing materials should be stored for possible return shipment of the system to CyNexo srl (such as for repairs, maintenance, upgrades, etc.)

13.2.2   Mechanical installation

Check that the surfaces where you are going to place the system can abundantly sustain the weight of this device, are stable and safe for this device.

13.2.3   Power cabling

This device is delivered with a standard power adapter and power cable. Should any cabling for power supply to the intended are of use be necessary, this must be carried out by a qualified installer. Please pay attention to:

- The supply voltage must be in the range of 110 to 230 VAC (50-60Hz)
- When laying any cable, make sure the external insulation is not damaged
- Avoid crushing or any other mechanical stress to the cable

13.2.4   USB communication cables

The installation of any fixed communication cabling must be carried out by a suitably qualified installer. We recommend the use of shielded cables for USB 2.0 or better. Please pay attention to:

- When laying any cable, make sure the external insulation is not damaged
- Avoid crushing or any other mechanical stress to the cable

13.2.5 Installation and connection

Once the above conditions have been checked, proceed with the installation by:

- Checking the connection between the power supply and the main unit using the supplied cable
- Check the correct installation of the USB cable

13.2.6 Dismantling or disassembly

The steps to be followed for disconnecting and dismantling your device are listed below:

- Turn off the power switch of the device
- Disconnect all USB, I/O, power supply and any other cables and connectors from the device
- Pack the device into it's original container or an alternative suitable container ensuring the device and all accessories snugly held in place and cannot move excessively

13.3 Disposal

Please dispose of all parts and materials responsibly.

13.3.1 Packaging materials

Packaging materials should be placed in appropriate collection points as per your local material disposal regulations.

13.3.2 Device disposal

To dismantle the system, separate the parts according to the type of material, place the various parts in the appropriate collection points following the disposal regulations of the location at which the equipment is installed. Please dispose of this device responsibly.

For any questions, please contact us as indicated in the Contact Details section.

14 Warranty

14.1 General terms

We guarantee that products and materials supplied are new and not damaged and guarantee this product for a period of twelve (12) months from the date of delivery. Should the shipping of this product not have been our responsibility, the warranty period will start no later than one (1) month from the date of notification that the goods are ready for delivery.

During the warranty period, we will be responsible to correct any defects or malfunctions related to its components, construction and assembly which impact the intended functionality of the product.

We additionally provide remote assistance for a period of 30 days after product delivery, via telephone and email, during normal Continental European business hours (9am to 5pm CET). Please note that in order to provide remote assistance, the product must be connected either directly to the internet (where applicable) or to a PC, itself connected to both the unit and the internet, and able to accept remote access sessions as requested by our support technicians. The lack of such an unhindered connection will significantly reduce our ability to provide you with the level of support foreseen.

This warranty does not however cover components subject to wear, or any problems due to the misuse of the equipment, lack of proper care or failed maintenance by you as the customer or anyone acting on your behalf. For consumable or replacement components, repairs and support outside of the warranty period, please refer to the section in this user manual named "Maintenance".

Under the terms of this warranty, we do not accept any responsibility for injury, damage or losses incurred by you or any third parties (including, without limitation, injury or material damages caused by an interruption to normal activities, lost funding or profits, loss of information or other losses) caused during or related to the use of the product provided. In such cases, we shall be liable only for the product provided and to a maximum of the net purchase value of the product supplied.

As the buyer you assume all responsibilities for damage caused due to the incorrect use of the product, abnormal variations in the product's working environment or to services connected directly or indirectly too it (such as abnormalities in the electrical, air or water supply, electromagnetic or thermal shock, network issues or malignant computer software) or any other act attributed to or permitted by your personnel or by anyone acting on your behalf.

All information provided related to this product shall be considered Confidential. You shall not disseminate, copy, decompile, modify, reverse engineer, or create derivative works out of any product or information provided without our explicit written consent.

Should a dispute arise which cannot be amicably resolved, legal jurisdiction will fall under the courts of Udine, Italy.

In the case of a malfunction please contact us for assistance from one of our service technicians. Should the device need to be returned to CyNexo, we will issue you with an RMA. Please do not send equipment to us without an RMA as it may be refused, delayed or cause additional charges.

In case of an RMA, the customer will be responsible for suitably packaging, where possible in the original packaging materials and containers, and shipment of the device to CyNexo via insured courier service. CyNexo cannot accept any liability for damages occurred during shipment. Upon receipt CyNexo will perform

the necessary checks and contact you to discuss the results of these checks and next steps. CyNexo will be responsible for packaging and shipping of the device back to the customer.

14.2   Voiding of warranty

The warranty becomes void if a malfunction or failure is caused by:

- Tampering with the equipment
- Removal of identification labels or seals
- Installation or incorrect or improper use of software and/or hardware
- Any intervention and attempt to restore the equipment by the customer, without the prior written authorization of CyNexo srl
- Damage, accidents and breakdowns caused by transport performed by the customer or transport company, even if previously authorized by CyNexo srl
- Misuse or use not intended by CyNexo srl
- Maintenance or repairs carried out by unauthorized personnel and/or use of non-original spare parts

14.3   Warranty exclusions

The warranty is not applicable to the products and to the parts subject to wear if the failure is due to normal wear and tear thereof and not to a manufacturing defect (e.g.: tubes, gaskets, jar caps, electrical or fibre optical cables, etc.).
The warranty does not apply if our technical service and, subsequently, that of our suppliers are unable to find or reproduce the alleged defect.

15 Contact Details

Please feel free to contact us with any requests, specific needs or concerns at:

CyNexo srl
Via Roma n. 6
33050 Trivignano Udinese (UD)
Italy

Tel: +39 (0432) 184 3913

E-mail:	**Website:**	**Certified e-mail (PEC):**
info@cynexo.com	www.cynexo.com	cynexosrl@pec.it