

V-Mic

Manual

v1.5



1	Introduction.....	3
2	Getting started.....	4
2.1	Hardware installation.....	4
2.2	Software installation.....	5
2.2.1	Call Recorder Apresa.....	5
2.2.2	V-Archive software on a PC.....	6
2.3	Checklist for Tunnel connection	7
3	Web interface and Settings	8
3.1	Access with a network cable	8
3.2	Web settings page.....	8
3.3	Settings.....	10
3.3.1	V-Mic Information	10
3.3.2	Network Settings	12
3.3.3	External Storage Settings.....	13
3.3.4	Recording Settings	14
4	LED's	17
5	Special functions	18
5.1	Access Settings with Wi-Fi	18
5.2	Factory Settings	20
5.3	Firmware Update	21
6	Technical Specifications	22
7	Revision History	24
8	Acknowledgements	25
8.1	Privacy.....	25
8.2	Liability	25

1 Introduction

The V-Mic is a hardware and software solution for the recording of audio, coming from a microphone. The supplied hardware unit can operate stand-alone and has a built-in microphone, but can also be connected to a professional external microphone. The recorded data is stored digitally onto an SD card and is sent optionally over the network, in which case the data is wrapped into a special Tunnel-format that can be received by the Call Recorder Apresa or by the V-Archive software running on a Windows PC. The external Apresa recorder or V-Archive software can both interpret the Tunnel-format and make playable audio files from it, together with the original date and time of recording.

The use of an SD card is mandatory and must be FAT32 formatted. The recorded data is stored in WAV file format on the card. Depending on whether a Tunnel has been defined or not, the files are sent over the network or can be read later by the V-Archive software.

The V-Mic can operate completely stand-alone and when the capacity of the SD card is big enough, it can store data for days or even weeks.

Connection to the V-Mic is made with a network cable or by using Wi-Fi. The web interface can be accessed by using a standard browser. The cable must be connected to the Ethernet port (100 Mbps, Full-Duplex).

The V-Mic is a member of a family of compatible products that can be used to create all sorts of recording solutions. There are V-Taps for VoIP, Analog and ISDN telephony and there is a V-App for mobile recording. All of these products will communicate with the Apresa Corporate or Apresa Cloud-based recording solutions.

The V-Mic needs to be powered through a 12V DC plug, or a USB cable or a LAN cable with PoE.

A FAT32 formatted SD card must be inserted to store the recordings.

2 Getting started

2.1 Hardware installation

The V-Mic is out-of-the-box ready to use:

- Insert an SD card (up to 32 GB, FAT32 formatted).
- Connect a 12V DC plug, USB or a LAN cable with PoE for power.
- Wait for the red light to go off.
(By default, the V-Mic records from its internal microphone.)
- Press the button to start recording; the green light goes on.
- Press the button to stop recording; the green light goes off.
- The recorded audio is now stored in a WAV file on the SD card.



To fine-tune the audio settings or to setup a connection to external software, you have to access the settings in the web interface. Then it is needed to connect with the network, using a browser ([see here](#)).

2.2 Software installation

External software can be used to receive the recorded audio files that are produced by the V-Mic, and to archive them into a database. The files are sent via a special Tunnel protocol, that must be setup in the web settings page of the V-Mic. The Tunnel data stream can be sent to the Call Recorder Apresa or the [V-Archive software](#).

2.2.1 Call Recorder Apresa

The Call Recorder Apresa is recorder software running on the Linux Debian operating system. The Apresa can receive Tunnel data from the V-Mic, convert this data into audio files and store these into its own database.

The Apresa can receive multiple streams from many V-Mic and V-Tap units simultaneously. In that case, the recordings of different locations are centrally stored in one database.

To setup the Apresa to act as a Tunnel server for a V-Mic (or V-Tap), go to System settings, Network tab and enable 'V-Tap' as is shown below:

V-Tap:

V-Tap Tunnel port number:

V-Tap Data separation:

Accept only known V-Taps:

Accept only encrypted V-Tap connections:

V-Tap Encryption password:

Default: Define new password

MAC address	Encryption password	Tenant	Delete
000349010041	*****	TN-793471005	<input type="checkbox"/>

ShoreTel Database:

Toshiba SMDR: (Beta)

Import tenants from Mitel Telepo:

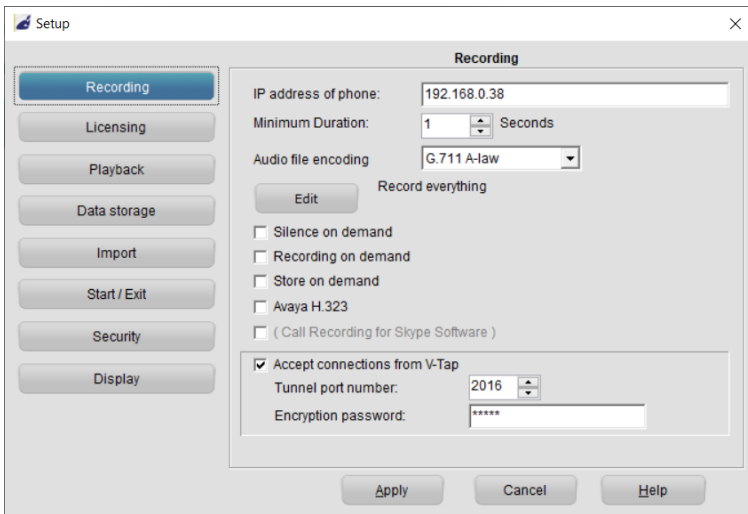
NOTE: The IP address of Apresa is the "[External Storage IP](#)" in the V-Mic.

2.2.2 V-Archive software on a PC

The [V-Archive software](#) for the PC can, just as the Apresa, receive audio files via a Tunnel from the V-Mic unit, and store these files into its own database. The V-Archive software can also receive multiple data streams from different V-Mic and V-Tap units simultaneously.

Note: During installation of V-Archive, the V-Mic needs to be connected once to a USB port on the same PC.

To setup the V-Archive software to accept connections from a V-Mic, go to Options, Setup, Recording tab and enable 'V-Tap connections':



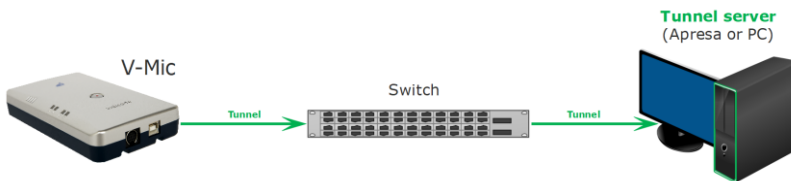
NOTE1: The PC's IP address is the "[External Storage IP](#)" in the V-Mic.

NOTE2: Be sure that the PC's firewall is open for TCP port 2016, the default "[External Storage TCP Port](#)" in the V-Mic unit. The V-Archive installer will try to do this automatically.

NOTE3: The V-Archive software does not need licenses to receive from the V-Mic unit.

The V-Archive software for the PC is further not described in this manual; see for more details the V-Archive manual.

2.3 Checklist for Tunnel connection



A connection between V-Mic and Apresa or PC software is needed to get the recorded data automatically into a user accessible database.

The following checklist can be used to setup this Tunnel connection:

- 1) Install the [Hardware](#), and note that, only during installation of V-Archive, the V-Mic needs to be connected once with USB to the same PC.
- 2) Install Apresa or V-Archive PC [Software](#) and enable V-Tap connections.
- 3) Get access to the V-Mic over the network by opening the settings page in a browser. This can be done with a [network cable](#) or with [Wi-Fi](#).
- 4) On that page, the IP address of the Apresa or the PC with V-Archive must be entered as the "[External Storage IP Address](#)" and the "External Storage via Tunnel" must be enabled.
- 5) Any **firewall** must have a rule that makes it possible to receive from TCP port **2016**, the default "[External Storage TCP Port](#)". This tunnel port number can be changed, when needed.
During installation of V-Archive this port is automatically opened, when this is allowed by the PC.
- 6) To see if the PC receives something from the V-Mic, it is possible to make a network trace for test purposes.
In V-Archive, go to menu Actions and select 'Network trace', press Start, make a short recording by pressing the button twice, wait 20 seconds, press Stop and then Save. From the zip file 'tunneltrace.pcap' can be analyzed with Wireshark.
The Apresa recorder has a similar option to make a network trace in menu Tools, System.
- 7) The SD card in the V-Mic should contain ".WAV" files. The SD card can be read by the V-Archive software in menu File and 'Import from V-Tap'.
The WAV files can also be opened by explorer on a PC with audio playback.

3 Web interface and Settings

There are two ways to access the web interface of the V-Mic:

- 1) With a network cable, connected to the LAN. See [below](#).
- 2) With Wi-Fi, after putting the V-Mic in a special 'config-mode', see [Access Settings with Wi-Fi](#).

3.1 Access with a network cable

In the case of using a cable, DHCP is default enabled and the V-Mic can be accessed with a browser by entering the address:

<http://vmicXXXXXX.local>

XXXXXX is the serial number, as it is found on the bottom of the device.

Note: It may take some time after first connect before the local name is known to the network.

When this does not work, the MDNS protocol is probably not active on the network. The IP address, given by the DHCP server (if present), may then be difficult to track down. Then, the best way is to set a static (fixed) IP address, by using an SD card:

Defining a Static IP address with an SD card:



- . Create a text file on your PC, named "IP".
- . The first line in this file must hold the IP address.
- . Copy "IP.TXT" to the root-directory of an SD card.
- . Insert the SD card into the V-Mic unit.
- . The IP address has now changed and can be accessed.
- . The file "IP.TXT" is deleted from the card by the V-Mic.



3.2 Web settings page

After entering the IP address in your browser, the settings page of the V-Mic appears, as is shown on the next page.

By pressing the **Submit and Restart** button, the settings are saved by the V-Mic and the unit restarts. Any ongoing recording is stopped, the file on SD is closed, and after a few seconds the new settings are activated.

V-Mic Information	
Name of this V-Mic	V-Mic_500561 ?
Ethernet IP Address	192.168.0.123 ?
Wi-Fi IP Address	?
Ethernet MAC Address	CC.50.E3.BE.8F.27 ?
Wi-Fi MAC Address	CC.50.E3.BE.8F.24 ?
Serial Number	500561 ?
Firmware Version	Pre-release <input type="button" value="Enable Update Mode"/> ?
Current Clock	2020-02-04 14:57:25 ?
Last Settings Change	2020-02-04 14:57:20 ?
Total Space on SD in MB	15549 ?
Free Space on SD in MB	15463 ?
Recording Time Left on SD	268 hours, 28 minutes ?
Network Settings	
Ethernet IP Mode	Static ?
Static Ethernet IP Address	192.168.0.123 ?
Static Ethernet Subnet Mask	255.255.255.0 ?
Static Ethernet Gateway	0.0.0.0 ?
Wi-Fi State	Off ?
Wi-Fi Name	?
Wi-Fi Password	?
External Storage Settings	
External Storage via Tunnel	On Ethernet ?
External Storage IP Address	192.168.0.71 ?
External Storage TCP Port	2016 ?
Delete Recordings from SD	Yes ?
Recording Settings	
<input type="button" value="Preset Built-in Microphone"/> <input type="button" value="Preset 3.5mm Microphone"/>	
<input type="button" value="Preset Phantom Microphone"/> <input type="button" value="Preset Aviation Headset"/>	
Recording Format	A-Law 8 bit 16kHz Mono ?
Audio Input Source	Built-in Microphone ?
Phantom Power	Off ?
Output on 3.5mm jack	3.5mm / built-in ?
Maximum File Size	5 minutes = 4.6MB. ?
Noise Reduction	Off ?
Recording Volume	Medium ?
Recording Trigger	Button Start/Stop ?
Automatic Recording Sensitivity	Normal ?
Automatic Recording Start Time	1 second ?
Automatic Recording Stop Time	10 seconds ?
<input type="button" value="Submit and Restart"/> <input type="button" value="Cancel"/>	

3.3 Settings

The settings are divided into groups that are described in the following paragraphs.

3.3.1 V-Mic Information

Name of this V-Mic

A custom name for this V-Mic. For example "Meeting_room". This name will show up on the tab "Local ID" when using V-Archive or Apresa. The maximum length for the name is 16 characters.

Ethernet IP Address

The Ethernet IP address to access this V-Mic when using a LAN cable. When the '[Ethernet IP Mode](#)' is on DHCP, the IP address is obtained from the server.

The field is blank when the V-Mic has no Ethernet IP address.

Wi-Fi IP Address

The IP address when the V-Mic is connected with Wi-Fi to a router or other access point. Fill in the Wi-Fi settings below.

Ethernet MAC Address

The Media Access Control (MAC) address of each device operating on an Ethernet network is a unique identifier that is needed to route the packets over the LAN. This address cannot be changed.

Wi-Fi MAC Address

The unique Wi-Fi MAC address that cannot be changed.

Serial Number

The serial number can also be found on the bottom of the case of the V-Mic.

Firmware Version

The version of the software running on this V-Mic. The button behind is used to update the software; see [Firmware Update](#).

Current Clock

The current value of the internal clock. This date and time will be used as a timestamp on all recordings. The clock is automatically synchronized with your computer after pressing the "Submit and Restart" button below.

Last Settings Change

Shows the last time the settings were changed and updated.

Total Space on SD in MB

Total space on the inserted SD card. If this number is 0, the SD card is not accepted and the red light should be on.

Free Space on SD in MB

Remaining space on the SD card to store recordings.

Recording Time Left on SD

Remaining time on the SD card to store recordings. This time changes when the Recording Settings below changes.

3.3.2 Network Settings

Ethernet IP Mode

When on DHCP, the V-Mic will try to get an IP address automatically from the DHCP server. When on Static, the next three fields must be filled in manually.

Static Ethernet IP Address

When the IP mode is on Static, the IP address must be filled in manually. An invalid address causes the V-Mic to be unreachable when using a cable. Only IPv4 addresses are possible.

Static Ethernet Subnet Mask

When the IP mode is on Static, the Subnet Mask must be filled in manually. Usually on 255.255.255.0

Static Ethernet Gateway

When the IP mode is on Static, the Gateway must be filled in manually. Used to get access to the internet and normally set to the IP address of the local router.

Wi-Fi State

This sets the behaviour of the internal Wi-Fi module. When the V-Mic has a cable connection, the Wi-Fi does not have to be enabled. Wi-Fi can be used for accessing the web interface or to send the recordings to the external storage server. However, it is recommended to only use Wi-Fi when a cable is not possible.

Wi-Fi Name

Wi-Fi Password

The name and password of the Wi-Fi access point to connect to for sending recordings to the external storage.

3.3.3 External Storage Settings

External Storage via Tunnel

This enables or disables synchronization with V-Archive or Apresa as the external storage server (Tunnel Server). When enabled, the next two fields must be filled in. Then a TCP tunnel connection will be used to send files over. When both Ethernet and Wi-Fi are enabled, the V-Mic will only use Wi-Fi when there is no cable connected.

External Storage IP Address

The IP address of the external storage server (a PC running V-Archive or a Call Recorder Apresa). Only fill in an IPv4 address. A hostname, URL or IPv6 is not accepted.

External Storage TCP Port

This port number is used by the tunnel protocol to send recordings over to the external storage server. Default on 2016. Firewalls must be open for this TCP port!

Delete Recordings from SD

To save space on the SD card, the recordings can be deleted after they have been sent to the external storage server.

Encryption Password

By entering a password here, encryption of the Tunnel protocol is enabled. This means that all data that is sent to the external storage server will be encrypted. The password must be the same as is entered in V-Archive or Apresa, else no files can be decrypted.



Firewalls must have a rule to let through TCP port 2016.



3.3.4 Recording Settings

Recording Presets

The presets will provide a quick setup for some basic recording configurations. The audio quality will be high in all cases. After selecting a preset, the individual settings can be changed to your needs. The following presets can be selected:

Preset Built-in Microphone: This is the default setting, recording from the built-in microphone.

Preset 3.5mm Microphone: Records the audio from a microphone that is plugged into the 3.5mm MIC2 jack.

Preset Phantom Microphone: Records the audio from a microphone that is plugged into the 6.35mm MIC1 jack. Phantom power is also switched on!

Preset Aviation Headset: Special setting for a headset, used by aviation pilots.

Recording File Format

The Recording File Format sets the compression type, the sample rate and the number of channels in the WAV files on SD. This determines the quality of the recording for playback later on and also the remaining recording time for storage on the SD card. The following formats are available:

	<u>Storage Rate</u>
U-Law 8 bit, 8kHz, Mono	8k bytes/sec
A-Law 8 bit, 8kHz, Mono	8k bytes/sec
U-Law 8 bit, 16kHz, Mono	16k bytes/sec
A-Law 8 bit, 16kHz, Mono	16k bytes/sec
U-Law 8 bit, 8kHz, Stereo	16k bytes/sec
A-Law 8 bit, 8kHz, Stereo	16k bytes/sec
U-Law 8 bit, 16kHz, Stereo	32k bytes/sec
A-Law 8 bit, 16kHz, Stereo	32k bytes/sec
PCM 16 bit, 16kHz, Mono	32k bytes/sec
PCM 16 bit, 16kHz, Stereo	64k bytes/sec
PCM 16 bit, 48kHz, Mono	96k bytes/sec
PCM 16 bit, 48kHz, Stereo	192k bytes/sec

NOTE: Not all formats can be combined with all Input Source selections below. The unavailable combinations will be greyed out.

Recording Input Source

Selects the input source for the recorded audio. This can be the 6.35mm MIC1 jack, or the 3.5mm MIC2 jack, or the built-in microphone. Switching between mono and stereo is done automatically. The following selections are available:

	<u>File Format</u>
MIC1 jack	Mono
MIC2 jack	Mono
Built-in Mic	Mono
MIC1 jack + MIC2 jack	Stereo
MIC1 jack + Built-in Mic	Stereo
MIC1 jack with Headset	Stereo

Phantom Power

Phantom power is a 48 Volt power source on the 6.35mm MIC1 jack. Enable this option if you have a Phantom enabled microphone. In combination with automatic level detection, this option needs to be on always.

Audio on OUT jack

Output the audio from the here selected input to the built-in 3.5mm jack. When enabled, output will always be on, even if there is no ongoing recording. The audio can come from the 6.35mm MIC1 jack, or the 3.5mm MIC2 jack, or a stereo mode from a headset on MIC1 for aviation.

NOTE: The output must be enabled, when automatic recording with audio detection is done.

Maximum File Size

Split the recording into shorter WAV files. This prevents loss of data when the power or SD card is suddenly removed. The time per file (recording-part) can be selected here.

Recording Volume

Sets the amplification of the recorded audio. On 'Automatic' will adjust the volume automatically, depending on the input signal.

Recording Boost

Extra amplification of the input signal on top of the Recording Volume, also when that is on Automatic.

Recording Trigger

Select the trigger mode to start and stop recording. When on Audio Detection, recording is done automatically and the next three settings are used (Automatic Recording). With or without button means, that recording can be paused or not when pressing the button.

When recording automatically, the 3.5mm output jack **must** be enabled for audio detection.

Automatic Recording Sensitivity

The sensitivity that will trigger a recording. Note that increasing the recording volume will also increase the sensitivity.

Automatic Recording Start Time

The minimum time the audio needs to be above the sensitivity level in order to start the recording. When the time is too short a lot of environmental noises will cause a recording to start.

Automatic Recording Stop Time

The minimum time the audio needs to be below the sensitivity level in order to stop the recording.

4 LED's



Red LED steady on: To indicate an error. If the Red LED is on, the device is not booting or an SD card is not detected.

Red LED flashing: To indicate a problem; either the SD card is full or the write-protect is enabled.

Green LED steady on: To indicate that the device is recording. Do not remove power from the device during recording, otherwise the recorded data is lost.

Green LED flashing: To indicate that the device is in automatic recording mode and that it is waiting for audio. If there is enough sound to trigger a recording, the Green LED will turn steady.

Blue LED steady on: To indicate a network connection. Either Wi-Fi or Ethernet is successfully connected.

Blue LED flashing: To indicate network activity. The device is now sending a recording to either an Apresa or the V-Archive software.

Orange LED steady on: To indicate that the device is on and powered.

Orange LED flashing: To indicate that the device is in 'config-mode' and can be accessed with Wi-Fi.

All LED's are flashing: The V-Mic is in [Firmware Update](#) mode.

5 Special functions

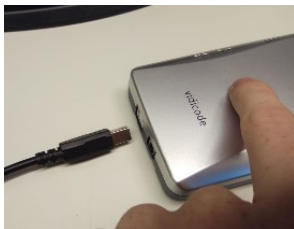


The various special functions are described in the following paragraphs.

5.1 Access Settings with Wi-Fi

When a network cable is not available, you can access the web interface using Wi-Fi. To put the V-Mic in this special 'config-mode', follow the steps below:

- Remove all power from the device.
- Press and hold the button on the device.



- While holding the button, apply power to the device.



- Hold the button for 3 seconds more, then release the button.
- The device should now be flashing its orange light.

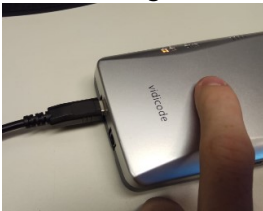
5.2 Factory Settings

If you want to reset the V-Mic to factory default settings, you can follow the following steps: *(this will not delete recordings from the SD card)*

- Remove all power from the device
- Press and hold the button on the device.



- While holding the button, apply power to the device.



- Hold the button for 10 seconds more, then release the button.
- The device should now be flashing all of its lights and the settings are back to factory default.



- After all the lights have flashed for a couple of times, the V-Mic continues in special 'config-mode'. This means, that it will open the Wi-Fi access point for configuration and the yellow LED is flashing.

5.3 Firmware Update

To update the firmware of a V-Mic, the “V-Mic Update Tool” must be installed on the PC, together with the new firmware files that are provided by the manufacturer.

After that, open the web settings page on the V-Mic and press the button “Enable Update Mode”. All lights must be flashing now.



The V-Mic is now ready for the firmware update. Further, follow the instructions from the PC update tool.

6 Technical Specifications

POWER

- Power consumption 2W maximal.
- The unit can be powered in 3 ways: PoE , DC plug , USB.

DC plug

- Voltage 8.....14VDC (2W max)
- Reverse polarity & overcurrent protection
- Size 2.1x5,5m, hot centered

LAN

- Ethernet IEEE802.3
- Speed 10 or 100Mbit/s
- 100Base-TX
- Cable length < 100m
- Auto DMI/DMIX
- RJ45 with GREEN led (function=LINK ON) and YELLOW led (function=ACTIVITY)
- POE Class 1 presentation to PSE (e.g. the connected switch)
- POE implementation according to standard IEEE802.3at (POE+)

Wi-Fi

- 2.4GHz band (certified FCC/CE/IC/TELEC/KCC/SRRC/NCC)
- Internal antenna, max 21.5 dBm power

USB

- V2.0 (programming and power supply function only)
- Connector USB 'B' type

SD card

- Full size card up to 32GByte
- Voice files are stored in .WAV format

Built-in MIC

- Type = Electret
- Bandwidth 4/8/16 KHz
- Balanced interfaced
- Phantom power has cascaded filtering for low noise

MIC1 jack (6.35mm)

- Intended use: MONO balanced microphone
- Connector Female 1/4 INCH TRS (T=NEG , R=POS, S=Ground)
- Input Sensitivity 5-50mV (depends on setting)
- Impedance 6K8
- Bandwidth 4/8/16 KHz
- Max cable length <20m
- Phantom Power 48V / 20mA max, software controlled on/off

MIC2 jack (3.5mm)

- Intended use: ordinary 'PC'-style MONO Electret microphone
- Connector Female 3.5mm TRS (T=SIG , R=POW, S=Ground)
- Input Sensitivity 5-50mV (depends on setting)
- Impedance 2K2
- Bandwidth 4/8/16 KHz
- Max cable length <2m
- Phantom Power 3V via ring

OUT jack (3.5mm)

- Intended use: audio line output
- Impedance 1K
- Max cable length 5m

RTC (Real Time Clock)

- Accuracy 3 minutes/year
- Battery backup: CR2032 , Shelf life time >10 years

Button

- Center placed 10mm push to start/stop recording button,

Signalling

- Top-side: RED- BLUE-GREEN and YELLOW LEDs
- Back-side 1xRED LED signaling the 48V phantom power on

Environmental

- 0-40 degrees Celcius / RoHS / IP50
- Size: 137 x 81 x 30 mm
- Weight: 150 gram
- Color Bottom: Blue (PANTONE 8483C METALLIC)
- Color Top: Silver Grey (PANTONE 877C METALLIC)

Approvals

- CE EN55022/EN55024 class-B
- safety EN60950
- RoHS

7 Revision History

V1.5 Juli 2020

- Recording Boost added.

V1.4 March 2020

- Front picture replaced and minor changes in text.

V1.0 - V1.3 February 2020

- First release.

8 Acknowledgements

8.1 Privacy

When recording conversations, the privacy of your conversation partner must be considered.

In some countries, there is an obligation to notify your conversation partner of the recording. Check your national legal obligations on this and other issues concerning the use of any recorder.

Vidicode is not a source of official interpretation of laws of any country or state, and shall not be construed as a source for making decisions whether to provide notification or not. Vidicode assumes no liability regarding incorrect notification of recording.

8.2 Liability

Correct functioning of the V-Mic cannot be guaranteed under all conditions and thus we do not accept any liability for loss of information or other damages due to the use of the V-Mic.