Operation Manual
Pillow Speaker Monitor

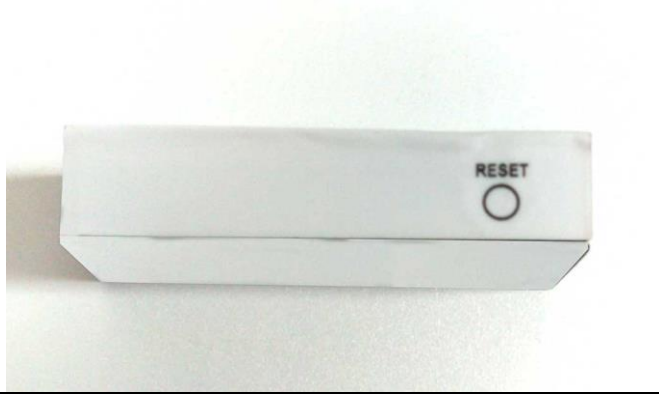
Release	Notes:
April 15, 2024	First Release
May 22, 2024	V0.4 firmware update: Add TONE generation when Control Data line is Low. (No TV or cable short) Add Protocol selection for internal test signals, Philips, Procentric and Samsung

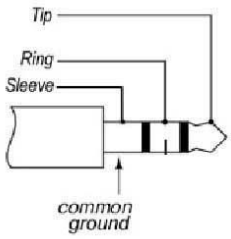
Description

The Pillow Speaker Monitor (PSM) is a tool used for the investigation and troubleshooting of Pillow speaker installations on rooms at Hospitals and clinics.

The PSM main operations are:

1. Confirm if the level on the control signal is adequate.
2. Confirm if the Audio signal can travel to the nurse call system.
3. Monitor the communication between the Pillow speaker and the TV, describing the Protocol and commands as they pass through the monitor.
4. Emulate the basic codes for Volume and channel control to confirm the TV is properly set up.

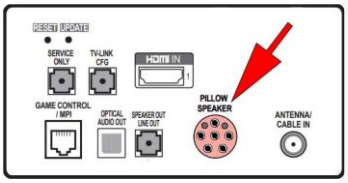
On the front there are four buttons: • **Off:** to manually send to power down mode the Pillow speaker to save battery. Note: The PSM will automatically enter the power down mode if it does not receive any activity between 5 minutes. • **Mode:** Allows the user to select different debug modes to emulate pillow speaker commands or to enable an audio signal to tracking purposes. • **- and +:** used to select between the options selected by the **Mode** button.	
On the TOP side there is the RESET button, It is used for any of the following: 1. To re-start the device if it when to sleep mode due to inaction. 2. To Turn On the device after plugging the USB power. 3. To turn off the Sound debugging tones used for troubleshooting	

On the left side there are two connectors: • **USB C** connector to power the device and to charge the battery. If the Device has not been in use for several hours, then it is necessary to plug in the device to activate it. Note: Depending on the conditions, it may be necessary to press the **RESET** button to ensure that the device starts properly. • **3.5 mm Stereo jack** to connect to the TV or to the Pillow speaker	
On the Right side there is one **3.5mm Stereo jack** connector Is used to connect to the TV or Pillow speaker. The connections on this side are connected in parallel to the other side.	
The connections on the 3.5 stereo connector follow the industry standard using a three-wire system: The TIP will send audio from the TV to the Nurse Call and then Pillow speaker. The RING used as the control line will have a 12Volt (Zenith) or 5V (Philips) nominal signal provided by the TV. The Pillow speaker will modulate its digital signal onto the control line The Sleeve will provide the common ground signal for the system.	 **3.5mm Stereo connector** **TIP = Analog Audio** **RING = Control line** **SLEEVE = GROUND**

Connecting the PSM

The PSM should be connected between the TV and the Wall connection that goes to the nurse call panel. These are some examples:

LG TV to wall with 6 Pin Zenith adapter:



LG TV 6 PIN Zenith connector

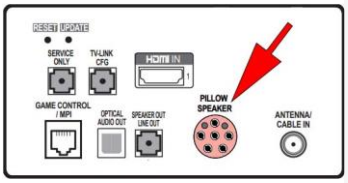
PTS-6 Pin Male to 3.5mm
(In the kit)

Pillow Speaker monitor

PTS-6 Pin Female to 3.5mm
(In the kit)

Legacy cable and
Wall connector

LG TV to ¼" Wall connector:



LG TV 6 PIN Zenith connector

PTS-6 Pin Male to 3.5mm
(In the kit)

Pillow Speaker monitor

PTS- 3.5mm Male
to 0.25 Male
(In the kit)

Legacy 0.25"
Wall connector

PDI TV to ¼" Wall Connector:

PDI TV ¼"connector

PTS- 3.5mm Male
to 0.25 Male
(In the kit)

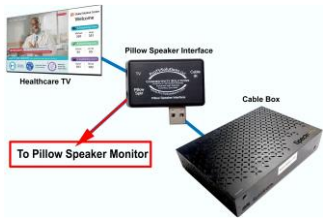
Pillow Speaker
monitor

PTS- 3.5mm Male
to 0.25 Female
(In the kit)

Legacy ¼"
TRS Cable

Legacy 1/4"
Wall connector

Monitoring PSI:



PSI 3.5mm connector

PTS- 3.5mm Male to 3.5mm Male (In the kit)

Pillow Speaker monitor

Legacy cables to Wall connector

Connection to HTVE:

HTVE 3.5mm connector

PTS- 3.5mm Male to 3.5mm Male (In the kit)

Pillow Speaker monitor

Legacy cables to Wall connector

Monitoring Operation:

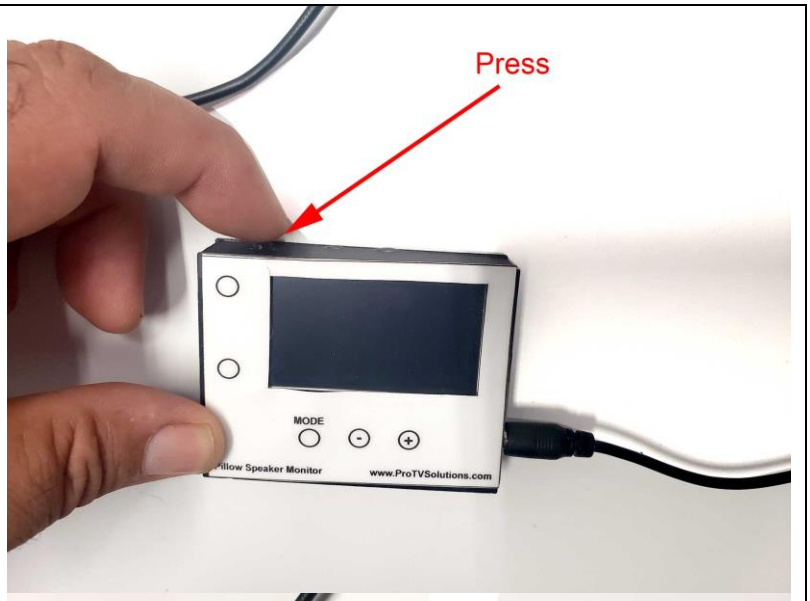
Once the device is installed, press the button that is located on the top of the device (RESET).

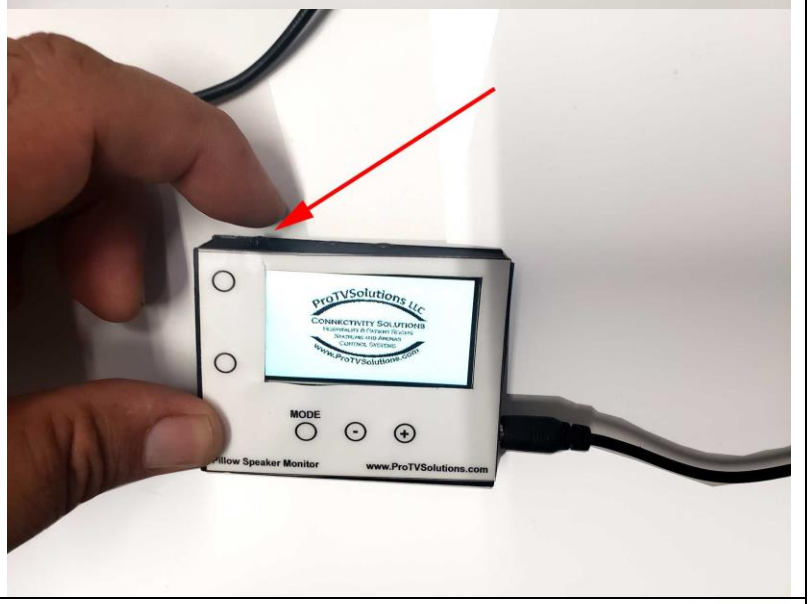
The ProTVSolutions Logo will be displayed and then the text:

“Pillow Speaker Monitor”

Will be shown. The Pillow speaker Monitor will be ready to check the data line.

NOTE:
If the PSM does not turn on, then the battery is low. Use the included USB type C cable to connect to the USB charger also included or connect it to the remaining USB connector on the setback box or TV’s USB.



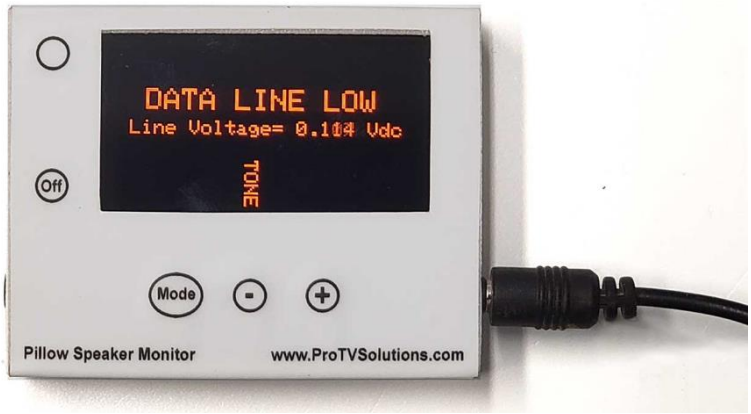


If the Connection from the TV to PSM is not made properly or if the connection to the Wall has a short circuit, then the Monitor may display the message:

“DATA LINE LOW”

In this condition, data can’t be transmitted. It is necessary to check the Cables.
First disconnect the cable that goes to the wall, if the device recovers, then the short-circuit is in the cable or wall connector.

If the Data low is still shown, then the TV is not providing power to the Pillow speaker.



The (-) button can be used to generate a Tone signal to test the cable audio, this useful when testing wiring without a TV.

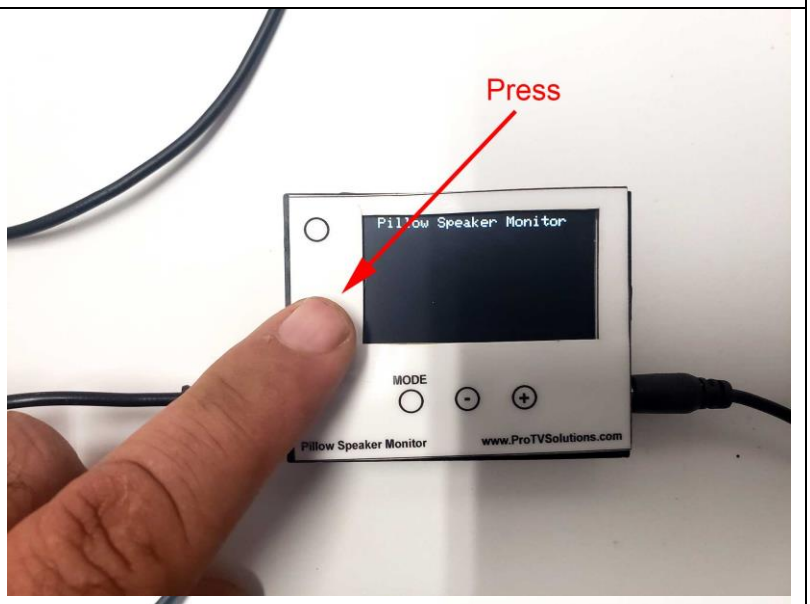
Normally, if all the connections are done correctly, the Pillow speaker can be used and the keys pressed will show up on the screen, for example:

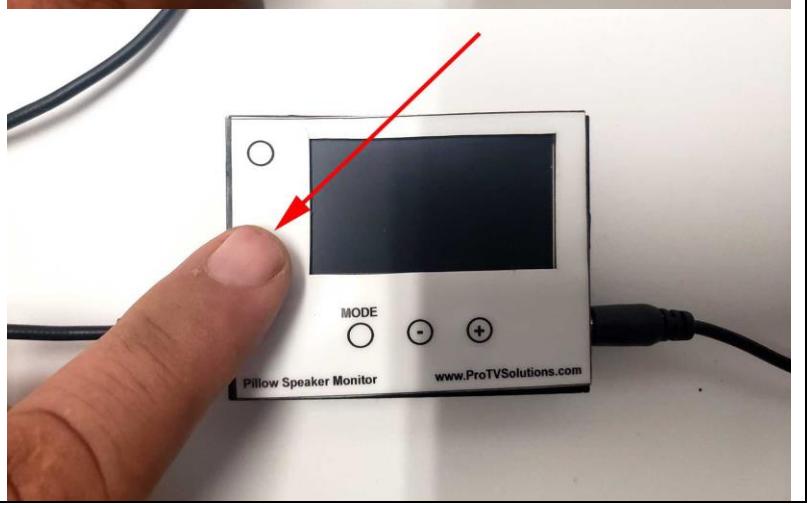
The screen will show the protocol family, the code, and the normal interpretation of the key by the TV.

Once the investigation is complete.

To turn off the Monitor, press the Button marked as a circle on the side of the device the screen will go dark.

The PSM will also turn itself off if it has no operations for about 5 minutes.





Testing TV:

There are situations when the TV installation needs to be tested but the nurse call system may not be available and therefore the Pillow speaker is not in the room to test.
The Installer can still confirm the TV to be properly configured using the PSM as it can simulate basic Pillows speaker commands:

Connect the TV to the PSM and Press the “Mode” button to select the “Test Volume” option:

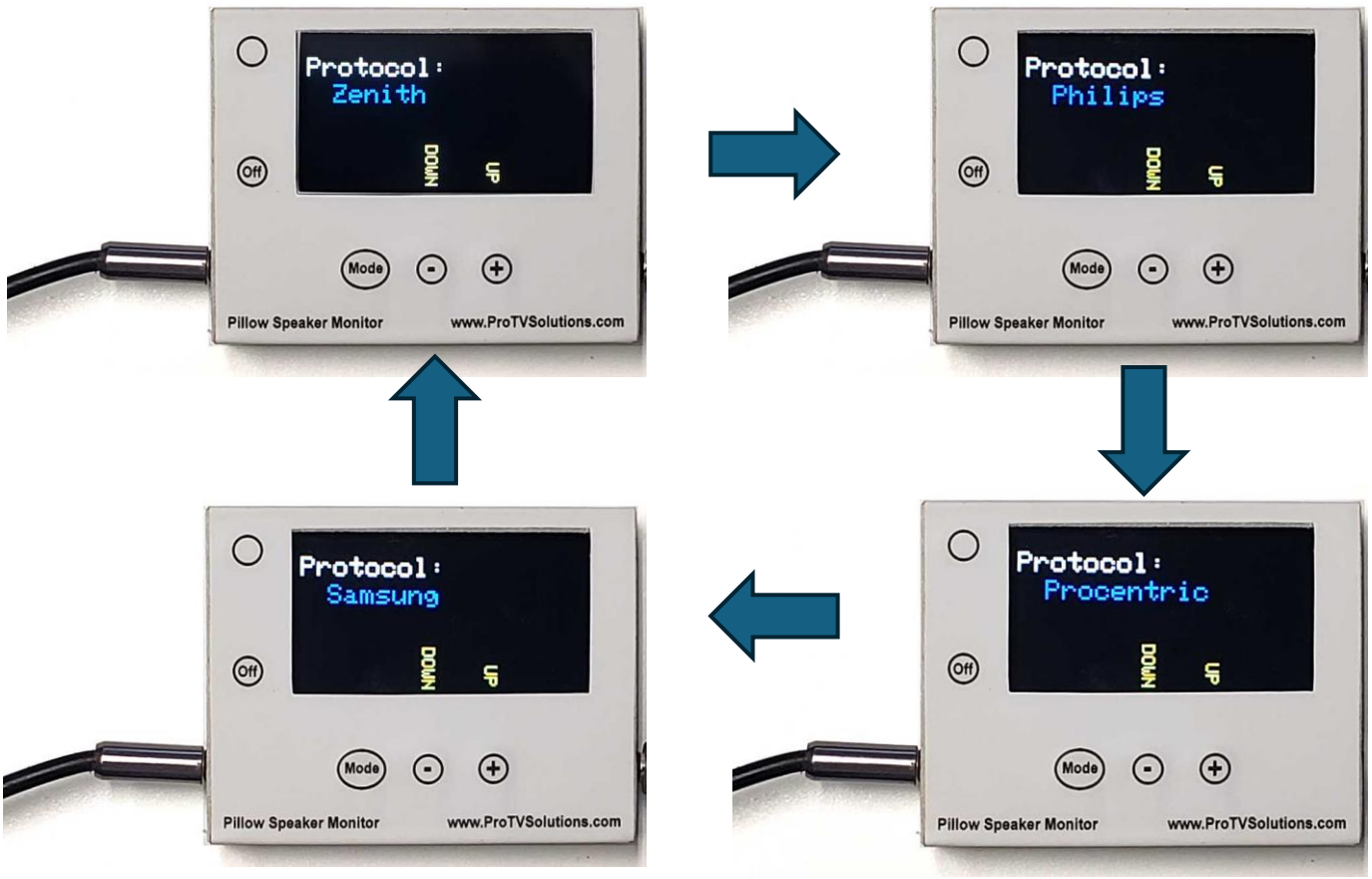
Using the -/+ buttons will send the commands to the TV.
The default protocol is standard ZENITH protocol, but the protocol can be changed to Philips, LG Pro:Centric or Samsung. The protocol in use will be shown between parentheses.

Pressing the “Mode” button again will allow you to send the Channel Up and Down commands.
This is useful when working with a device like our PSI to control the channels on a cable box.

Changing the test protocol

On the last section it was shown how the PSM can emulate a Pillow speaker to test the TV directly by emulating the volume and channel buttons.

By default, the protocol that will be used will be the Zennith code, but this can be changed in the next Mode:



The Protocol that is selected will be used when sending the volume and channels commands:

NOTE:
This selection is independent of the real pillow speaker, and it is also independent of how the TV is set up.
This is only for the internally generated codes as shown in the previous section.

This is useful when dealing with a location that is using their TVs set on a protocol other than Zenith and we need to test them using their set protocol.

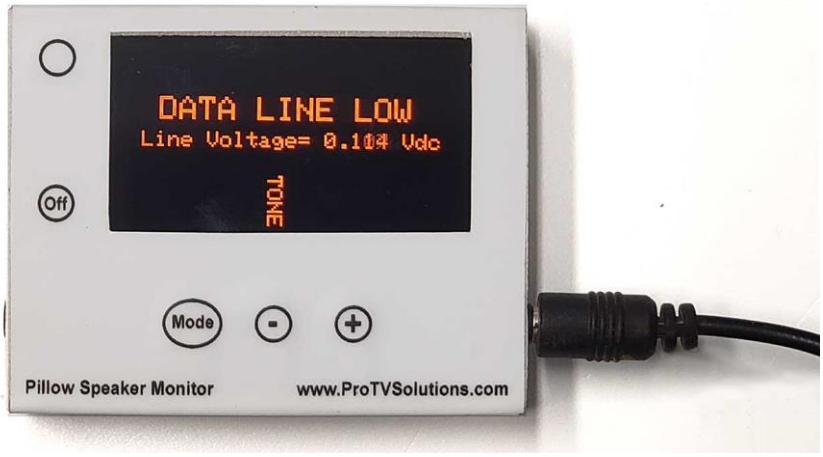
Testing the Pillow speaker for audio:

There are situations when the audio signal may need to be tested when appears to be no audio coming from the TV. Having the PSM connected to the TV and the Pillow speaker, Use the "Mode" button to select the Test Tone option.

Pressing the – button will generate a loud three tone signal that can be used to check the wiring.

NOTE:
The tone will not stop until the RESET button is pressed on the PSM.

Also, there migh be the need to test the cables that go to the nursecall panel but there is no TV on the room, as it may be the case in some new room instalations.
When connecting the PSM it will show that the line is low, as there is no TV generating the signal. However on the screen you will be able to use the (-) button to generate the audio tone and be able to test at least the audio cable going to the pillow speaker.
This process would not warranty that the data line is properlly connected, but it does confirm that the common and audio lines are OK.



Included in the kit:

The current PSM Kit includes the following supporting cables:

Part number: PTS-3.5M to 6 PIN Male Used to connect the PSM to LG TVs May also be used on situations when the Wall connector is a 6 Pin Zenith connector	
Part number: PTS-3.5M to 6 PIN Female Used to convert a Male 6 Pin connector to the 3.5mm TRS connector used by the PSM. It is useful when the room installation is already using 6 Pin male cables and we need to integrate the PSM.	

Part number: PTS-3.5M to 0.25M Used to connect the PSM to some TVs or the wall connector.	
Part number: PTS-3.5M to 3.5M Used to connect the PSM to TVs like Samsung that use the 3.5mm TRS connector. Also, useful when connecting to devices like our PSI or HTVE devices.	
Part number: PTS- 3.5M to 0.25F Used to convert a male ¼" TRS cable to a 3.5mm TRS connector to use with the PSM. Useful if the current room is using ¼" male cables and we need to integrate the PSM.	
Part number: PTS-USB-C-KIT Standard power supply used to charge the PSM.