Storm Interface 1400 Series Audio-Nav Keypad Instruction Manual

1400 Series Audio-Nav Keypad
Technical Manual

Contents

Product Features

AudioNav is an ADA compliant assistive USB device offering menu navigation by means of audible content description.

Users with impaired vision, reading difficulties or impaired fine motor skills can navigate through menus or directories that would typically be presented on a visual display or touch screen. Screen content is represented and summarised by recorded or synthesized language via a headset or handset.

This provides a set of menu selection keys that are differentiated in a way that makes the product easier to use by people with visual impairments. In addition, a standard 3.5mm headphone socket is provided. This allows customers to plug their headsets into the module and receive audio instruction to help them navigate the use of the equipment.

The externally mounted version of the AudioNav provides options for manufacturers and operators to permanently affix an AudioNav device to the outer casing of a host terminal or to adjacent surfaces such as walls or service counters. This is especially useful when existing self-service installations must be upgraded to meet current accessibility mandates.
An optional ‘Quick Release Cradle’ allows the AudioNav to be detached from the host system for use as a hand-held device. In this hand-held configuration, AudioNav can, if required, be passed directly to any user with limited reach or impaired dexterity.
Used in combination with SpacePole™ products this externally mounted version of the AudioNav can be conveniently positioned and adjusted to ensure maximum accessibility.
The Extended Footprint version “AudioNav EF” adds volume and playback speed control keys.
By use of the utility software, default illumination status and ‘wake-up’ behavior can be selected. The USB codes can also be changed. Connection to the host is via a single USB cable.

Keypad

– The keypad is available in standard, extended footprint, or externally mounted versions, with the following keys :
– A 4-way directional key providing UP, DOWN, LEFT, and RIGHT navigation.
– A central ENTER key
– An illuminated audio volume key
– Additional keys on the EF version
– Illuminated 3.5mm audio jack socket (illumination under software control)
– Orientation switch in under panel version to allow portrait or landscape mode.
– Mini-USB socket for connection to host (external version has fitted cable)

USB Interface

– HID keyboard
– Supports standard modifiers, i.e. Ctrl, Shift, Alt
– HID consumer-controlled device
– Advanced audio device
– No special drivers are required
– Audio Jack Insert / Removal sends USB code to host
– Versions with microphone support need to be set as the default recording device in the Sound Panel
– Products with microphone support have been tested with the following voice assistants:- Alexa, Cortana, Siri, and Google Assistant.

Support
– Windows compatible utility for changing the USB Code Tables
– API for custom integration
– Remote Firmware update support

The typical method for audio module volume control using the API
User Action
- Plugin the headphone jack

Host
- Host system detects the connection
- Sets volume level to initial default
- Repeating message :
“Press the volume key at any time to increase the volume level”

User Action
- Presses the volume key
Host
- Host system changes the volume on each keypress (up to a max limit, then revert to default)
Host
- Message stops if the volume key is not pressed within 2 seconds.
User Action
- Remove the headphone jack
Host
- Volume reset to default.

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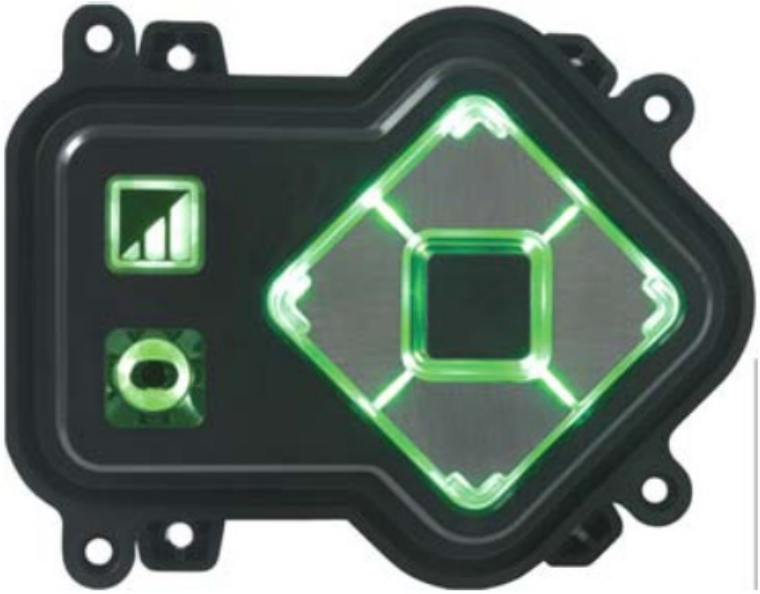
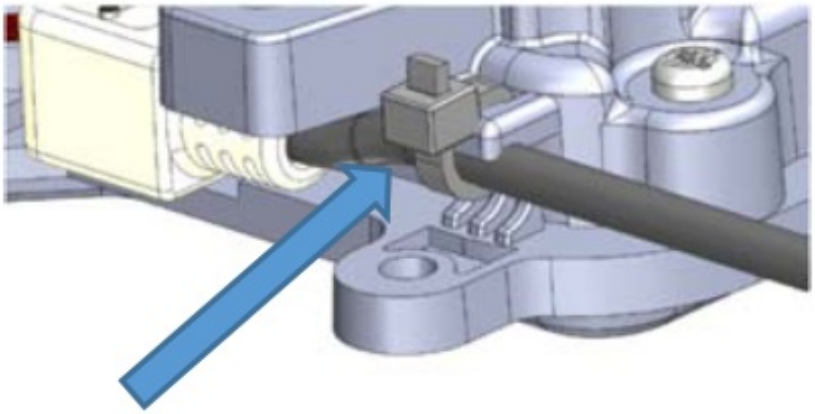
Underpanel Version

Part Number 1406-33001 6 KEY DEVICE + USB AUDIO

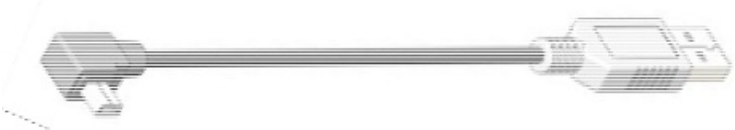


The Audio-Nav is for under-panel use in either portrait or landscape orientation. There are 2 sets of fixing lugs :
– for weld studs on steel panel (1.2mm – 4mm thick), and
– for threaded inserts on plastic panel (3mm thick).
An orientation switch is provided so that the keypad can be fitted in portrait or landscape orientation.
This sends a USB code to the host: the factory default is landscape
(Landscape = switch position I shown in picture)
The keypad is designed to be installed under a panel onto M3 weld studs. Download CAD File for panel cutout drawing.
It is recommended to use a cable tie for strain relief on the USB cable.
(Use 2.5mm nylon cable tie, RS 233-402 or equivalent)

Accessories / Cables

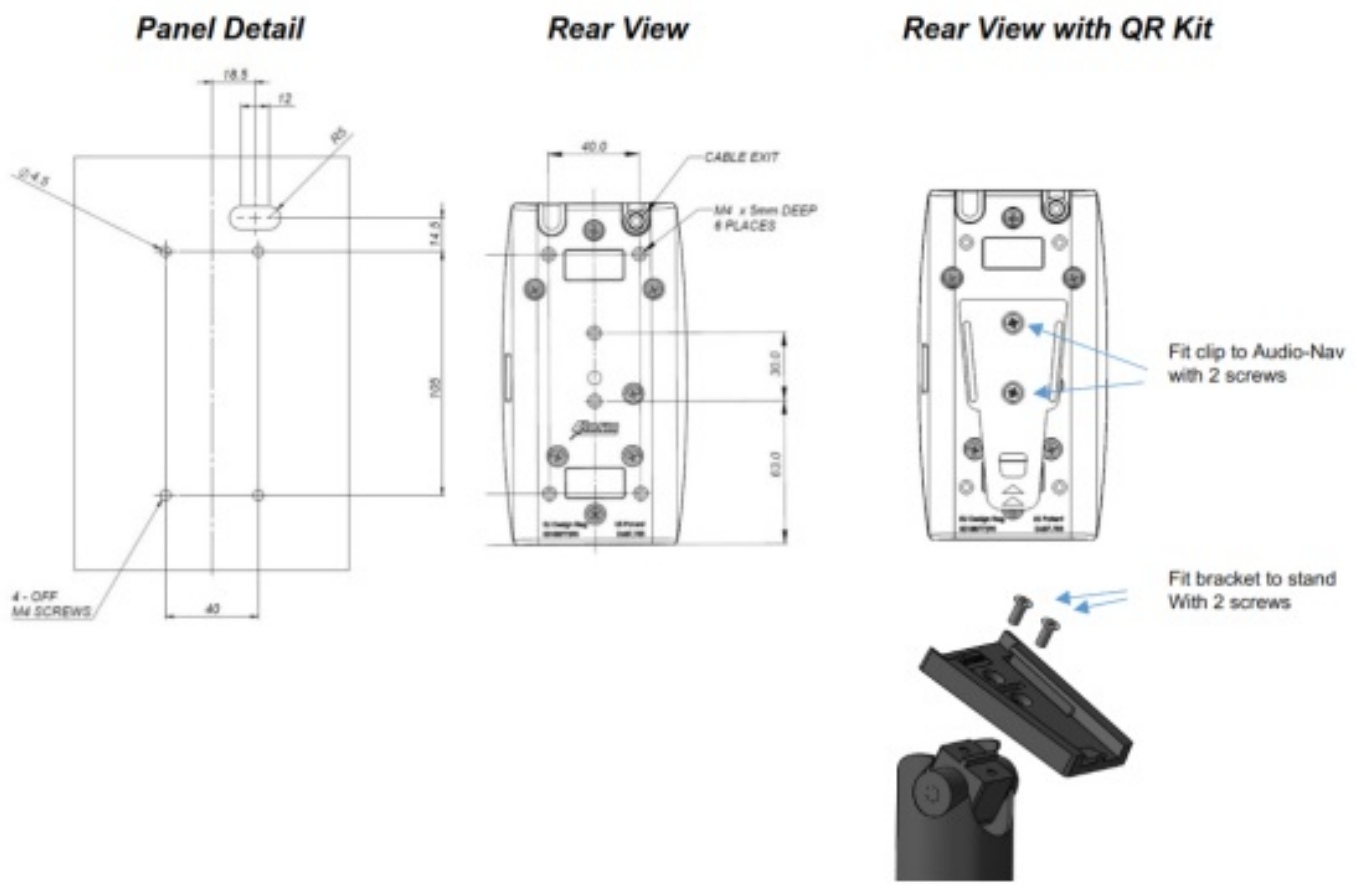


4500-01 USB CABLE MINI-B TO TYPE A, 0.9m



Externally Mounted Version
Part Number 1406-33002 6 KEY DEVICE + USB AUDIO (includes 2m Cable)
1406-QR000 Quick Release Bracket Kit (includes Qty 4 T20 M4 x 10mm screws)
The externally mounted Audio-Nav is for use either fixed directly to a panel, or on a stand.
For direct panel fixing use M4 screws through the panel into the brass inserts on the rear of the Audio-Nav

If used with a Spacepole stand then use the Quick Release Bracket kit Compatible with Spacepole Stack **STP101-02**



Extended Footprint Version

Part Number

1409-34011 – 9 Key Device + USB (vertical)

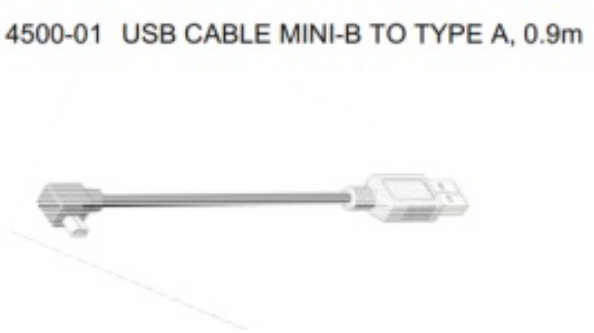
1409-34013 – 9 Key Device + USB (horizontal)

An Audio-Nav EF product with additional keys to adjust the speed of speech reproduction, and to have a sound volume adjustment. This version also supports voice input from the headset microphone
The Audio-Nav is for under panel installation: there are portrait & landscape versions
There are 3 sets of fixing lugs :

– for weld studs on steel panel (1.2mm – 4mm thick), and
– for threaded inserts on plastic panel (3mm thick).
The keypad is designed to be installed under a panel onto M3 weld studs.
Download CAD File for panel cutout drawing.
It is recommended to use a cable tie for strain relief on the USB cable.
(Use 2.5mm nylon cable tie, RS 233-402 or equivalent)

Accessories / **Cables**

4500-01 USB CABLE MINI-B TO TYPE A, 0.9m



Specifications

	Underpanel	Externally Mounted	Extended Footprint
Rating	5V ±0.25V (USB 2.0)	5V ±0.25V (USB 2.0)	5V ±0.25V (USB 2.0)
Connection	mini USB B socket	USB A Male 2.0	USB A Male 2.0
Compatibility	Storm Interface products are developed primarily for use with current and supported Microsoft Windows® platforms. For use with a non-Windows® platform, please contact Storm Interface for advice. Compatibility with non-Windows® platforms or operating systems cannot be guaranteed.		
Audio	3.5mm jack socket illuminated	3.5mm jack socket illuminated	3.5mm jack socket illuminated
Audio Output level	30mW per channel max into a 32ohm load	30mW per channel max into a 32ohm load	30mW per channel max into a 32ohm load
Microphone Input	Supported in some versions		Supported
Ground	M3 thread grounding point		M3 thread grounding point
Dimensions	Overall 105 mm x 85mm x 28mm	Overall 150mm x 82mm x 34mm	Overall 138mm x 90mm x 28mm
Cable	Not Included	2 M (includes coiled section)	Not Included

Order Codes	**Part Number**	**LED Colour**	**Mic support**	**Part Number**	**LED Colour**	**Mic support**	**Part Number**	**LED Colour**	**Mic support**
	1406-33001	Green	No	1406-33002	Green	No	1409-34011	White	Yes
	1406-33011	White	No				1409-34013	White	Yes
	1406-34001	Green	Yes						
	1406-34011	White	Yes						

Performance/Regulatory

	Underpanel	Externally Mounted	Extended Footprint
Operational Temp	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C
Impact Rating	1K08 (5J)	1K08 (5J)	1K09 (10J)
Vibration/Shock	ETSI 5M3	ETSI 5M3	ETSI 5M3
Key Operational Life	4 million	4 million	4 million
Water / Dust sealed	IP65	IP54	IP65
Certification	CE / FCC/ UL	CE / FCC/ UL	CE / FCC/ UL
ADA	ADA Compliant	ADA Compliant	ADA Compliant

Connectivity

The USB interface comprises an internal USB hub with a connected keyboard and audio module.
This is a composite USB device and no additional drivers are required.
PC based software utility and API are available to set/control: –

- Volume key function
- Illumination level control
- Customize the USB codes

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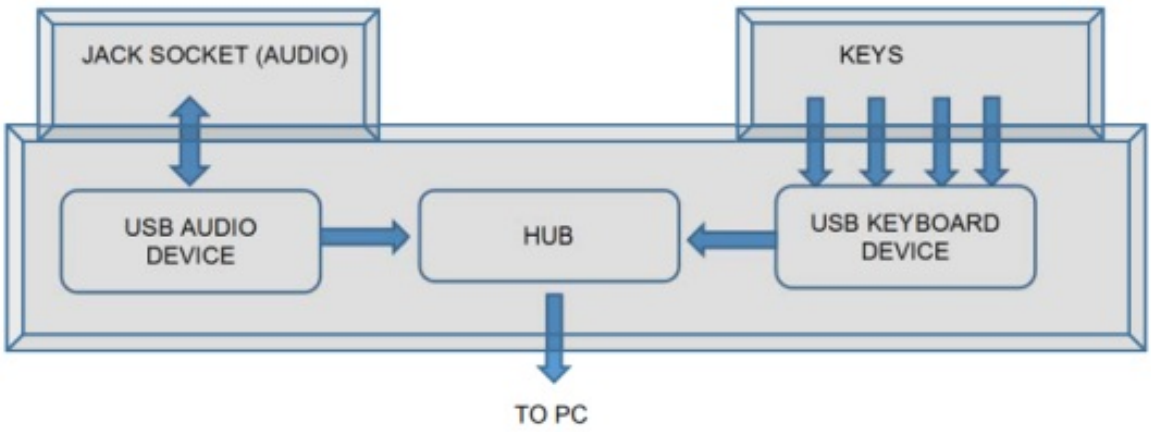
USB Device Information

USB HID

The USB interface comprises a USB HUB with a keyboard device and audio device connected.



The following VID/PID combinations are used:

For USB HUB:

- VID – 0x0424
- PID – 0x2512

For Standard Keyboard/Composite HID/Consumer Controlled device

- VID – 0x2047
- PID – 0x09D0

For USB Audio device

- VID – 0x0D8C
- PID – 0x0170

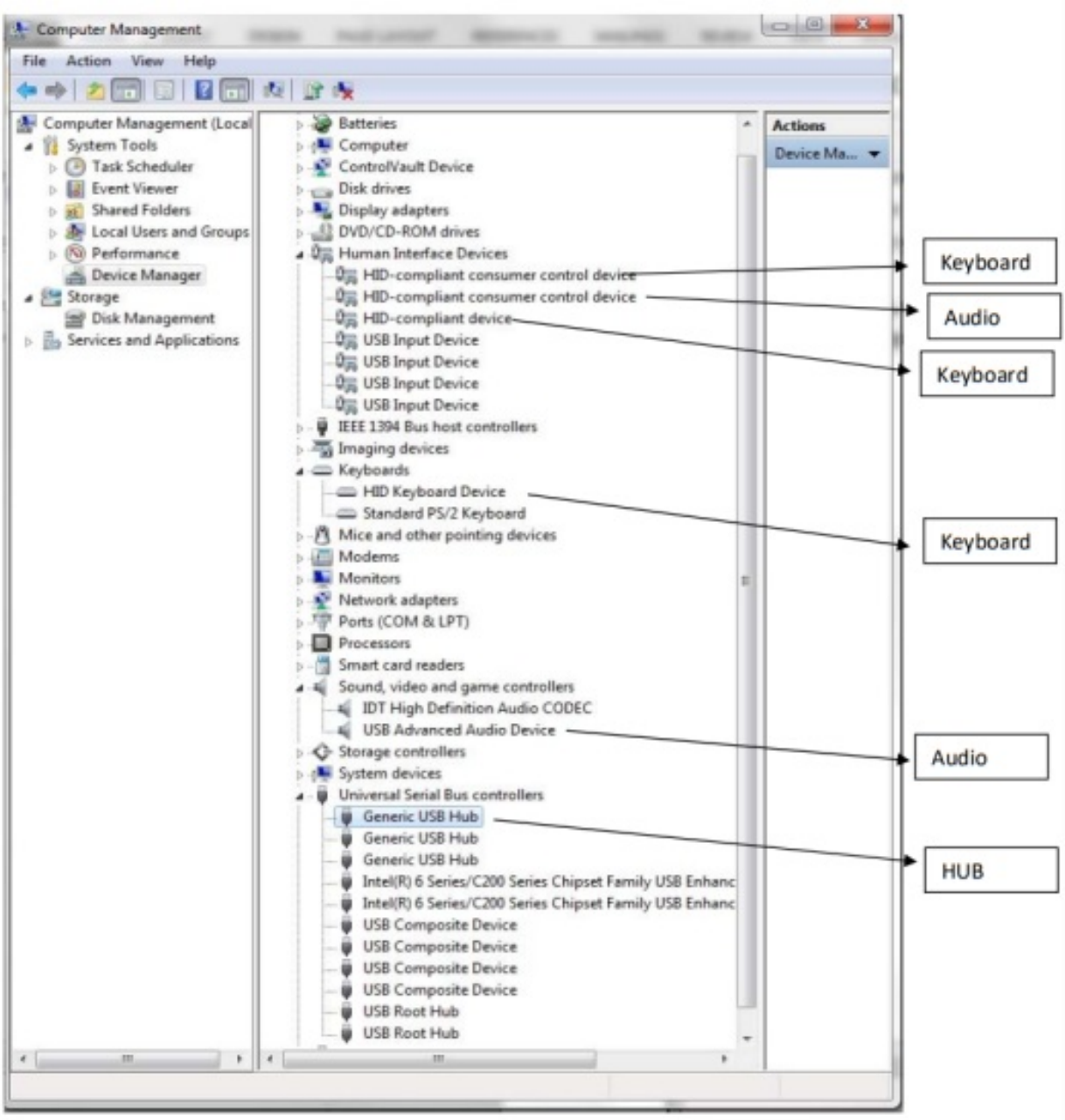
This document will concentrate on the Standard Keyboard/Composite HID/Consumer Controlled device.
This interface will enumerate as

- Standard HID Keyboard
- Composite HID-Datapipe Interface
- HID Consumer Controlled device

One of the advantages of using this implementation is that no drivers are required.
The data-pipe interface is used to provide the host application to facilitate customization of the product.
Supported Audio Jack Configurations
The following jack configurations are supported.

Notes: Application software should always ensure the same audio is present on both Left and Right Channels for correct mono operation. Headsets with microphones can be used but there is only microphone support on some versions.
Device Manager

When connected to a PC, the keypad should be detected by the operating system and enumerated without drivers.
Windows shows the following devices in the Device Manager:
(Note that other audio devices will need to be disabled in Device Manager otherwise they will take priority).

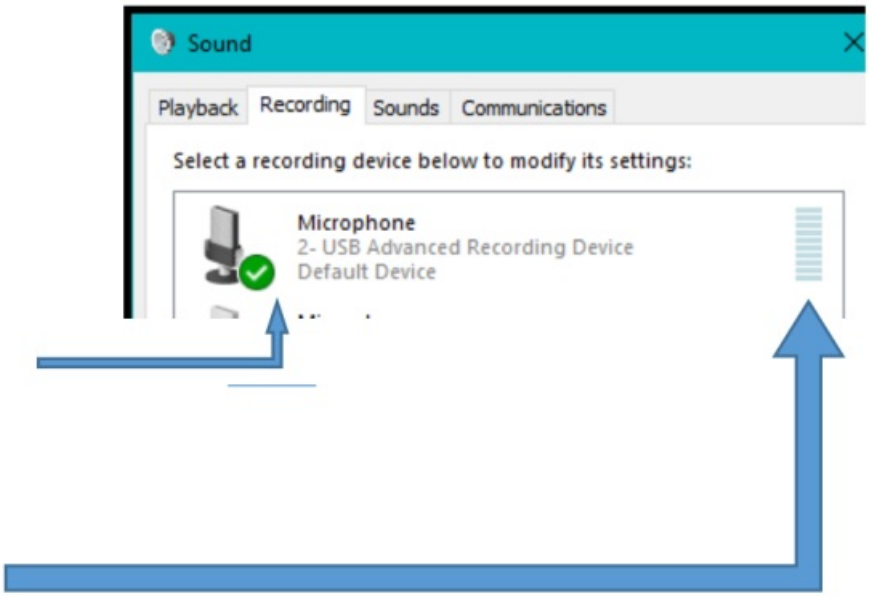


Microphone Support

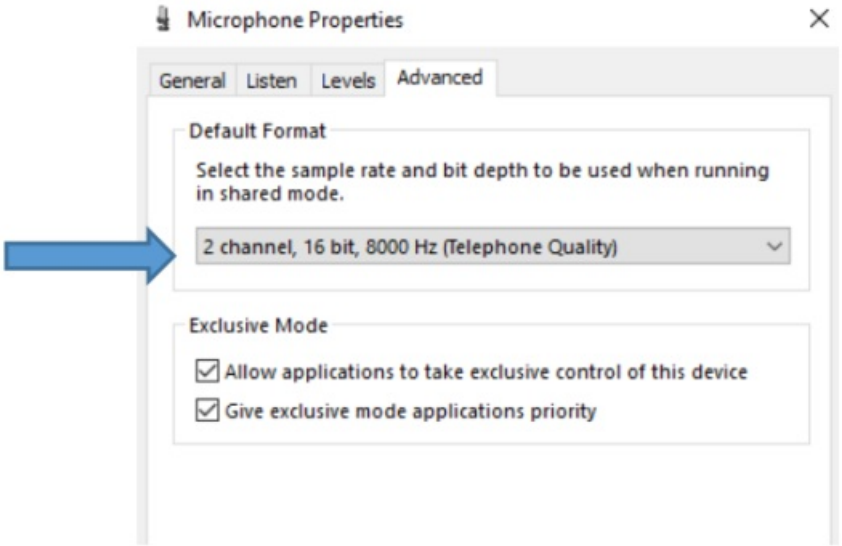
The device will enumerate as a sound device (no special drivers are required) and will show up on the device manager as a USB Advanced Recording Device

Open the sound panel it will show up as per the screenshot below :

For any windows, application ensure that the microphone is set as the default device



If you speak the bar on the right-hand side will indicate that the microphone is picking up the voice.
It is recommended for speech recognition that the sample rate is set to 8 kHz: click on Properties and then select the sample rate (in the Advanced tab).



Code Tables

The default and alternate USB code tables are shown below.

Landscape

The standard AudioNav can be used in landscape or portrait mode. The conventional orientation is the landscape – if you move the switch to portrait mode the output codes are adjusted to suit the new orientation.

	FACTORY DEFAULT CODE TABLE		ALTERNATE CODE TABLE		CUSTOMISED CODE TABLE
	LANDSCAPE	PORTRAIT	LANDSCAPE	PORTRAIT	
Function	Hex USB	Hex USB	Hex USB	Hex USB	Set initially to the factory
Right	Ox4F Right Arrow	Ox4F Right Arrow	Ox4F Right Arrow	01 02 Multimedia Vol Up	
Left	0x50 Left Arrow	0x50 Left Arrow	0x50 Left Arrow	01 04 Multimedia Vol Down	
Down	0x51 Down Arrow	0x51 Down Arrow	<0x01><0x04> Multimedia Vol Down	Ox4F Right Arrow	
Up	0x52 Up Arrow	0x52 Up Arrow	<0x01><Ox02> Multimedia Vol Up	0x50 Left Arrow	
Select	0x28 Enter	0x28 Enter	0x28 Enter	0x28 Enter	
Jack IN	Ox6A F15	Ox6A F15	Ox6A F15	Ox6A F15	
Jack OUT	Ox6B F16	Ox6B F16	Ox6B F16	Ox6B F16	
Volume	Ox6C F17	Ox6C F17	Ox6C F17	Ox6C F17	
Orientation Switch					
I Landscape Ox6D F18		Ox6D F18	Ox6D F18	Ox6D F18	
II Portrait Ox6E F19		Ox6E F19	Ox6E F19	Ox6E F19	

Extended Footprint Version

Function	Hex
Right	0x4F
Left	0x50
Down	0x51
Up	0x52
Select	0x28
Jack IN	0x6A
Jack OUT	0x6B
Volume Up	01 02
Volume Down	01 04
+ Speech Rate	0x72
– Speech Rate	0x73

External Mount Version

Function	Hex
Right	0x4F
Left	0x50
Down	0x51
Up	0x52
Select	0x28
Jack IN	0x6A
Jack OUT	0x6B
Volume	0x6C

Using the Windows Utility to change USB Codes

Each product version has its own (free to download) version of the utility
If any other keypad utility software is installed (e.g EZ-Key Utility) then you should uninstall that before you start.

System Requirements

The utility requires the .NET Framework to be installed on the PC and will communicate over the same USB connection but via the HID-HID data pipe channel, no special drivers are required.

Compatability

Windows 10 ✓

Windows 8 ✓

Windows 7 ✓

Windows Vista ✓
Windows XP Only if you install the .NET framework

The utility can be used to configure the product to

- Select Code Table
- LED brightness (0 to 9)
- Test Audionav
- Create a customized keypad table
- Reset to factory default
- Load Firmware

API for controlling the AudioNav device from the Host Computer
It is also possible to control the AudioNav device programmatically using an API (free to download) from a host that has USB capabilities.

AudioNav	Instructions	Utility	API
AudioNav External Mount	☑	☑ v5.0	☑ v4.0
AudioNav EF	☐	☑ v2.0	☑ v1.0

Change History

Technical Manual	Date	Version	Details
	29 July 15	1.0	First Release
	12 Aug 15	1.2	Screenshots updated
	01 Sep 15	1.3	API added
	08 Oct 15	1.4	Added amended function for h/v switch on p6
	20 Nov 15	1.5	Added cable tie picture to page 2.
	08 Sep 17	1.6	Update and added Remote Update Instructions
	25 Jan 18	1.7	Added RNIB logo and Externally mounted versio n
	13 Sep 19	1.8	Added EF version and split off Utility/API
	02 Sep 20	1.9	Added PNs for mic support versions
	02 Sep 20	2.0	Add note re Voice Assistant Support
	02 Dec 20	2.1	Add Code table for EM version

Configuration Utility	Date	Version	Details
	29 Jul 15	2.0	First Release
	08 Sep 17	3.0	Added Win 10 Compatability
	20 Sep 20	4.0	Recompiled with Visual Studio 2017.
	24 Nov 20	4.1	Bugfix
	08 Dec 20	5.0	Added function to test microphone
Configuration Utility EF	Date	Version	Details
	05 Jan 21	2.0	Added missing .dll files

Product Firmware	Date	Version	Details
	29/7/15	2.0	Updated so that only vol up / down works as a co nsumer device.
	10/8/15	4.0	H/V Code table switchover fixed for std table
	25/2/16	5.0	Jack In/Out debounce increased from 400ms to 1.2 sec
	25/3/17	6.0	Improve stability
	18/10/17	7.0	Added 8 digit SN, set LED default brightness to 6 , improved recovery process.

AudioNav API	Date	Version	Details
	01 Sep 15	1.0	First Release
	08 Sep 17	4.0	Added Win 10 Compatability

AudioNav EF API	Date	Version	Details
	11 Dec 20	1.0	First Release
Remote Firmware Updat e	Date	version	Details
AudioNavDownloaderUtili ty	08 Sep 17	1.0	New Release, added to Tech Manual

Documents / Resources

	Storm Interface 1400 Series Audio-Nav Keypad [pdf] Instruction Manual 1400 Series, Audio-Nav Keypad, 1400 Series Audio-Nav Keypad

References

- Home | Storm Interface | Interface Specialists