

**Human Machine Interface
Specification
For**

**NVXM1000
Rev.2.2
Mar. 2007**

[illegible]

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1 PURPOSE

This document specifies the requirements for the human machine interface (HMI) for the NAVIGATION with XM Ready model, hereinafter referred to as the “NVXM1000 “.

It is primarily used for the development and verification of embedded software within the system controller of the NAVIGATION with XM Ready.

Specifically, the user control and visual and audible responses in the application layer are described.

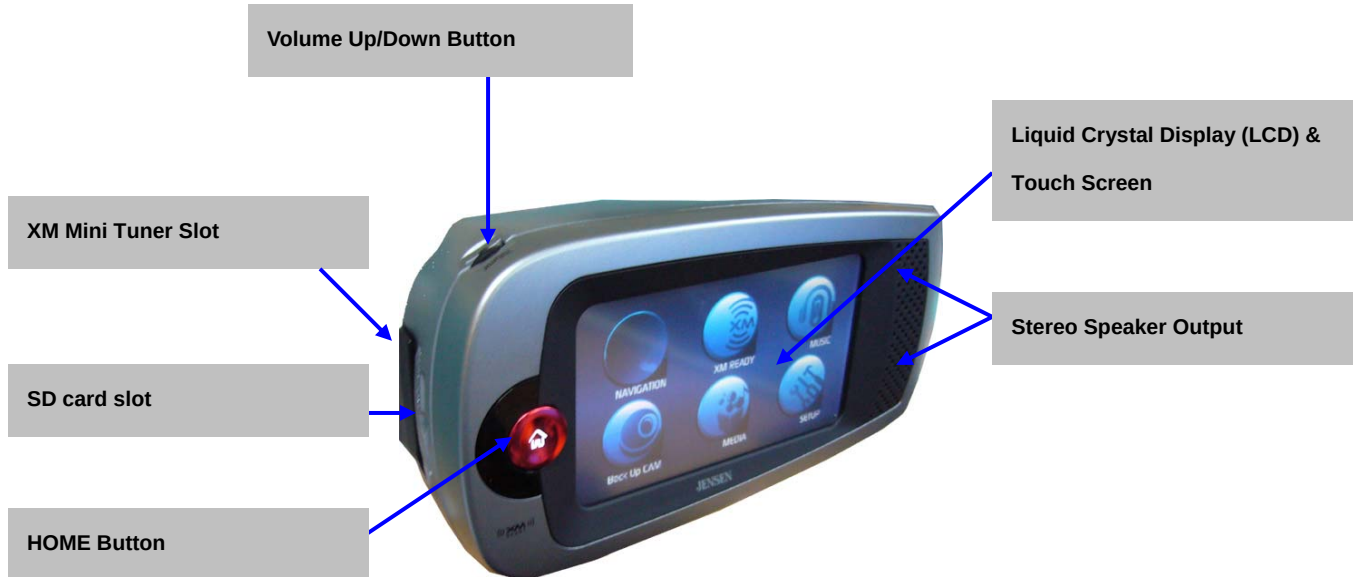
The objective of this document is to provide guidance as to how to quickly, reliably and cost effectively design and develop the “NVXM1000“ to meet with current mass production schedule. To achieve this, the “NVXM1000 “shall use existing reference design and similar derivatives and the like from NAVIGATION with XM Ready, both hardware and software, as a base. Software changes shall be as minimal as possible.

2 FEATURES SUMMARY

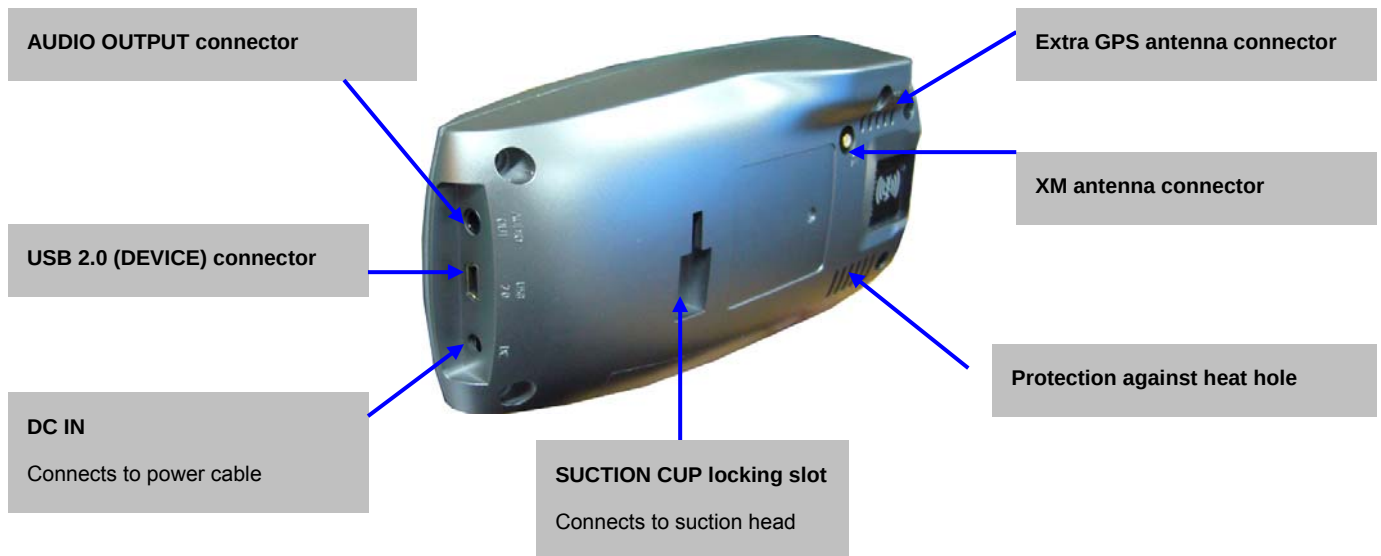
The following is a list of features that “NVXM1000” software shall implement.

Features Summary Comparison			
Item	Description	Reference	
1	Atlas II 300MHz CPU		
2	Windows CE v5.0 Installed		
3	1" HDD 8GB Located		
4	4"TFT Touch Screen (16.7M Color) Display		
6	High Speed USB Support		
7	Li-Ion (3.7v2400mA) Internal Battery Located		
8	Navteq (11M POI) Navigation Mapping		
9	XM Ready		
10	External Memory Extend (SD/MMC Slot)		
11	Photo Album		
12	Built-in Speaker		
13	FM Transmitter		
14	A/V Input Jack		
15	Audio Output Jack		
16	Audio Output Jack		

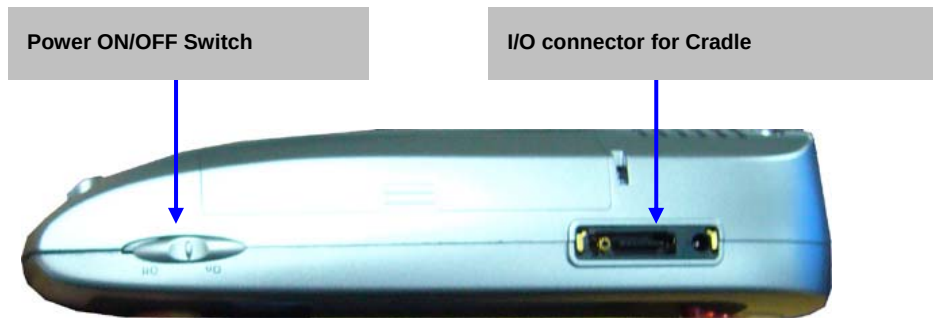
3. Front view



4. Back view



5. Bottom view

**Note**

To save internal battery, power off the power on/off switch when not use or portable transfer

6. Getting started

1. Press the Standby button.

The JENSEN Logo appears;



You're ready to use the NVXM1000. as a **Modes of operation Display**

7. Modes of operation Display

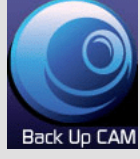
The mode button looks like a toolbox.

Pressing this button displays a cycle of features from which you can select NAVIGATION, XM Ready (radio), MUSIC, Back UP CAM. MEDIA. SETUP

Modes of operation default display



Function Buttons

Icon	Button	Press This Button to...
	NAVIGATION	Corresponds to the button of the same name. For details, see "Navigation"
	XM READY	Corresponds to button of the same name and launches satellite radio mode. For details, see "XM Ready"
	MUSIC	Corresponds to button of the same name and launches music mode. For details, see " Music"
	Back Up CAM	Corresponds to button of the same name button and launches video mode. For details, see "Back Up Cam".
	MEDIA	Provides access to five configuration options. For a complete summary of details, see "Media "
	SETUP	Provides access to five configuration options. For a complete summary of details, see "Setup "

8. NAVIGATION

This chapter explains how to navigate using the NVXM1000 If this is the first time you've used the unit, read this chapter from beginning to end. Later, use it to refer to specific procedures.

Refer to an appendix for Navigation software user manual

9. XM Ready

Getting started

To listen to XM satellite radio you need two things in addition to your NVXM1000.:

- Optional XM Mini tuner & XM antenna installed in your vehicle or Home..
- A subscription to XM satellite radio.

Note your ID number

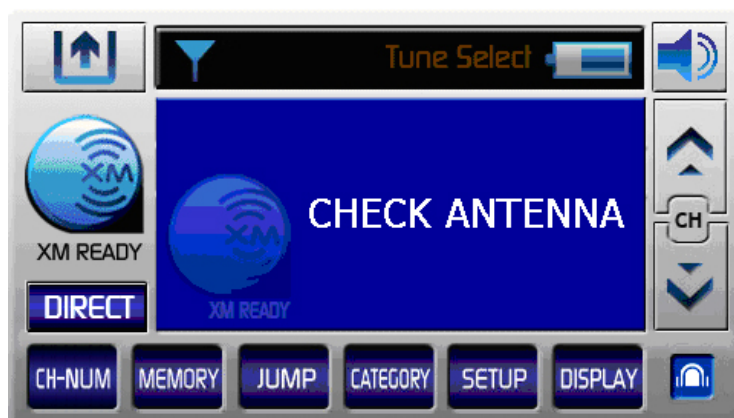
1. Press the XM Ready button at the press the mode button (toolbox),
2. Select Channel 0. The XM Mini tuner's eight –character XM Satellite Radio ID number will appear on the display. Write the number here:
3. Activate your Satellite Radio service.



XM Satellite Radio ID number display



XM Mini tuner disconnected display



XM Antenna disconnected display

XM Ready main screen

While turned to an XM channel, the NVXM1000 XM default display contains information about that channel



XM Ready DEFAULT DISPLAY

Function Buttons

	Return to "Modes of operation" mode .
	Mute ON
	Mute OFF

	Next Channel & Preset A/B/C
	Previous Channel & Preset A/B/C
	Disable Tune Select
	Enable Tune Select
	Direct channel input
	Select Preset A
	Select Preset B
	Select Preset C
	Channel number direct entry
	Preset setting
	Memory present song
	Move previous channel
	Display category list window
	Display user menu list window.
	Display Mode change
	Display main setup menu

CHANNEL UP/DOWN BUTTONS

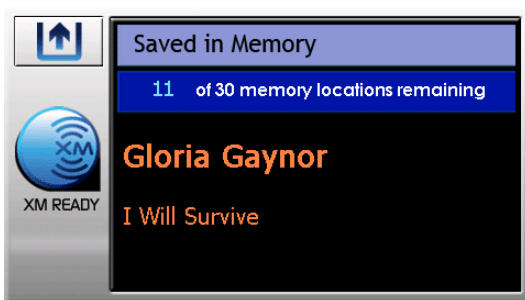
The CH ▲▼ buttons are the primary controls for navigating through the various lists and option menus available on the unit. In the default mode, these buttons provide sequential tuning through the available program channels.

The Up (▲) button, when pressed, tunes up one channel, while the Down (▼) button, when pressed, tunes down one channel. When in the list

MEMORY BUTTON & TUNE SELECT FUNCTION

If user want hear like song again Press the Memory button.

Then, the user can enjoy the song whenever broadcast on the other channels by Tune select enable



Memory display



Tune Select pop up

This feature allows the user to capture and store the current program data information (Channel Name & Number/ Artist & Song Title). You can store up to 30 Artist/Song Title combinations. The NVXM1000 also has the capability to search the current incoming XM signal, and thereby alert you if it matches the Artist/Song title stored in NVXM1000 memory.

PRESET A/B/C & DIRECT BUTTON

To recall the like channels, user can use the preset functions

DIRECT CHANNEL NUMBER ENTRY

To entry direct a channel

Firstly, Change from **PRESET A**, **PRESET B** or **PRESET C** button. to **DIRECT** on the XM Ready

default display

The user can select then press the CH-NUM button

Once a select has been made, it can be tuning by pressing the ENTER button



Direct Channel number display

PRESET STORE

To store preset channel,

Firstly, Change from **DIRECT** button. to **PRESET A**, **PRESET B** or **PRESET C** on the XM Ready

default display

The user can select between 3 banks Then, press the PRESET button

User can store the channel in the 3banks by press the 'SET' button also user can store preset numbers user want

PRESET RECALL

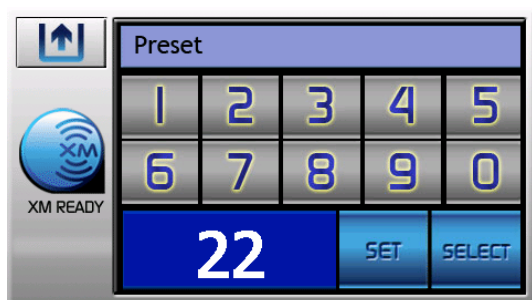
To recall preset channel,

Firstly, Change from **DIRECT** button. to **PRESET A**, **PRESET B** or **PRESET C** on the XM Ready

default display

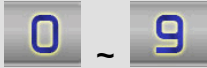
The user can select between 3 banks Then, press the PRESET button

User can recall the channel in the 3banks by input number in preset display by press the 'SELECT' button



Preset display

Function Buttons

	Exit preset mode
	Keypad buttons
	Store preset channel numbers
	Recalling preset channel numbers into memory

Each momentary press of the PRESET & DIRECT button allows the user to switch between 3 banks of Channel presets (10 presets each Preset **A**, Preset **B**, and Preset **C**, plus **Direct** channel entry. When in any of the three preset banks, momentarily pressing any of the number buttons will recall the stored channel. In the Direct mode, use the number buttons to directly enter the desired channel number

JUMP BUTTON

Move previous channel

CATEGORY



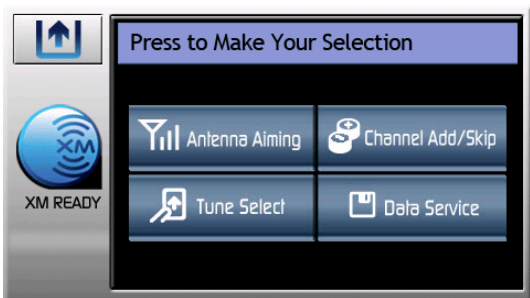
Category list display

The CATEGORY button allow the user to advance through the channel groups based on content category. By pressing the CATEGORY button, the user can then page up or down through the channels within that category. Once a choice has been made, it can be tuning by pressing the touch screen.

The Display button allow the user to change display channel name /Artist name/song title

SETUP

Upon entering this mode, there are four sub-buttons.



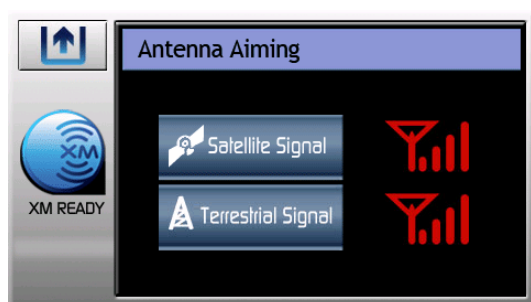
Setup display

Function Buttons

	Exit Setup mode
	Display Antenna Aiming
	Display Channel Add/Skip

 Tune Select	Display Tune Select
 Data Service	Display Data Service

Antenna Aiming



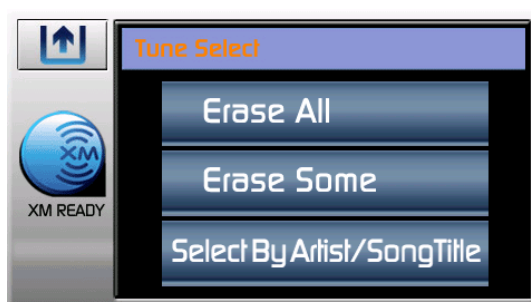
Antenna Aiming display

Antenna Aiming display

Upon entering this mode, two vertical bar graphs are displayed representing terrestrial (tower) and satellite transmitters. The signal strength is displayed by the respective graph segments. Position the antenna to optimize either the satellite or terrestrial signal. The current setting is indicated by number of bars in the graph. Moving the antenna location should maximize the number of bars in the respective graph, thus ensuring optimum reception. To exit this function, press the exit Button.

NOTE: Terrestrial repeaters are typically used in large urban areas where structures may affect the line of sight satellite signal. Terrestrial signals may not be available in your geographic location.

Tune Select



Turn Select display

Upon entering this mode, the user all 30 Memory Locations can be cleared or some parts memory Locations can be cleared.

The following adjustment options are possible:

1. **Clear all Memory Locations.** Press the Erase All button; a prompt display screen appears confirming **Please Confirm Your Selection?** Select **Yes** or **No** and press the **Yes** or **No** button.



Confirm display

2. Clear some Memory Locations

.Press the Erase some button; a prompt display screen appears the already memorize list



Memory list display

Select the one item by touch screen. ; a prompt display screen appears confirming

Please Confirm Your Selection? Select **Yes** or **No** and press **Yes** or **No** button



Confirm display

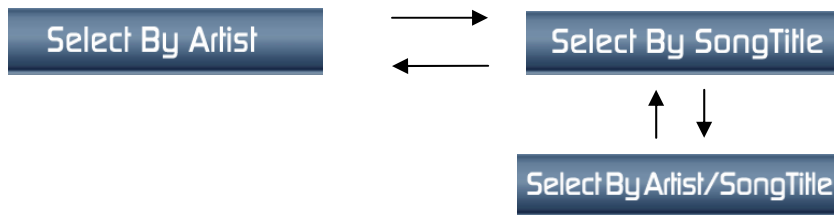
3. Select by Artist, Song Title and Artist/Song Title

T Select Search Options: - All, Artist Name, Song Title

Press the **Select by Artist** button, Then, the display would be replaced "**Select by Song Title**"

And next replaced “Select by Artist/Song Title”

According to user choice, the XM display would be show each selected display



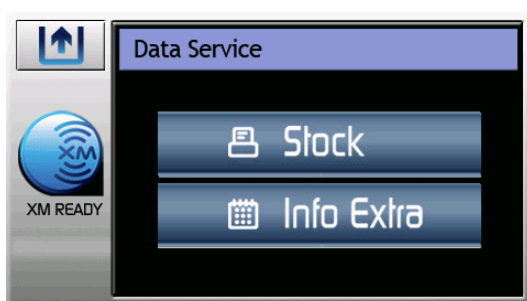
Channel Add/Skip



Channel Add/Skip display

Upon entering this mode, a channel list is displayed with the current channel. Use the Page Up/Down buttons to navigate the list. Once a channel has been select one item by touch screen, pressing the item you can see the color change of the contents from white color to gray color on the display and prevents the channel from being accessible during any of the tuning modes. Skipped channels can only be accessed either through direct channel number entry or by returning to this menu and going through the same process to return the skipped channel to the list. Upon adding a channel, the check mark is removed from alongside the channel number/name.

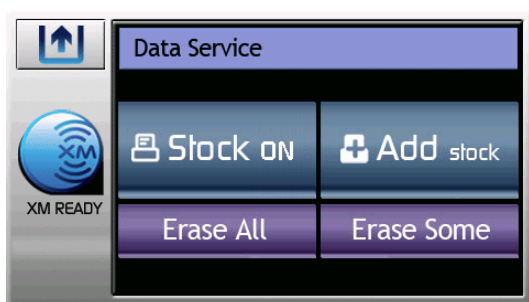
DATA SERVICE



Function Buttons

	Exit Data Service mode
 Stock	Display Data Service control window
 Info Extra	Display Data Service control window

Stock



Stock display

Function Buttons

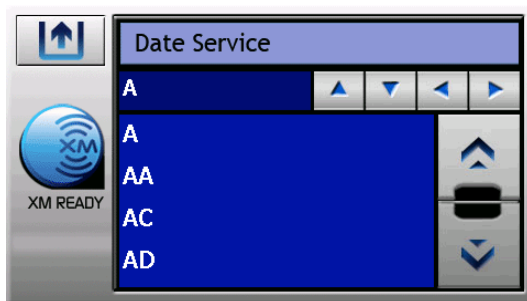
	Exit Stock mode
 Stock on	Stock ON
 Stock off	Stock Off
 Add stock	Add stock list
Erase All	Present stock erase all
Erase Some	Present stock erase some

Stock Erase All popup



Stock Erase All display

Stock Add



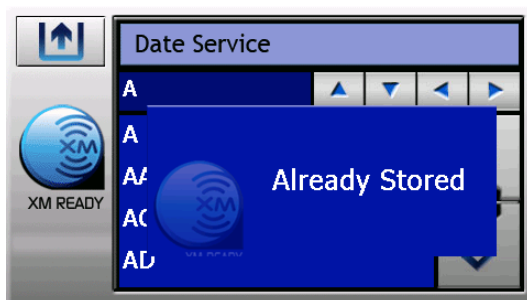
Stock Add display

Function Buttons

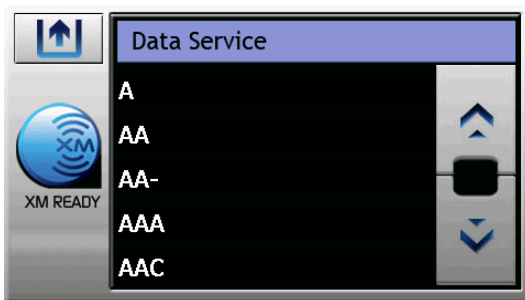
	Exit Stock Add mode
	Spelling scroll up
	Spelling scroll down
	previous spelling select
	Next spelling select
	List page up



Stock Add popup

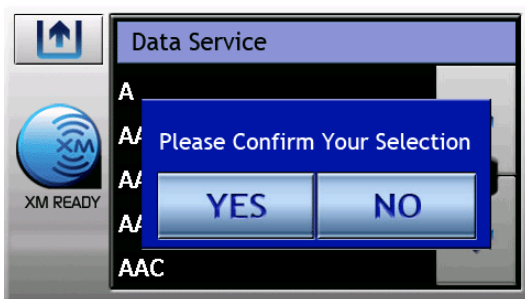


Stock Erase Some

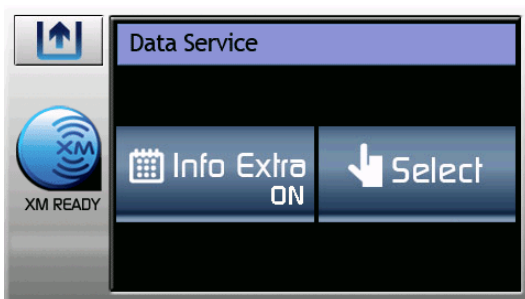


Stock Erase Some display

Stock Erase Some popup



Info Extra

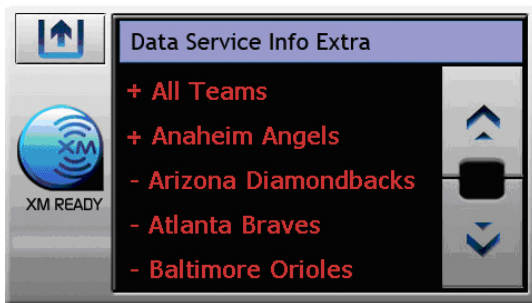


Info Extra display

Function Buttons

	Exit Info Extra mode
	Info Extra ON
	Info Extra OFF
	Select info Extra

Info Extra Select

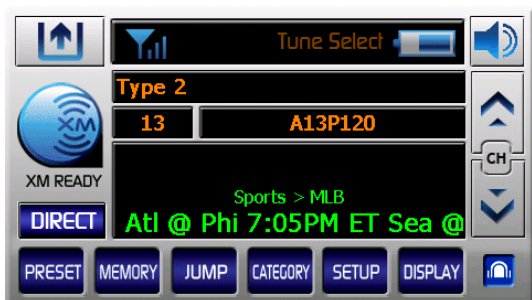


Info Extra Select display

Display Stock



Display Info Extra



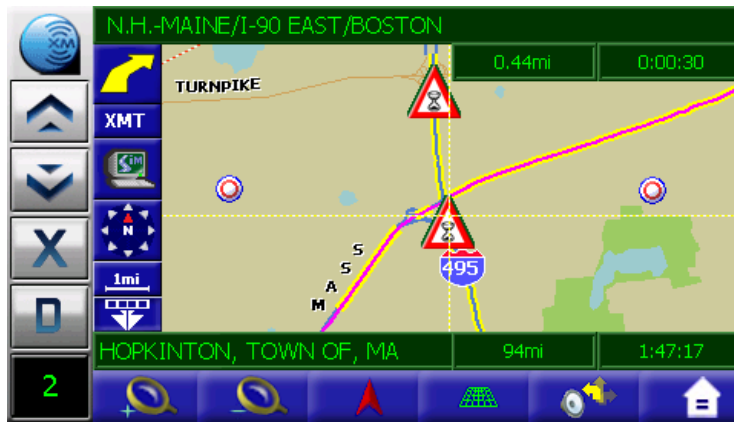
DISPLAY BUTTON

The DISPLAY button allows the user to choose one of several ways of presenting the Artist, Song Title and data service information on the LCD screen.



Main setup Button

XM Ready & Navigation dual play



To operating XM Ready & Navigation dual mode, Please follow step.

1. firstly, operate Navigation Mode or Music Mode
2. Go back "Modes of operation" mode by press the "  " button or "Home" button at the front
3. Press the XM Ready mode or Navigation on the Modes of operation default display
4. You can see the dual modes display
5. In this mode, you can use all functions of XM ready & Navigation

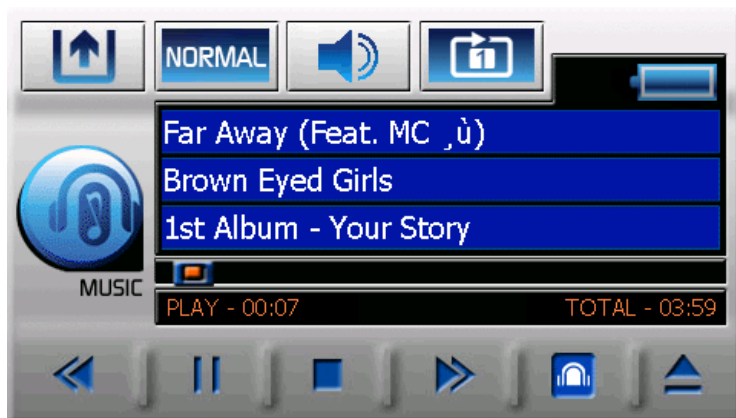
Function Buttons

	Display Music default mode
	Next Channel & Preset A/B/C
	Previous Channel & Preset A/B/C
	XM Ready mode done
	Direct, Preset A/B/C setting
	Display current folder list

10. Music

This chapter provides guidelines for using the NVXM1000. in **Music** mode.

MUSIC default display



Playing music

You can play music stored on the unit's hard disk with on a personal computer to the USB 2.0 port.

1. If the music is stored on a personal computer insert the USB2.0 connector directly into the USB2.0 port on the right side of the unit.

To change the song, press the title of a different song in the list.

OR To play a song in a different folder, press the folder in the displayed pane and press the title

OR To play a song stored on SD Memory, press the SD button. You can see same type display list in the SD Memory

Function Buttons

	Play present loading song
	Play previous song
	Play next song
	Pause current song

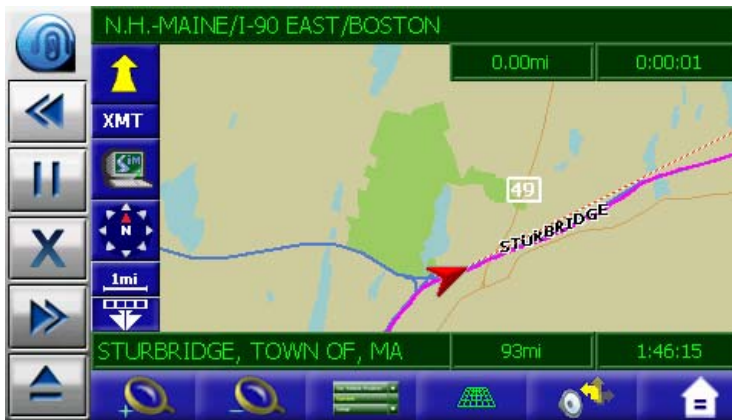
	Stop current song
	Display main setup menu
	Display current folder list
	Random Play within HD/SD all songs
	Play sequence
	Repeat Play present a song
	Repeat Play present Directory
	Repeat Play within HD/SD all songs
	Go back "Modes of operation" mode.
	Display current all files of SD memory
	Display current all files of HDD memory.
	Display previous list within current folder
	Play current check a file or Play first a file in current folder
	Display next list within current folder



HDD folder list

2. Press the song title on the touch screen. The song begins to play. When it's finished, the unit plays the next song based on the MUSIC mode

MUSIC & Navigation dual play



MUSIC & Navigation mode display

To operating MUSIC & Navigation dual mode, Please follow step.

1. firstly, operate Navigation Mode or Music Mode
2. Go back "Modes of operation" mode by press the "  " button or "Home" button at the front
3. Press the MUSIC mode or NAVIGATION on the Modes of operation default display
4. You can see the dual modes display
5. In this mode, you can use all functions of MUSIC & Navigation

Function Buttons

	Display Music default mode
	Play previous song
	Pause current song
	Music mode done
	Play next song
	Display current folder list

11. Back up CAM

This chapter provides guidelines for using the NVXM1000 in Back up CAM mode.

Getting started

To see to Back up CAMER Screen you need two things in addition to your NVXM1000.:

- Optional NVXM1000 Cradle & Back up camera installed in your vehicle. ...
- Connect to Back up camera cable to the NVXM1000 Cradle



Back Up CAM display

Function Buttons

	Quit and Exit Back up mode
	Mute ON
	Mute OFF
	Display full screen

Backup view

To operating Backup camera, press the Back cam icon on the entertainment pack mode.

To use rear camera mode, Please follow step.

In case not shift into reverse gear

1. Connect the backup view camera cable on the NVXM1000 cradle
2. Start the rear view Mode

In case shift into reverse gear

1. Connect the backup view camera cable on the NVXM1000 cradle
2. It will be display backup view. Whenever drivers shift into reverse gear automatically

12. Media

This chapter provides guidelines for using the NVXM1000 in Media mode.



Media display

Function Buttons

	Quit Media and Return to main menu
	Operate Store demo mode
	Operate Photo mode

PHOTO

Photo view

This chapter provides guidelines for using the NVXM1000 in PHOTO mode.

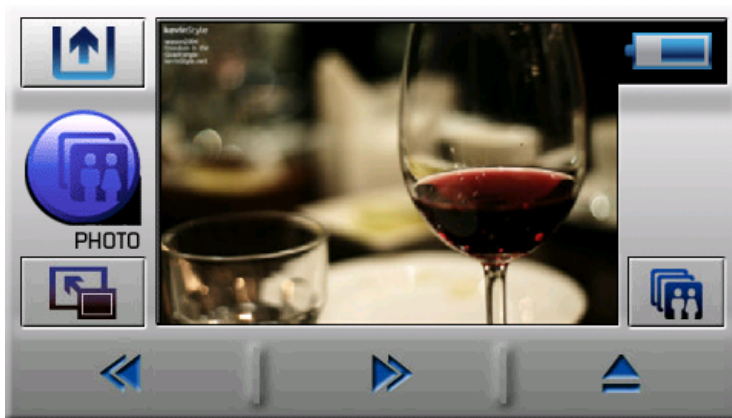


Photo view display

Function Buttons

	Quit Photo mode and Return to Media default display
	Mute ON
	Mute OFF
	Display full screen
	Display full screen and slide mode
	Display previous image
	Display next image
	Display image file list

Photo view

Press the previous and next buttons to view the images

Full screen

To expand the image to fill the screen, press the full-screen mode button.

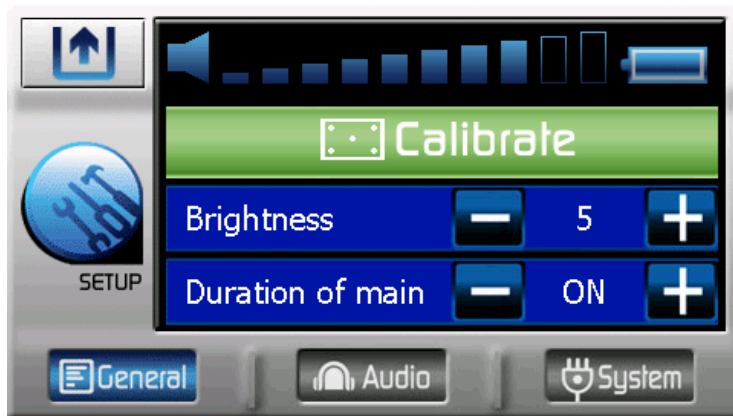
**Full Screen & Slide Mode display****Slide Mode**

Press the Slide mode button to start the slide show.

Supported formats

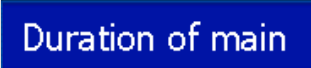
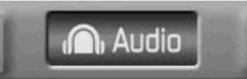
- JPEG
- BMP

13. SETUP**Setup - General mode**



Setup - General display

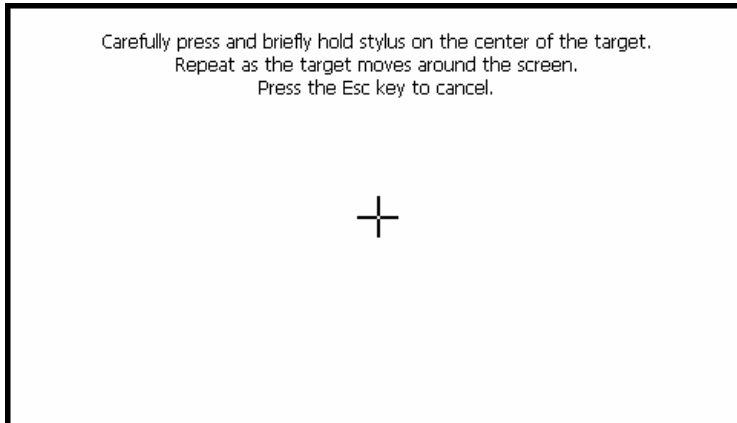
Function Buttons

	Quit and Exit Setup mode
	Battery charge status indicator
	Speaker Volume status.
	Execute calibration setting program.
	Setting brightness level.
	Setting duration level of main menu window.
	Increase level (1 - 2 - 3 - 4 - 5)
	Decrease level 5 - 4 - 3 - 2 - 1)
	FM Frequency and audio setting mode
	Display System menu.

Calibrate

XDMB Inc.,
 805 8F Ssangyoung IT-1 Sangdaewon-dong Jungwon-gu
 Seongnam-si Gyeonggi-do, Korea
 Tel: +82-31-741-7007
 Fax: +82-31-741-7006`

To adjust stylus touch position for each user, Press the Calibrate button on the setup mode general display.



Carefully press and briefly hold stylus on the center of the target

Repeat as the target moves around the screen

TMC (Traffic Message Control) ON/OFF

This feature allows the user to control of Traffic status indicate on the Navigation mode

Brightness

To adjust LCD brightness, Press LCD + or - buttons on the setup mode main display

Duration of main

This feature allows the user to adjust of main display holding duration.

On the each mode operation for example NAVI, MUSIC, MUSIC ... and etd.

When exit the main menu the previous menu will be return automatically according to setting duration

The setting duration are 2sec,4sec, 6sec, 8sec and ON

In case "ON" setting, the main menu did not return to previous menu without user select

Setup – Audio mode


Setup - Audio display

Function Buttons

	Quit and Exit Setup mode
	Display General menu.
	Display System menu.
	Operate Speaker ON
	Operate FM modulation (Speaker OFF)
	Display direct FM channel setting mode.
	Store current channel / Recall the stored channel
	Store current channel / Recall the stored channel
	Store current channel / Recall the stored channel

Speaker

This feature allows the user to control internal speaker ON or OFF

Green back ground : Speaker ON / FMT OFF

Grey back ground : Speaker OFF / FMT ON

FMT

Upon entering this mode, any FM transmitter frequency can be chosen using select by touch screen FM frequency buttons. The frequency step is 200Khz. The FM frequency range from 96.1 to 99.9MHz is represented by a display graph;

Preset1/2/3

If you want store user desire frequency channel, firstly adjust the favorite frequency Then, Press Preset 1or2or3 button during 2sec. the user can select user desire frequency by preset number choice

Direct button

Setup – Audio – Direct



Setup - Audio - Direct display

Function Buttons

	Exit direct mode
	Direct FM frequency Buttons
	Next page
	Previous page

Direct

User can set desire FM frequency directly.

Sequence is following:

- press the “Direct” button

- Press the desire FM frequency button. And then screen will automatically return the FM setting menu.

NOTE

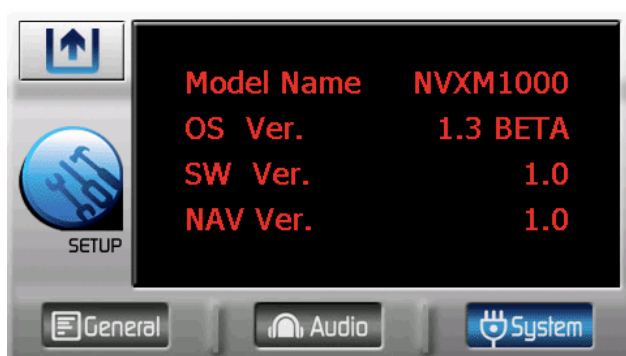
FM Modulation button, redirects audio output from the speakers in the NVXM1000. to the speakers in your car using a wireless connection.

FMT Mode: directs audio output to your vehicle's stereo speakers.

Speaker Mode: directs audio output to the NVXM1000 own internal speakers.

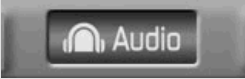
Setup – System mode

Display system information (model name / OS version / software version / navigation version)



Setup – System display

Function Buttons

	Exit current mode
	FM Frequency and audio setting mode
	Show the system information

14. REMOTE CONTROL CONFIGURATION

XM

KeyPad	mode	mute	<<	>	>>	list	^	v	<	>	Sel	F1	F2	F3	F4	F5	F6	0~9	None
main									ABCD	ABCD	Tune Select	PRESET	MEMORY	JUMP	CATEGORY	SETUP	DISPLAY		
preset									SET		SELECT							0	9
category							Up	Down	CATEGORY	DISPLAY	SELECT								
setup																			
antennaAim																			
channel A/S							Up	Down			Select								
tuneSelect																			
tune EA									YES	NO									
tune ES							Up	Down			SELECT								
data service																			
stock																			
stock add							Up	Down	Title 로	title 로	SELECT								
											List 로								
stock EA									YES	NO									
stock ES							Up	Down			SELECT								
InfoExtra																			
InfoExtra Sel							Up	Down			SELECT								
X	main: AudionSetting, DataServiceCategory																		

MEDEA,BACK UP CAM, PHOTO, MUSIC AND SETUP

KeyPad	mode	mute	<<	>	>>	list	^	v	<	>	Sel	F1	F2	F3	F4	F5	F6	0~9	None
BackUpCam											normal								
Media												video	photo						
Photo											normal								
Music							RANDOM	ALL											
List								Root		SELECT									
setup(general)																			
setup(audio)										FMT	Direct				Presel 1	Presel 2	Presel 3		
setup(system)																			
direct											ENTER						DELETE	0	9
X	Stop																		

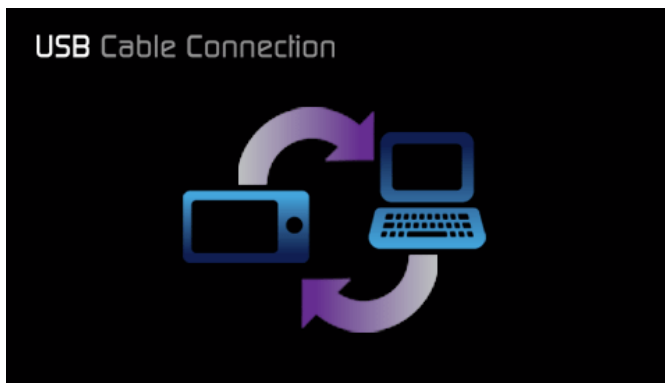
15. File Copy

XDMB Inc.,
 805 8F Ssangyoung IT-1 Sangdaewon-dong Jungwon-gu
 Seongnam-si Gyeonggi-do, Korea
 Tel: +82-31-741-7007
 Fax: +82-31-741-7006`

Connecting to your PC

You connect your NVXM1000. to a PC using a standard USB 2.0 cable. Most computers come with this cable or you can purchase one at your computer store.

1. Make sure power to both the PC and the NVXM1000 is turned off.
2. Connect one end of a standard USB cable to the USB 2.0 port on the NVXM1000.
3. Connect the other end of the USB cable to the PC's USB 2.0 port.
4. Turn on power to both the PC and the NVXM1000

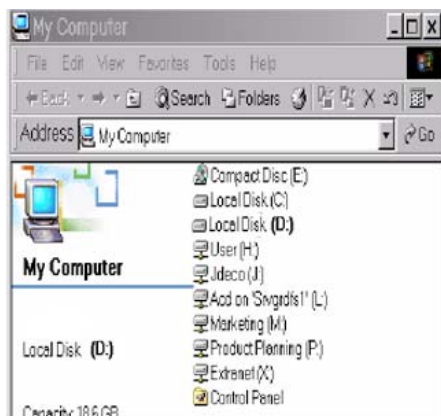


USB Connecting Message

Copy

On the PC, open My Computer or Windows Explorer. Consult your Windows manual if you need help. Windows opens a screen showing all the drives on your computer. Windows assigns a drive letter to the NVXM1000 based on the other drives in your system.

Therefore, the drive letter you see may be different from the one in the following example.



A Copying message may appear, depending on the PC's operating system and processor speed.

When the copy is finished, the files appear in the selected Music, Movie or Photo folder on the NVXM1000.

16. Troubleshooting

Description	Probable Cause	Remedy
NVXM1000 does not turn on.	The power cable may not be properly connected.	Check power cable
GPS signal strength is weak	In some applications/installations, GPS signal may be difficult to receive.	Position the built-in GPS antenna to a better angle for signal reception. To locate the antenna, see "Back view"
You hear no sound from the unit's internal speaker.	The speaker may be turned off or redirected to the stereo speakers in your car or home.	1. Press Setup, Navigation Preferences. 2. Press the button to change the setting from FMT Mode to Speaker Mode
You hear no sound from your car stereo speakers	You've selected an unavailable FM frequency	Tune to the correct FM frequency
When trying to update firmware, the unit displays, "OS Update File can't be found"	To update, you need the update software. See "Upgrade the firmware"	Double-check all connections

17. Specifications

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Dimensions (W x H x D): 159 x 81.60 x 37.66 mm

Operating system Windows CE version 5.0

Embedded processor Atlas II 300MHz

Memory 64MB SDRAM

64MB Flash Memory

8GB Hard Disk Drive

Power source 12 ~ 24V DC (using cigar jack)

Map database Nav Tech Map Database

Liquid crystal display (LCD) 4" LCD Antiglare touch panel TFT Touch screen

LCD 480 horizontal x 272 vertical pixels

FCC Information

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This Device may not cause harmful interface, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for CLASS B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try correct the interference by one or more of the following measures:

- 1.1. Reorient or relocate the receiving antenna.
- 1.2. Increase the separation between the equipment and receiver.
- 1.3. Connect the equipment into an outlet on a circuit different from that to which receiver is connected.
- 1.4. Consult the dealer or experienced radio/TV technician for help.

WARNING

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.