

**DENSO**

# ***S***ervice ***Manual*** ***Operation***

***Audio / Visual Basics***

DENSO CORPORATION

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# INTRODUCTION

Car navigation systems are advancing every day. The integration of car navigation systems and car audio, as well as the modularization of products (integrated installation of products within one big unit), means that car navigation system and car audio have become inseparable products. This volume describes fundamental car audio technology. It provides an understanding of the system as a whole, and is useful for troubleshooting.

## TABLE OF CONTENTS

1. OUTLINE .....	1
1-1. OUTLINE .....	1
1-2. HISTORY OF CAR AUDIO SYSTEMS .....	6
2. RADIO AND RADIO WAVES .....	7
2-1. OUTLINE .....	7
2-2. RADIO .....	10
2-3. TUNER .....	16
2-4. OPERATION .....	19
3. TELEVISION (TV) .....	20
3-1. OUTLINE .....	20
3-2. PRINCIPLE .....	20
3-3. TELEVISION NOISE AND RECEPTION OBSTRUCTIONS .....	26
3-4. OPERATION .....	29
4. CD (COMPACT DISC) .....	30
4-1. OUTLINE .....	30
4-2. PRINCIPLE .....	31
4-3. CONSTRUCTION .....	35
4-4. OPERATION .....	38
5. MD (MINI DISK) .....	39
5-1. OUTLINE .....	39
5-2. PRINCIPLE .....	40
5-3. OPERATION .....	43
6. DVD-VIDEO .....	44
6-1. OUTLINE .....	44
6-2. PRINCIPLE .....	47
6-3. OPERATION .....	51
7. CASSETTE TAPE .....	52
7-1. OUTLINE .....	52
7-2. PRINCIPLE .....	53
7-3. CONSTRUCTION .....	55
8. AMPLIFIER AND SPEAKER .....	59
8-1. OUTLINE .....	59
8-2. Equalizer .....	62
8-3. Speaker .....	65

<b>9. AUDIO NOISE COUNTERMEASURES</b> .....	<b>69</b>
<b>9-1. NOISE</b> .....	<b>69</b>
<b>10. PRECAUTIONS FOR HANDLING</b> .....	<b>79</b>
<b>10-1. GENERAL KNOWLEDGE</b> .....	<b>79</b>



1. OUTLINE

1-1. OUTLINE

A. Introduction

a. What are Car Audio Systems?

In conjunction with the rapid pace of automobile development, the popularization of car-audio systems (vehicle-use radios and car stereos etc.), has resulted in their utilization and rating as “functional vehicle parts”.

The car audio system is equipped to provide both a means of information acquisition for the driver (relaying traffic, weather and emergency information), as well enhance relaxation within the vehicle by providing music and so on.

Car audio systems range from those with radio-only capabilities, to those which play music on media such as cassette, CD, MD, or DVD players, through to systems equipped with multiple items. More recently, car audio systems utilizing semiconductor memory as a music medium have emerged. In addition, integrated car navigation and car audio systems with television reception capabilities are becoming popular.

b. Types of Car Navigation Systems

Car navigation systems can be broadly divided into the following three types according to their functions: the H/A or hide-away navigation type (including the audio-integrated display type), the visual navigation type, and the audio integrated navigation type.

(1) Types

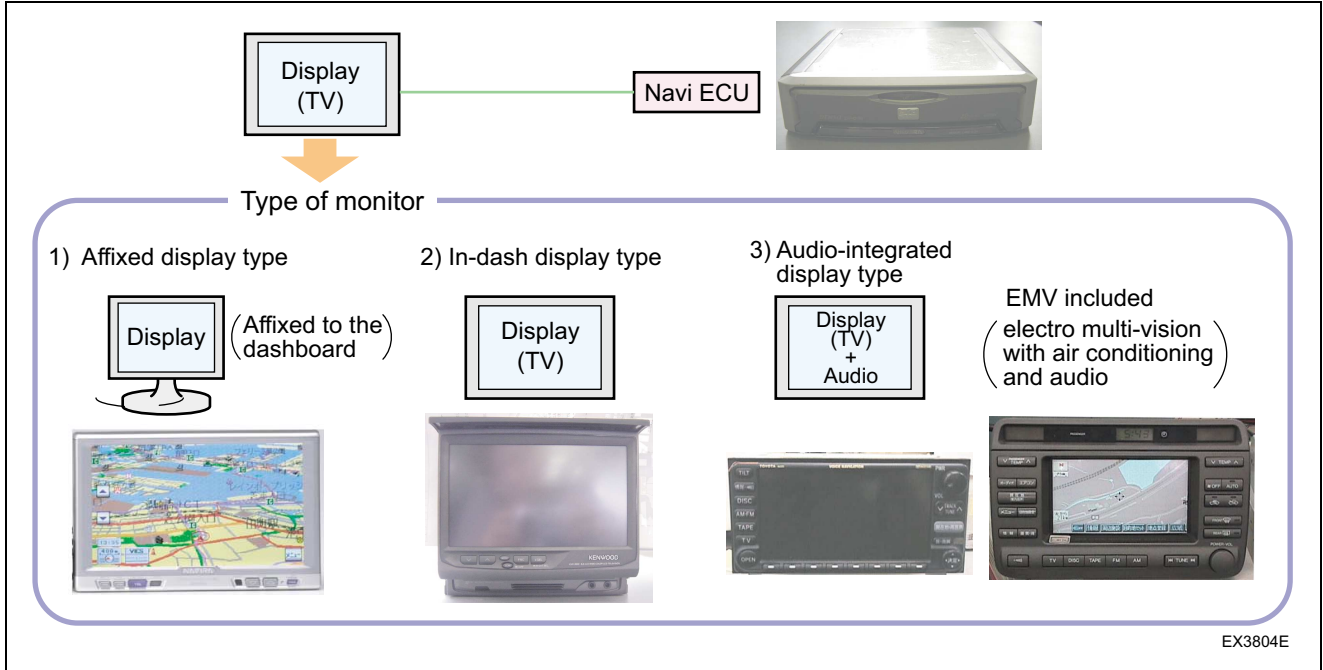
Type		Navigation	Visual (Display)	Audio	Communication	Remarks
H/A (hideaway) navigation type	Affixed type	○	○	-	-	Navigation ECU installed separately
	Audio-integrated display type	-	○	○	-	Navigation ECU installed separately
Visual navigation type		○	○	-	-	Navigation ECU integrated
Audio-integrated navigation type	Without communication function	○	○	○	-	Navigation ECU integrated
	With communication function	○	○	○	○	Navigation ECU integrated

(2) Types

A) H/A (Hideaway) Navigation Type

This type has a separately installed navigation ECU. It can be divided further into the following three types, according to the type of display used.

- Affixed display type (affixed to the dashboard)
- In-dash display type
- Audio-integrated display type/EMV (A/C + audio) type



B) Visual Navigation Type

- The display and the navigation ECU are integrated in this type.
- The display retracts into a 1DIN-size space.



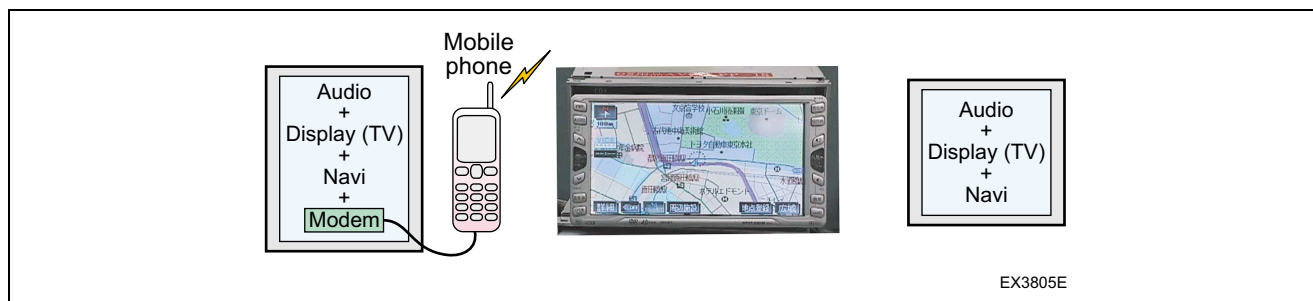


## C) Audio-Integrated Navigation Type / Audio-Integrated Navigation Type with Communication Function

- Audio-integrated navigation: integrated audio, navigation and display.
- Audio-integrated navigation with communication function: integrated audio, navigation, display and communication functions (with modem).

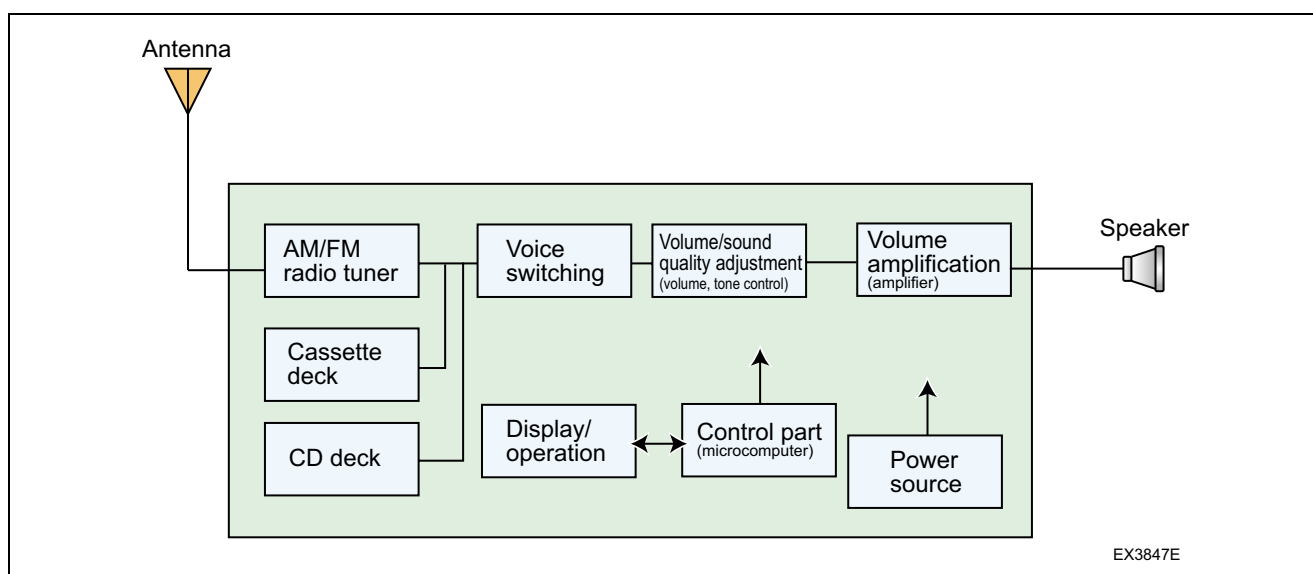
With this type, a mobile telephone can be used to make hands-free calls and access the Internet or i-mode.

Many of these come in a 2DIN size.



## c. Car Audio System Configuration

A configuration example of a car audio system with integrated cassette, CD, and AM/FM radio is illustrated below.



The basic configuration of a car audio system is no different from a home audio system. However, it has unique features to adapt to a use environment where radio wave reception conditions change constantly due to vibration, heat, and electromagnetic interference emitted by electronic vehicle components.