REAR VIEW MONITOR SYSTEM

DICDM–01

DESCRIPTION

1. GENERAL

(a) To assist the driver in parking the vehicle by monitoring the rear view, this system has a television camera mounted on the luggage compartment door to display the rear view of the vehicle on the multi–display.

(b) This system consists of the following components: television camera ECU, television camera assy, multi–display.

(c) This system is equipped with a self–diagnosis system, which is operated on a dedicated window that appears on the display panel, just as in the navigation system.

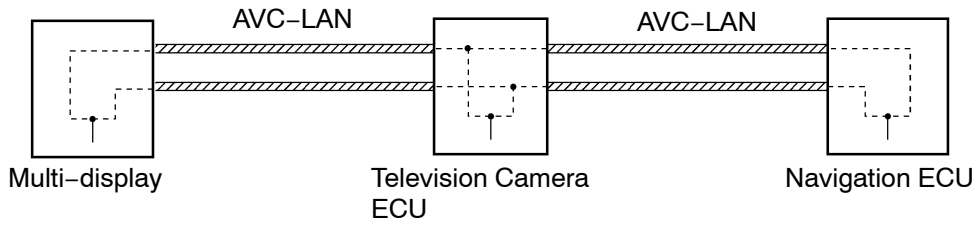
2. FUNCTION OF COMPONENTS

(a) The television camera ECU controls the system by using information from the following components.

Item	Function
Television Camera Assy	Mounted on the luggage door to transmit the rear view of the vehicle to the television camera ECU.
Television Camera ECU	Transmits video signals, which contain a composite of the rear view of the vehicle taken with the television camera and the warning message, to the multi–display.
Multi–display	Receives video signals containing a composite of the rear view of the vehicle and the warning message from the television camera ECU, and displays them on the display panel.
Neutral Start Switch	Transmits a reverse shift position signal to the television camera ECU through communication. This signal switches the display of the multi–display to operate this system.

3. COMMUNICATION SYSTEM

(a) This rear view monitor system communicates between the components by AVC–LAN.



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4. DIAGNOSTIC FUNCTION

(a) This rear view monitor system has diagnostic function (Displayed on ”NAVIGATION SYSTEM” of the multi–display assembly).

(b) Three–digit number (in hexadecimal notation) of ”unit code (physical address)” is set in each component composing AVC–LAN.

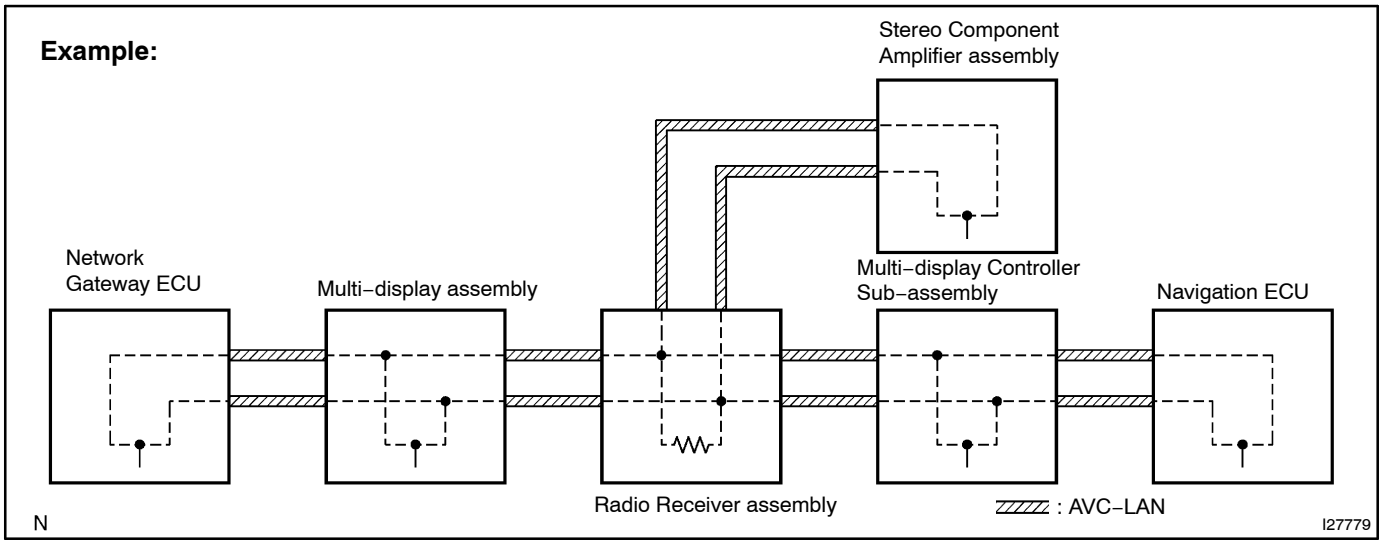
(c) Two–digit number (in hexadecimal notation) of ”logical address” is set in each function consists of internal AVC–LAN.

5. OUTLINE OF AVC–LAN

(a) What is AVC–LAN?

AVC–LAN is the abbreviation for Audio Visual Communication–Local Area Network. This is a unified standard co–developed by 6 audio manufacturers associated with Toyota Motor Corporation.

The unified standard includes signals, such as audio, visual and signals for switch indication and communication.



(b) Objectives

Recently developments in car audio systems have been rapid and functions have been changed drastically. The conventional system has been switched to the multi–media type such as a navigation system. At the same time customers want to upgrade their audio systems. This is the factor that lies behind this standardization.

The concrete objectives are explained below.

(1) When products by different manufacturer were combined together, malfunctions such as sound failure occurred. This problem can be solved by standardization of signals.

(2) Various types of after market products are available.

(3) Because of the above (2), each manufacturer has been able to concentrate on developing products in their strongest field. This has enabled the development of inexpensive products.

(4) In general, a new product developed by one particular manufacturer could not be used due to a lack of compatibility with other manufacturers products. By developing this new standard, users can enjoy a range of compatible products from different manufacturers anytime they want.

(c) The above stated are the reasons for the introduction of AVC–LAN. Under this standardization, development of new products no longer causes systematic errors.

HINT:

- When +B short or GND short is detected in AVC–LAN circuit, communication stops, and the audio system does not function normally.
- When audio system is not equipped with a navigation system, the audio head unit is the master unit. When the audio system is equipped with a navigation system, the multi–display is the master unit.
- The radio receiver is equipped with a resistor (60 to 80 Ω) for communication.
- The car audio system using AVC–LAN circuit has a diagnosis function.
- Each product has its own specified number called a physical address (three–digit number). Numbers are also allotted to each function within a product, which are called logical addresses (two–digit number).

6. NOTES FOR REAR VIEW MONITOR

(a) Notes for rear view monitor.
  (1) The rear view monitor may not function properly if subjected to a severe blow by any hard object.
  (2) Do not ”scrub” the cover part of the camera (resin made). Scrubbing it may scratch the cover and affect the image. Prevent organic solvents, waxes, bond removing solvents, or glass coating from adhering to the cover. Clean off immediately, and wash with water.
  (3) Exposing the camera to sudden temperature change may affect proper function.
  (4) A clear image may not appear if the camera is dirty with snow, mud, etc. In that case, wash with water and wipe off. Use a detergent if necessary to remove dirt.

(b) Images are difficult to discern even in normal conditions if:
  (1) Camera screen is frosted over (the image immediately after turning the ignition switch ON may be blurred or darker than normal).
  (2) A strong beam of light, such as a sunbeam or headlight, hits the camera.
  (3) It is too dark around the camera (at night etc.).
  (4) The ambient temperature around the camera is either too high or too low.

HINT:

When a strong light, such as a sunbeam reflected off the vehicle’s body, hits the camera, the image may be blurred. It is called the ”SMEAR” phenomenon, peculiar to the CCD camera.