



# **DDWG Digital Display Dual-EDID Implementation Guide**

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## Table of Contents

Acknowledgements	3
<b>1. INTRODUCTION</b>	<b>5</b>
<b>2. DUAL EDID DISPLAYS WITH A SINGLE DVI-I CABLE</b>	<b>5</b>
2.1 Background	5
2.2 Dual EDID Digital Display Vendor Implementations	5
2.2.1 Work Around 1	5
2.2.2 Work Around 2	6
2.2.3 Work Around 3	6
2.2.4 Work Around 4	6
2.2.5 Polling	6
2.2.6 Sample Connection 1	7
2.2.7 Sample Connection 2	8
2.2.8 Sample Connection 3	9
2.2.9 Non-recommended Connection	10
2.2.10 Suggested Host and Display Algorithm	11
<b>3. SUMMARY</b>	<b>12</b>

## 1. Introduction

The Extended Display Identification Data (EDID) specifications were defined by the Video Electronics Standards Association (VESA) to provide a standardized structure for a display to communicate its specific capabilities to a graphics host via the Display Data Channel (DDC) pins. EDID capabilities such as timings will vary from display to display depending on available hardware and display features. The ability to accept both digital and analog data inputs from the graphics host is becoming increasingly popular as is the desire to provide a single connector / cable interface for both analog and digital data through the DVI-I connector. However, since the single DVI-I connector provides pins for a single DDC interface, the issue of EDID conflict must be addressed.

The purpose of this document is to communicate DDWG recommendations in regards to dual EDID implementations for combination analog / digital displays or projectors using a DVI-I input connector. This white paper is provided to clarify possible cable and display configurations for digital displays that support both analog and digital input through a single cable

## 2. Dual EDID displays with a single DVI-I cable

### 2.1 Background

There are support concerns for digital displays that can accept both analog and digital signals through a single DVI-I cable. This issue only exists if the analog and digital EDID settings are different requiring 2 different EDID structures. (i.e. the analog input allows higher pixel clocks than the digital.) Since there is only 1 set of DDC pins available in a DVI-I connector, 2 separate EDID structures will need to be multiplexed to the DDC pins. A mechanism will then need to be made available to select one or the other to avoid any possible EDID confusion.

### 2.2 Dual EDID Digital Display Vendor Implementations

Although the DVI 1.0 specification describes the implementation of DVI-I for supporting both analog and digital inputs through a single connector, this usage is not fool proof and may result in possible interoperability problems under certain circumstances. Below are some possible options for avoiding potential EDID conflict.

#### 2.2.1 Work Around 1

1. Set Digital EDID as the default on the DDC lines.
2. Use internal logic in the digital display to test for analog activity on the analog display lines. This logic will need to poll periodically for analog activity to accommodate the scenario of a powered on display being connected to a powered off system and then applying power to the graphics host.
3. If there is analog activity from the graphics host, internal switch to the analog EDID. (See figure 4).

**Possible issues:** Assumes the graphics host sends signal to display for detecting analog device. If the host does not, then this may result in a black screen.

### 2.2.2 Work Around 2

1. Provide a user setting on the monitor to switch from one EDID to the other. This may be a hardware switch or software menu driven.

**Possible issues:** Requires manual user switch, therefore not plug and play ready, and not user friendly.

### 2.2.3 Work Around 3

1. Use DVI-I connector on digital display.
2. Only use DVI-D or DVI-A cable. Do NOT use DVI-I cable.

**Possible issues:** DVI-I cable may be obtained and used possibly leading to EDID conflict.

### 2.2.4 Work Around 4

1. Use two separate connectors to enable two separate EDIDs.
2. A DVI-D connector can be used for the digital input.
3. A VGA connector can be used for the analog input.
4. Each set of DDC lines will be connected to their respective EDIDs.

### 2.2.5 Polling

In workarounds 1, 2, and 3, the internal logic in the display may need to poll for analog activity to avoid the possibility of EDID conflict in the following scenario:

1. Connect display to system.
2. Power on display while system is powered off.
3. Power on system.

The above scenario may result in EDID conflict if the display only checks for analog activity at display power up, therefore polling or alternate methods should be considered.

Below are sample recommended connections for displays that contain both analog and digital EDID structures.



## 2.2.6 Sample Connection 1

Use DVI-D cables for dual EDID digital displays with digital EDID set as default.

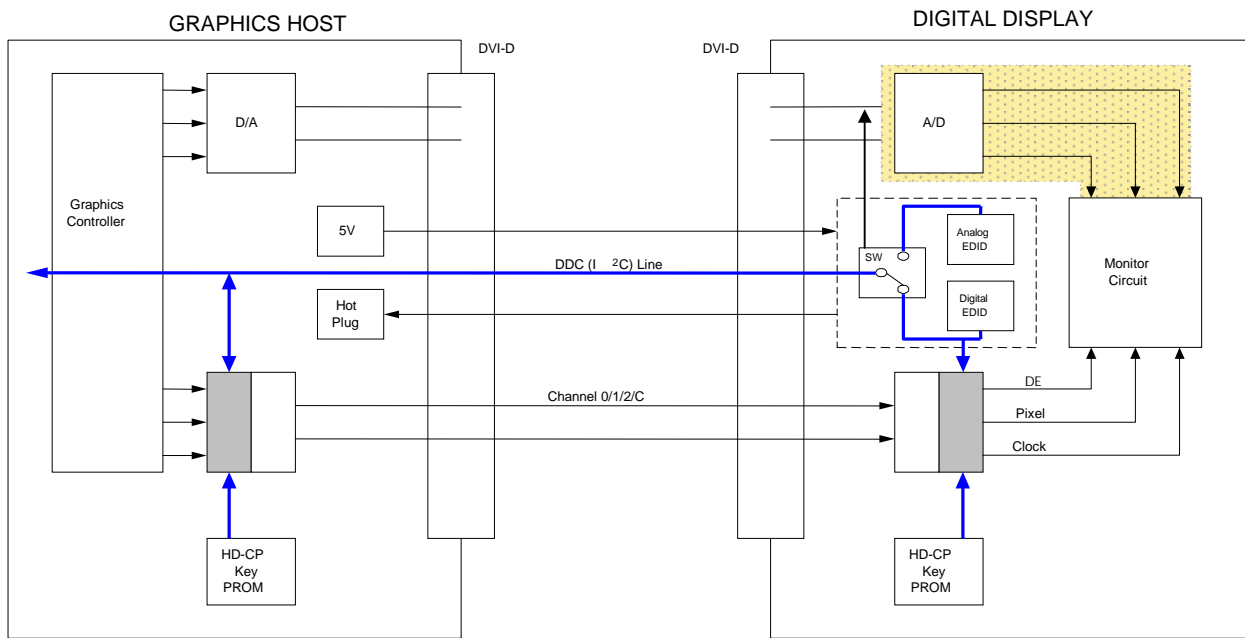
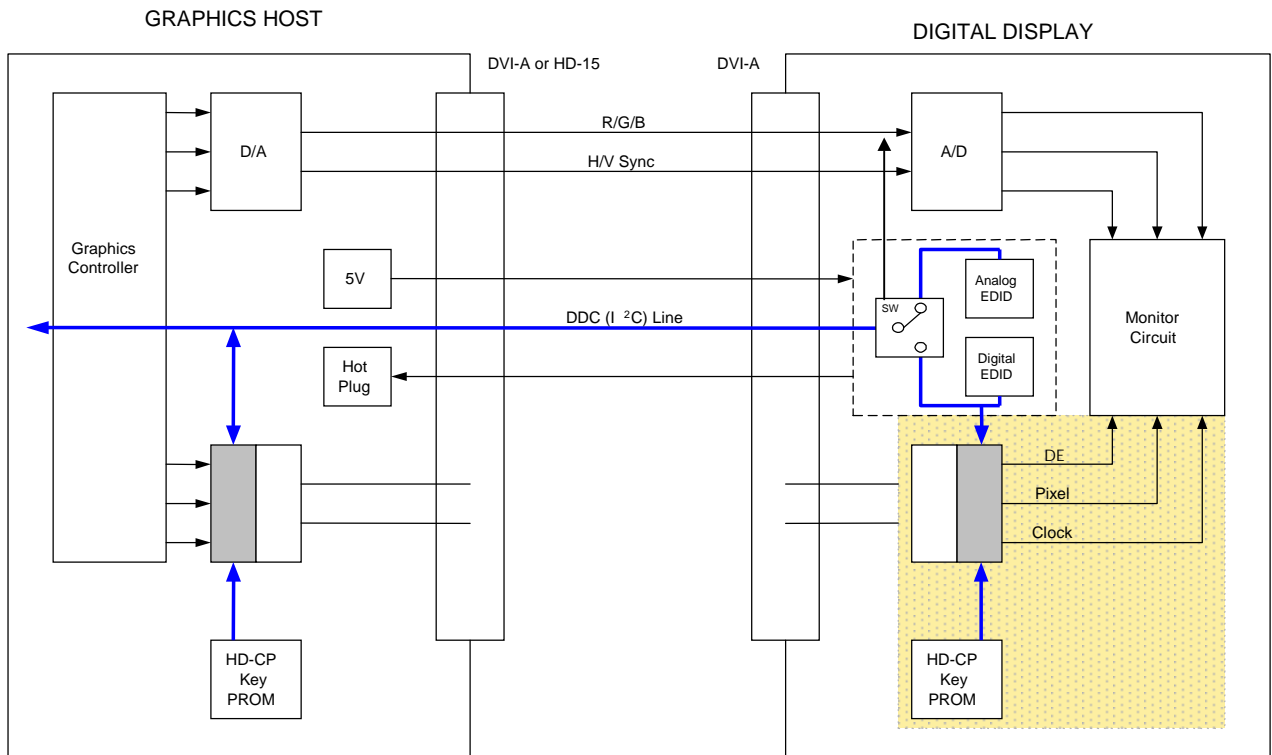


Figure 1.

**Note:** If the switch persists to analog once changed, then a similar detection will need to be done for changing to the digital EDID.

## 2.2.7 Sample Connection 2

Use DVI-A or DVI or analog HD-15 cable. Test for analog activity to determine to expose analog EDID to DDC lines.

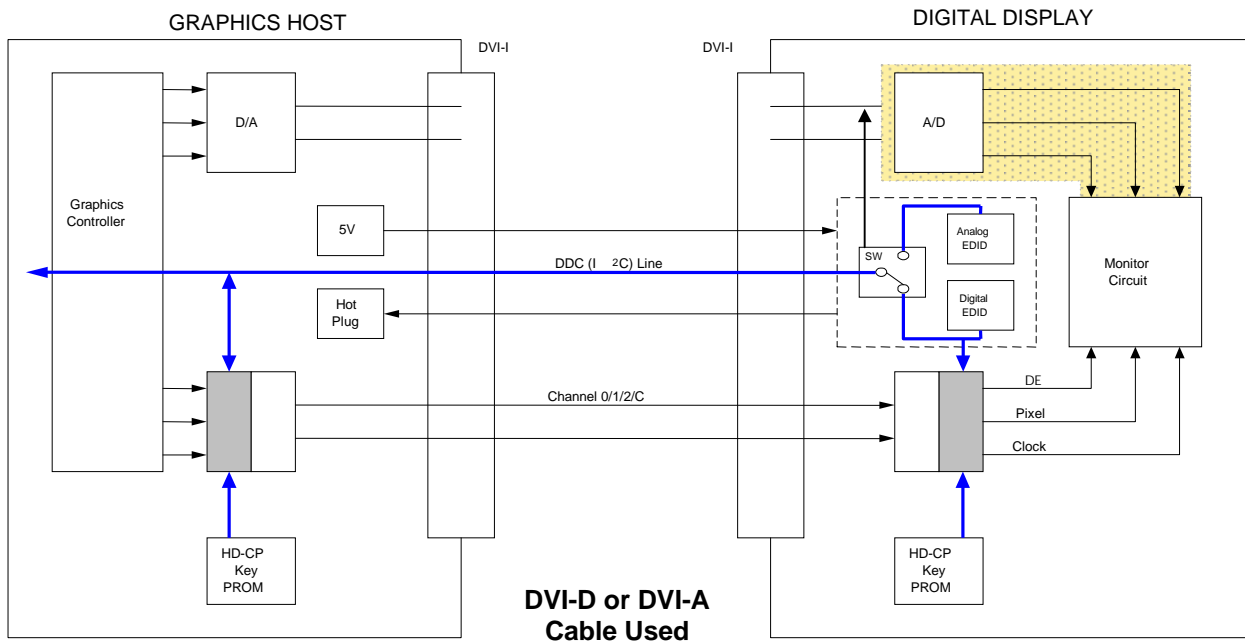


**Figure 2.**

**Note:** If the switch persists to analog once changed, than a similar detection will need to be done for changing to the digital EDID.

## 2.2.8 Sample Connection 3

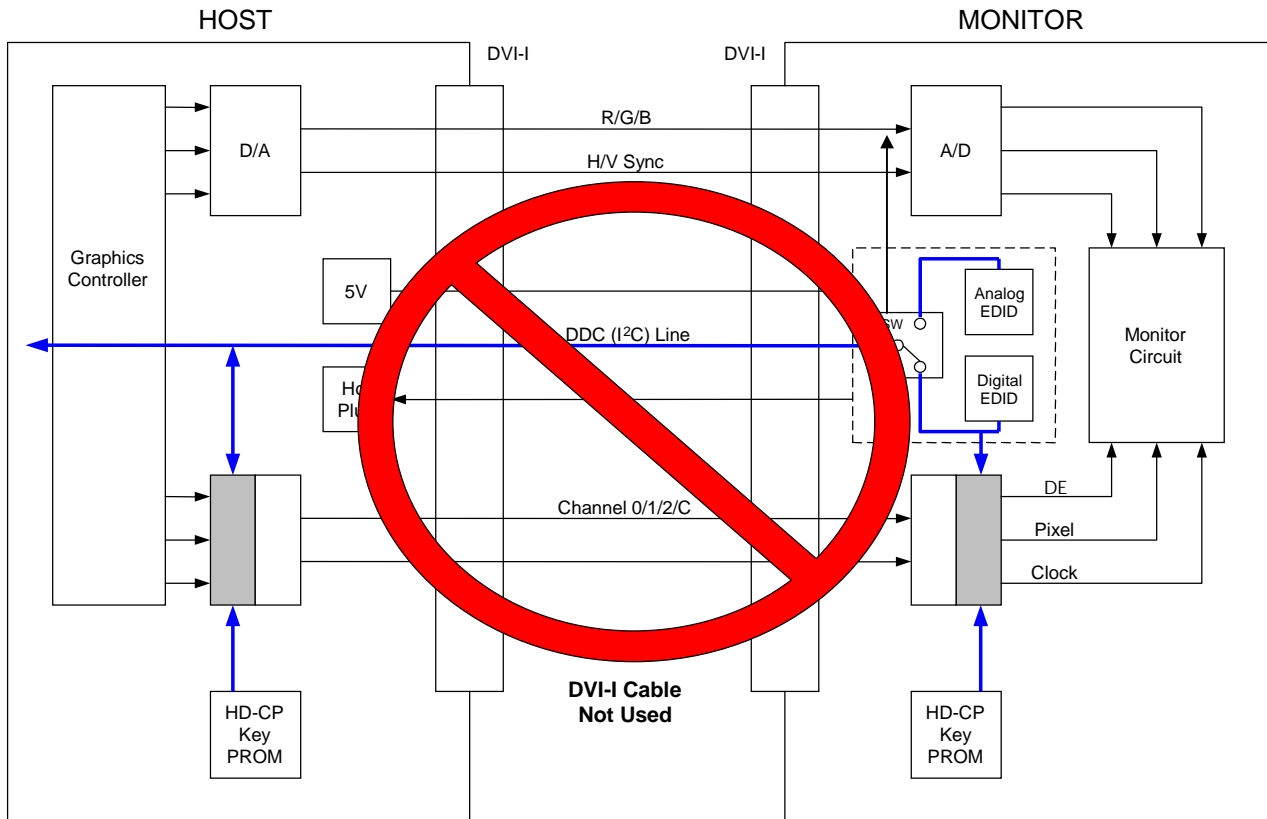
Use DVI-D or DVI-A cables with DVI-I connector on display.



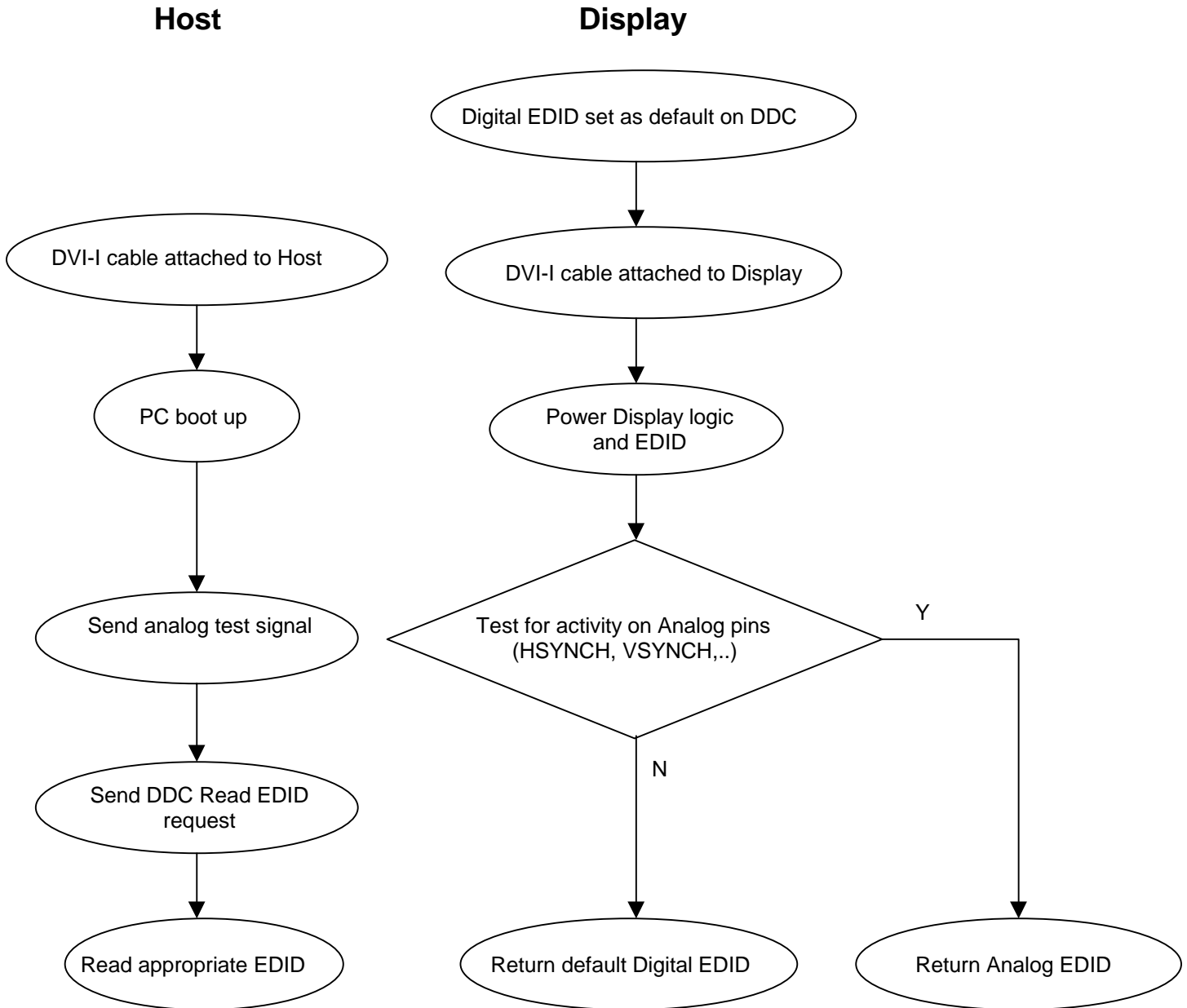
**Note:** If the switch persists to analog once changed, than a similar detection will need to be done for changing to the digital EDID.

## 2.2.9 Non-recommended Connection

Using a DVI-I cable for dual EDID display may result in interoperability problems and may not function properly under certain circumstances.



## 2.2.10 Suggested Host and Display Algorithm



**Figure 4**

**Note:** The above scenario is similar when a Hot Plug event of digital display device starts. The same decision branch for the display is required when the EDID read request is made by the Host at the start of a Hot Plug Interrupt cycle.

### 3. Summary

The above sample recommendations and diagrams are intended to help address issues related to EDID conflict for displays that support both analog and digital signal inputs through the use of a DVI-I input connector. While none of the proposed workarounds necessarily eliminates all concerns of EDID confusion, and these are not intended as the only possible solutions, following any of these guidelines will minimize the chances of any undesired customer experience.