DS Vision® Digital

User Guide

www.minicomdigitalsignage.com

International HQ

Dübendorf, Switzerland
Tel: +41 44 823 8000
mds@minicomds.com

North American HQ

400 Plaza Drive
1st Floor Atrium
Secaucus, New Jersey 07094
Toll Free: 877-343-6404
Tel: + 1 201 293 0847
Fax: + 1 866 948 8449
mds@minicomds.com

European HQ

Dübendorf, Switzerland
Tel: + 41 44 823 8000
mds@minicomds.com

Technical support – support@minicomds.com

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Please include the following information: Guide name, part number and version number (as they appear on the front cover).

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1. Introduction

DS Vision® Digital is a high definition (HD) digital distribution system that delivers real-time digital non-compressed content to Digital Signage terminals up to 600m/2000ft away. DS Vision® Digital enables you to manage Digital Signage assets and monitor system performance.

2. System Components

The DS Vision Digital system consists of the following components:

- Transmitter + power adapter
- Broadcaster + power adapter
- Receiver + power adapter

3. Features

The DS Vision Digital system offers the following high-level capabilities:

- Media Distribution
- Display Serial Control
- Terminal IP Connectivity
- Scalability
- Management Features
    - Continuous Playback
    - Display Performance Monitoring

4. DS Vision Digital Units

The figure below illustrates the ports of the Transmitter.

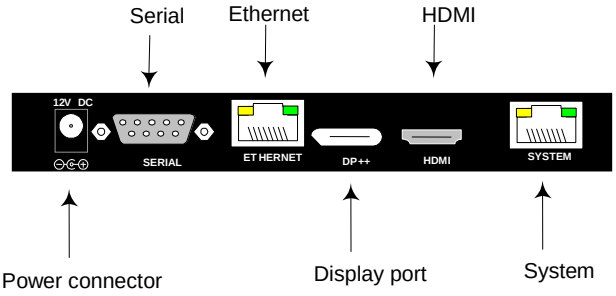

Figure 1: Transmitter ports

Port	Function
Power	Power in
Serial	Serial extension for terminal control
Ethernet	IP extension and system management
DP	DP++ player connection
HDMI	HDMI 1.3a player connection
System	System cable to Receiver

The figure below illustrates the ports of the Broadcaster.

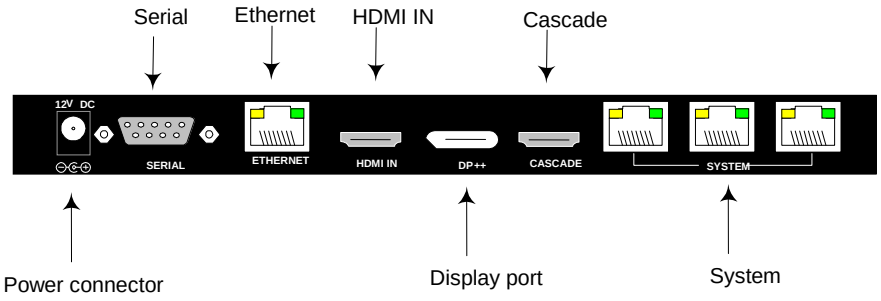

Figure 2: Broadcaster ports

Port	Function
Power	Power in
Serial	Serial extension for terminal control
Ethernet	IP extension and system management
HDMI	HDMI 1.3a player connection
DP	DP++ player connection
Cascade/Local	For cascading units or local display connection
System	System cables to Receivers

The figure below illustrates the ports of the Receiver.

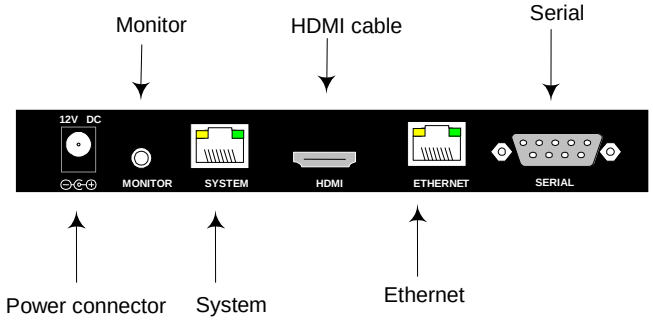

Figure 3: Receiver ports

Port	Function
Power	Power in
Monitor	Performance Monitoring Engine
System	System cable from Transmitter
HDMI	HDMI 1.3a communication to display
Ethernet	IP connectivity to display and/or peripherals
Serial	Display control

5. Compatible Cabling

DS Vision Digital works with CAT5e/6/7 FTP/UTP network cable.

6. Pre-Installation Guidelines

Ensure that the player and the screens are compatible. Check that they work together before connecting the DS Vision Digital system.

7. Media Distribution

The DS Vision Digital system can distribute HD digital media from a single player to:

- A single display located 100m/330ft away, using the Transmitter
- Three (3) displays located 100m/330ft away, and one (1) local display, using the Broadcaster

The following figure illustrates the configuration for media distribution to a single display:

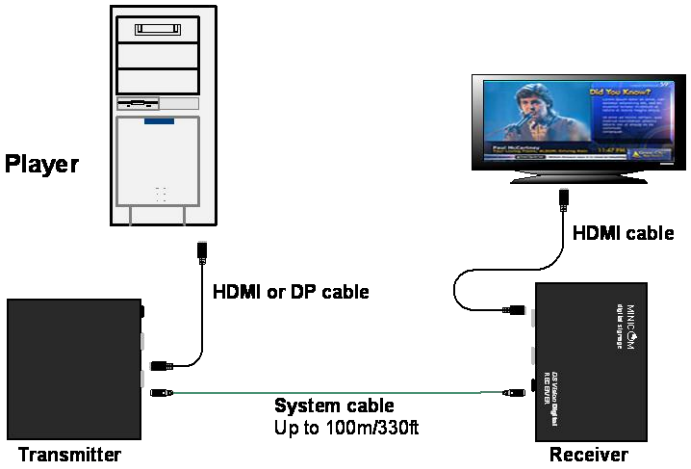

Figure 4: Media distribution to a single display

The following figure illustrates the configuration for media distribution to three displays:

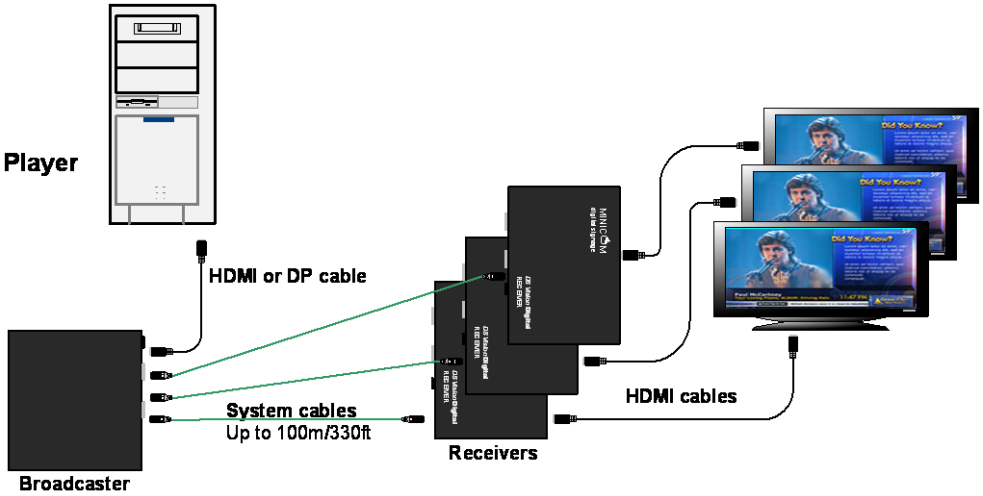

Figure 5: Media distribution to three displays

Note! The connections to the Transmitter and the Broadcaster are identical. The Broadcaster has three System ports and the Transmitter has only one System port. All references to connections apply equally to both units.

Figure 6 and Figure 7 illustrate all the connections to the DS Vision Digital units. Not all the connections are always needed. This section explains the basic connections. Subsequent sections explain the circumstances that require additional connections.

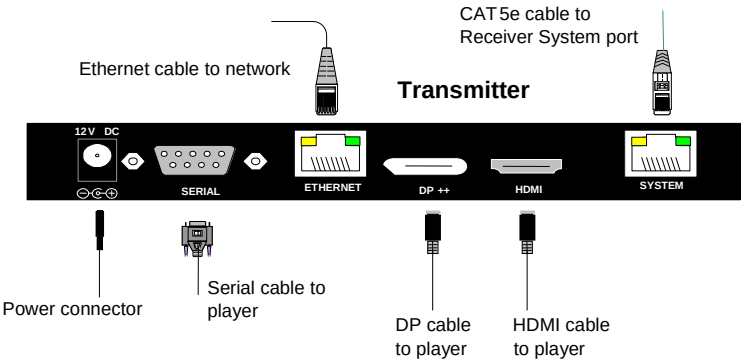

Figure 6: Transmitter connections

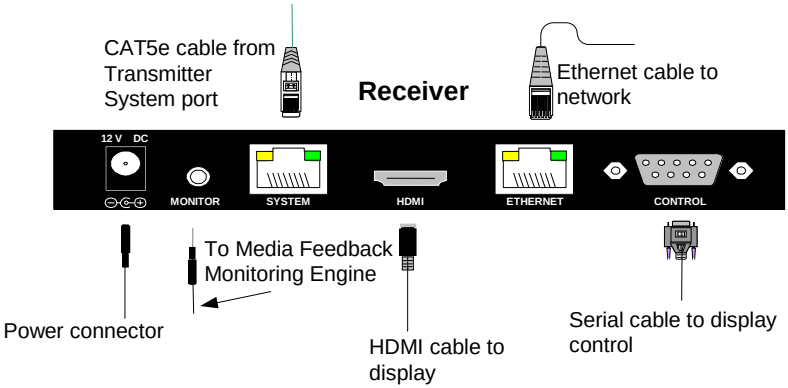

Figure 7: Receiver connections

7.1. Connecting the player and the screen

Connect the player to the Broadcaster/Transmitter HDMI port using an HDMI to HDMI cable (type A, male / male) **or** connect a DP cable to the DP port (Display Port male, male).

Connect the screen to the Receiver HDMI port using an HDMI to HDMI cable (type A, male / male).

7.2. Connecting the System cable

Connect the System cable up to 100m/330ft to the System port of the Broadcaster/Transmitter and the System port of the Receiver. Refer to Figure 6 and Figure 7, above.

Important Note: Make sure to connect the Transmitter to the LAN even if management features are not being used. Connecting the Transmitter/Broadcaster to the LAN can enable management of the system in the future.

7.3. Connecting to the power supply

Connect the Broadcaster/Transmitter and Receiver to the power supply with the 12V/2A, DC Power adapters provided.

Once connected, the system is ready to transmit the video and audio signals.

7.4. Mounting the Receiver

The Receiver units have VESA standard screw holes 100mm apart, as shown in the figure below. Use 2 screws supplied with the Receiver and monitor to connect the unit to the back of the monitor.

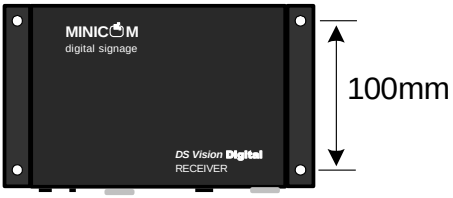

Figure 8: VESA standard screw holes

8. Serial Control

To enable serial control of remote displays:

1. Connect a serial (DB9 Male / Female) cable between the players and the Broadcaster/Transmitter.
2. Connect a serial (DB9 Female / Female) cable between the Receiver and the screen.

The following figure illustrates the connections:

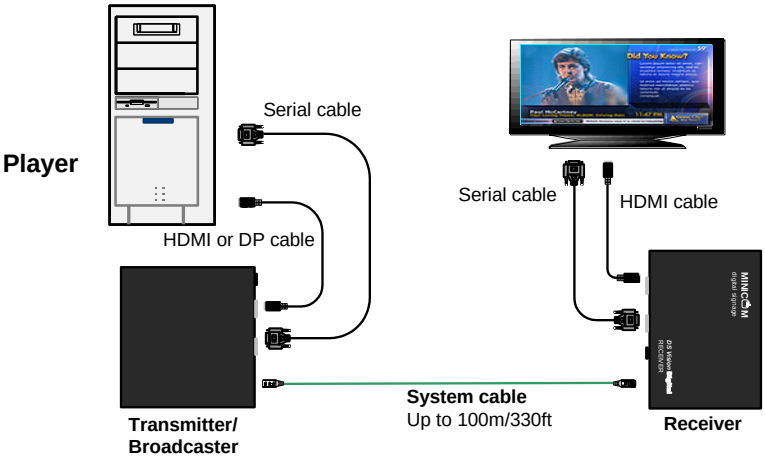

Figure 9: Serial Control

When using a Broadcaster, the serial command is broadcasted to all the displays. In order to send a quarry command to a specific display, make sure to place the relevant screen ID in the serial command.

Note: In order to address a specific display, make sure the display supports "ID mode".

9. Terminal IP Connectivity

To extend a network from the Transmitter/Broadcaster side to the remote terminal side:

1. Connect a standard Ethernet cable (Ethernet 10/100 Base T straight thru cable (T568B)) between the player side network and the Transmitter/Broadcaster.
2. Connect a standard Ethernet cable (Ethernet 10/100 Base T straight thru cable (T568B)) between the Receiver and the terminal side units.

Once these connections have been made, the extension system enables the creation of an extended IP segment.

The following figure illustrates the connections to be made:

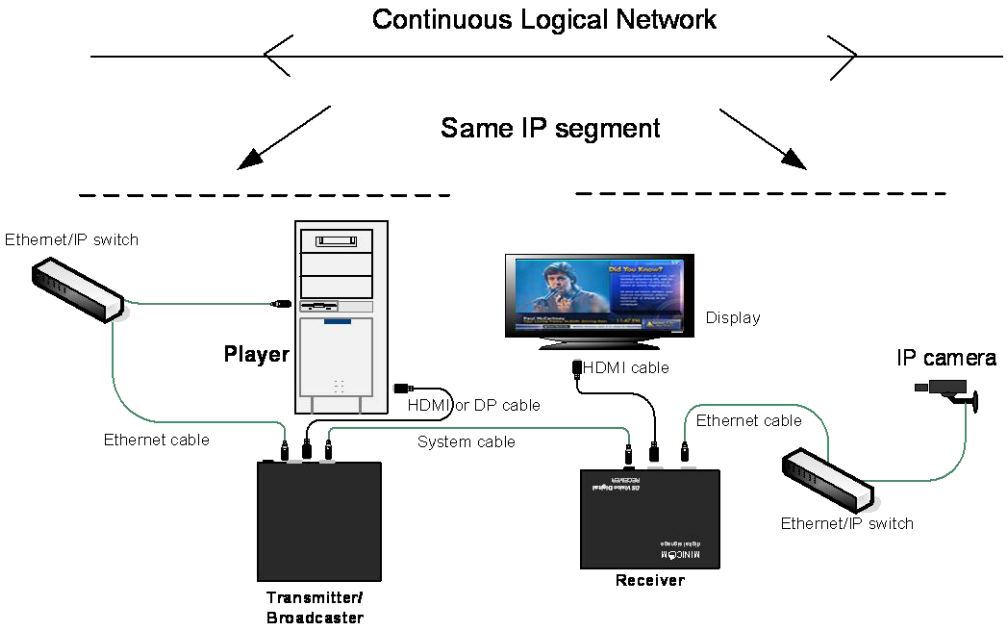

Figure 10: Terminal IP Connectivity

10. Scalability

There are two types of methods to extend the system scale:

- Cascade a Receiver with a Broadcaster/Transmitter to increase the distance of the system
- Cascade a Broadcaster with a Broadcaster/Transmitter to increase the number of supported displays

10.1. Cascading to increase the distance

Cascade up to six distribution systems to increase the distance up to 600m/2,000ft. The following figure illustrates a 2 hop cascaded system.

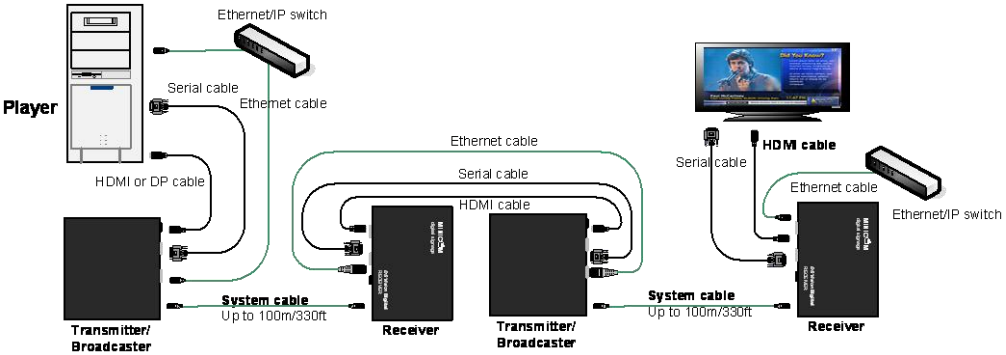

Figure 11: 2 hop cascaded system

To connect the Receiver to the Broadcaster/Transmitter, connect the following cables (see Figure 11):

- HDMI to HDMI (type A, male / male)
- For serial control: Serial cable - (DB9 Male/Female). See section 8 on page 10.
- For IP connectivity: Ethernet/Management cable - Ethernet 10/100 Base T straight thru cable (T568B). See section 9 on page 11.

The figure below illustrates a 6 hop cascaded system up to 600m/2000ft.

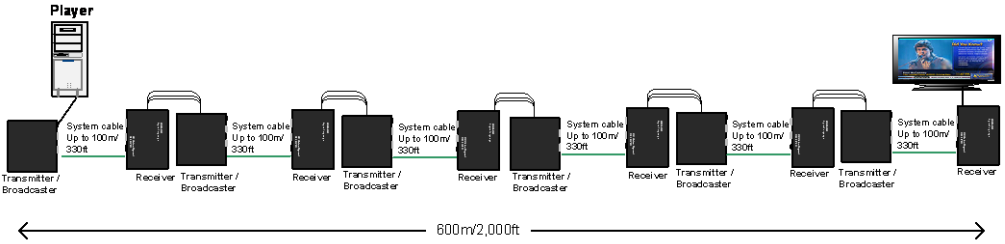

Figure 12: 6 hop cascaded system

10.2. Cascading to increase the number of displays

Connect a primary Broadcaster to a secondary Broadcaster or Transmitter to increase the number of Receivers and displays that can be connected to the system. Cascading an additional Broadcaster enables adding three displays, whereas cascading of an additional Transmitter enables adding a single display.

1. Connect the primary Broadcaster to a secondary unit using an HDMI to HDMI cable (type A, male / male).
2. Connect the HDMI to HDMI cable (type A, male / male) to the Cascade/Local port of the primary Broadcaster and to the HDMI input of a secondary Broadcaster or Transmitter.

Figure 13 illustrates a primary and secondary cascaded system:

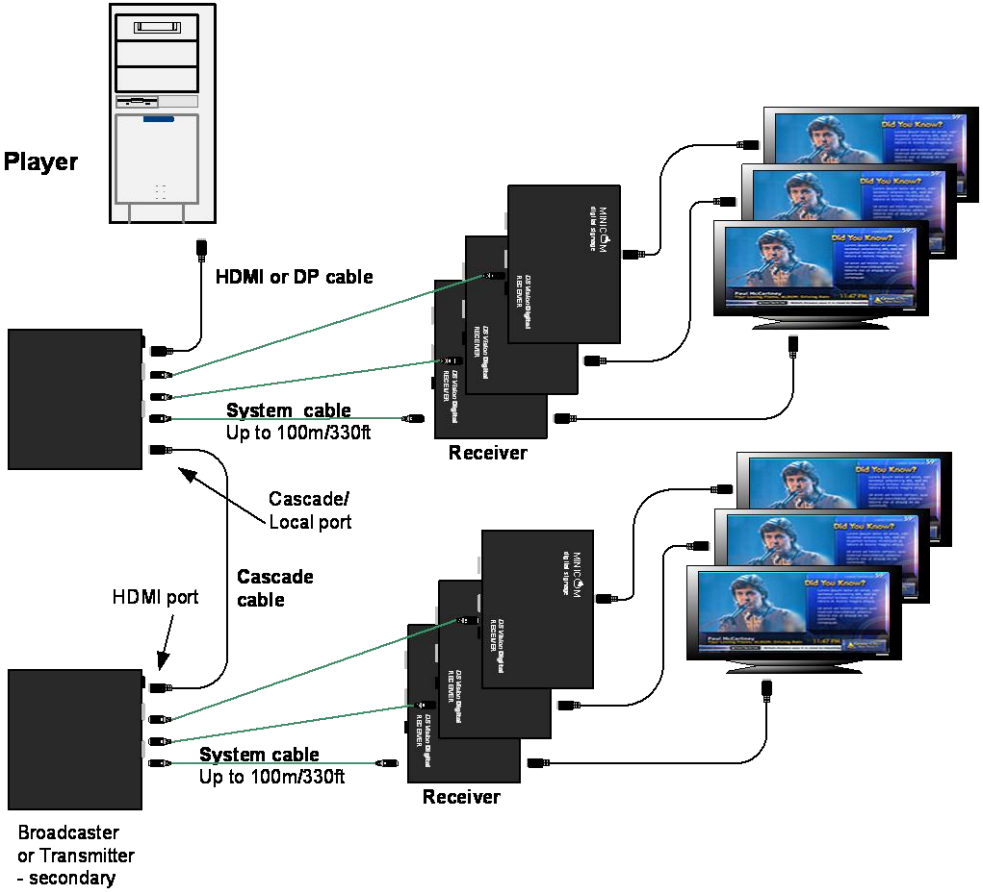

Figure 13: Primary and secondary cascaded system

The following figure illustrates a system with two cascaded Broadcasters and a Transmitter, providing four additional displays:

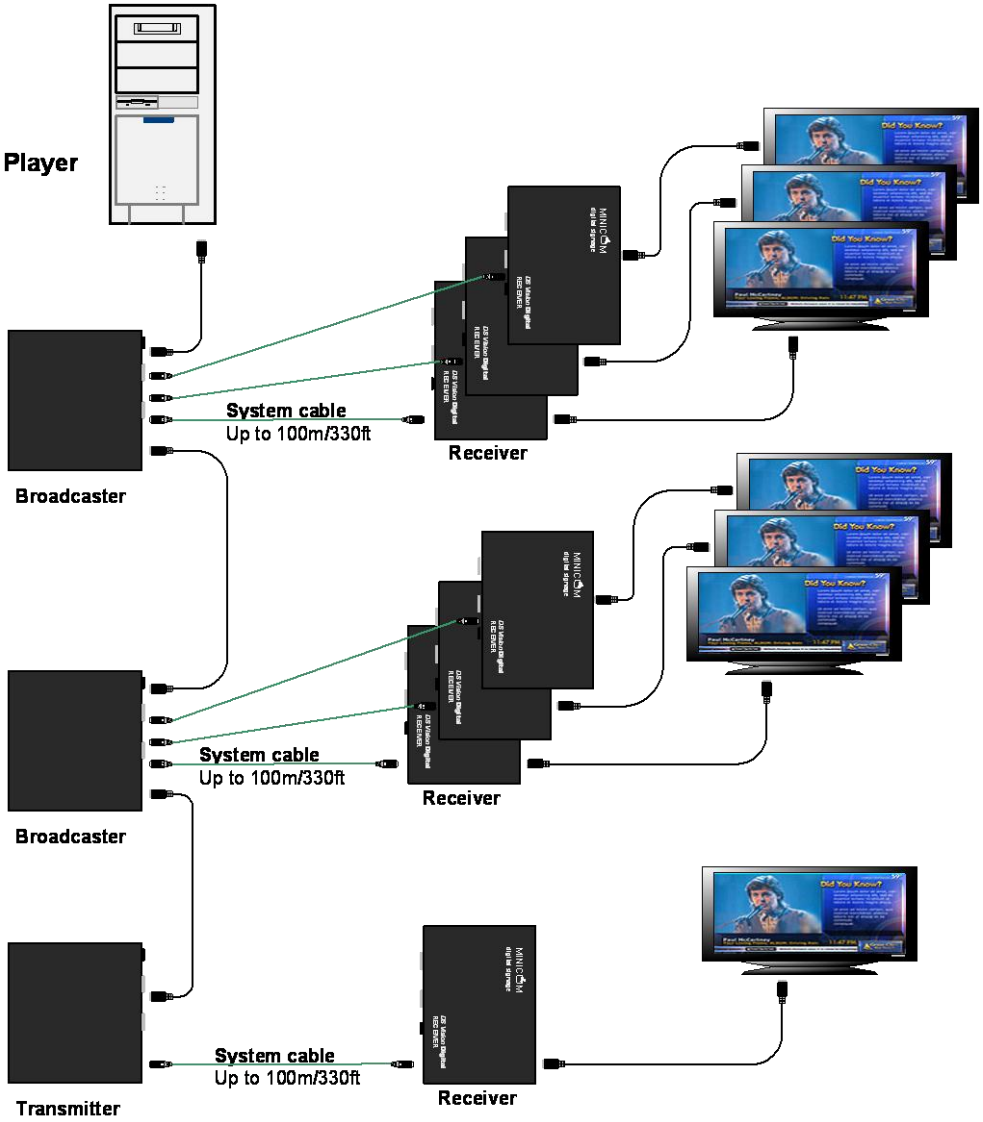

Figure 14: Cascaded Broadcaster and Transmitter

The system can be further scaled to include hundreds of displays.

The following figure illustrates the connection of 16 displays:

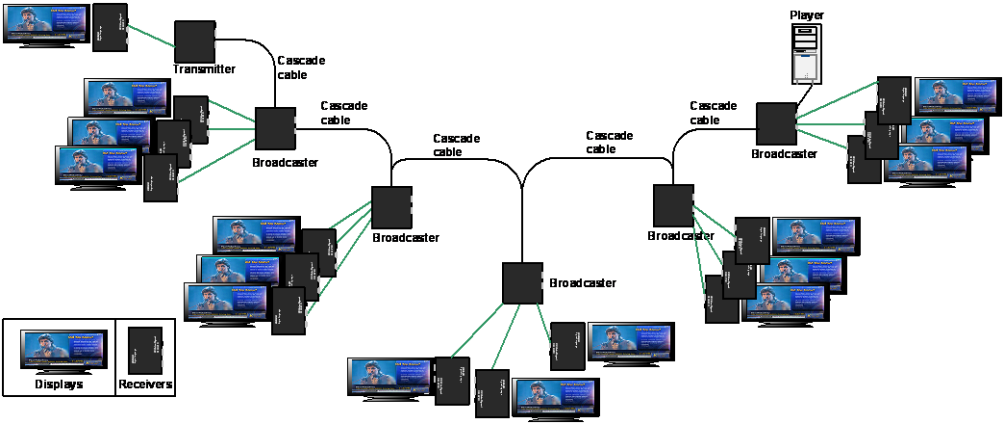

Figure 15: Sixteen displays

When cascading to increase the distance, connect the Receiver to the cascaded Transmitter with the Serial/RS232 cable. See Figure 11 on page 12.

11. Advanced Management Features

Use MDS management technology for advanced management features, such as:

- Continuous Playback
- Performance Monitoring

The following figure illustrates the management architecture:

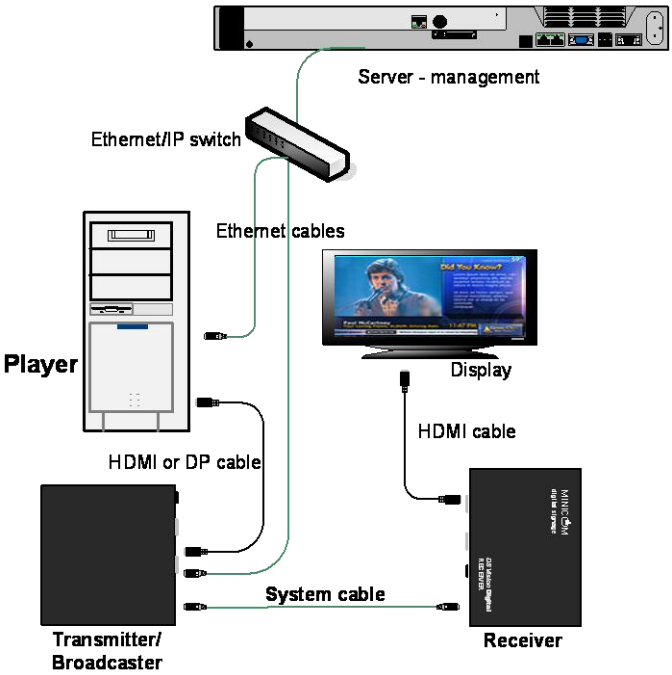

Figure 16: Management architecture

To operate the management features, connect the Transmitter/Broadcaster to a DHCP server on the LAN.

Once the Transmitter/Broadcaster is switched on, it receives an IP address from the DHCP server.

Note: The Receiver does not receive an IP address and is not visible as an IP network element.

To learn more about the MDS management technology, features and benefits, please refer to the ScreenGate Management Gateway documentation.

11.1. Continuous Playback Configuration

Two active players can be connected to the DS Vision Digital system, one primary and the other secondary. If the primary player becomes unavailable the secondary player can be activated remotely, thereby enabling continuous playback. To set up a continuous playback configuration, connect two players: “Primary” and “Secondary” to the Broadcaster/Transmitter.

If one player has a DP output and the other player has an HDMI output, the players can be connected to the DP and HDMI connectors respectively using the following cables:

- DP to DP (Display Port male, male)
- HDMI to HDMI (type A, male / male)

If both players have DP or HDMI connectors, use a DP to HDMI converter cable or an adapter to connect one of the DP players to the HDMI input.

The following figure illustrates the Continuous Playback Configuration connections:

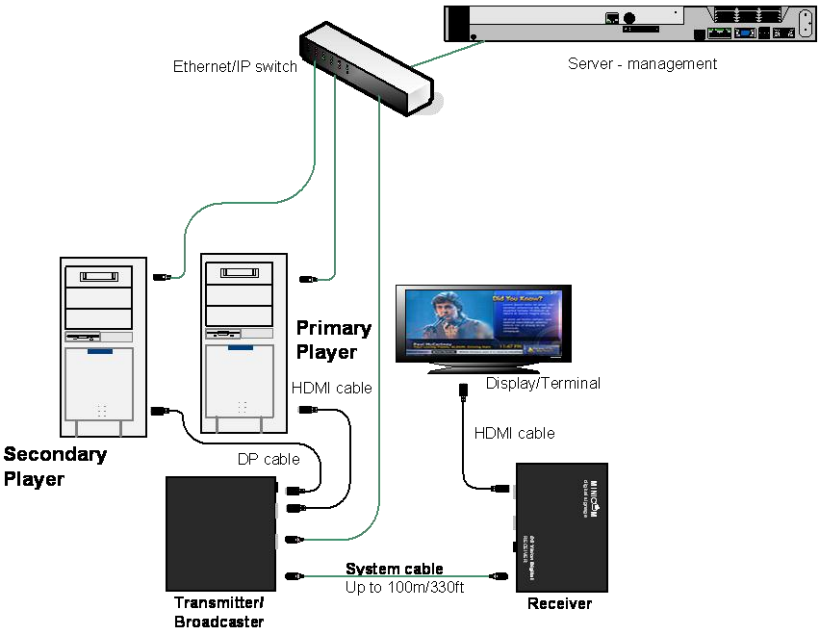

Figure 17: Continuous Playback Configuration connections

11.2. Display Performance Monitoring

A player can create a report that consists of the amount of times media was sent to the screen. However, this report can't verify if the media was in fact displayed on the screen.

The DS Vision Digital system uses a unique display performance monitoring mechanism, which is imbedded in the Receiver unit, to monitor and verify that content played was actually displayed.

To enable display performance monitoring, connect the display audio output to the monitor port of the Receiver using the Display Audio out – Receiver Monitor in cable (Stereo plug 3.5mm male / male).

In addition, a watermark generator agent must be installed on the player device. To learn more about installing a Media Watermark Generator Agent, please refer to the Media Watermark Generator Agent section of the ScreenGate Management Gateway documentation.

The following figure provides an outline for the Display Performance Monitoring system:

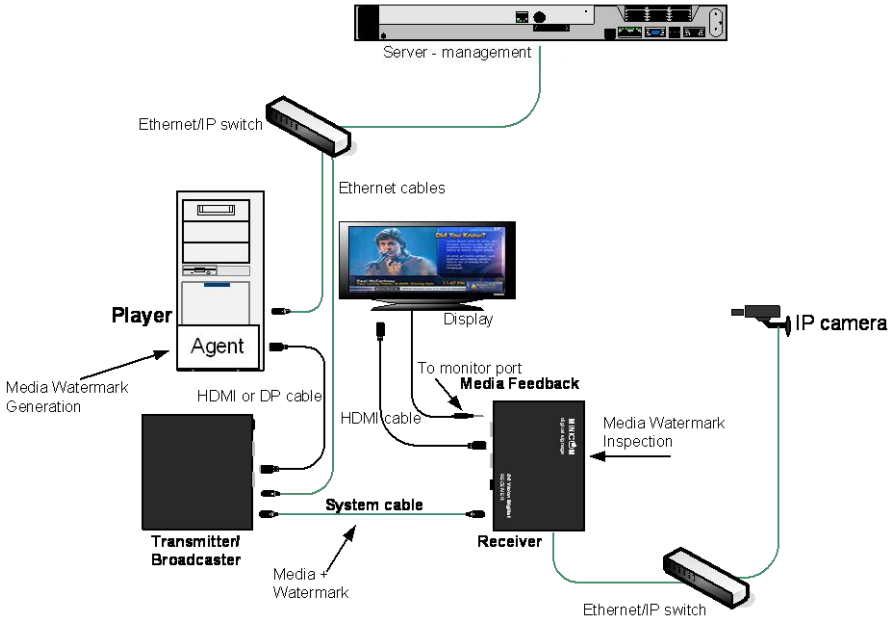

Figure 18: Display Performance Monitoring

12. Technical Specifications

Feature		Broadcaster	Transmitter	Receiver
Maximum Resolution		1080P, 60Hz, 24bit per pixel, uncompressed	1080P, 60Hz, 24bit per pixel, uncompressed	1080P, 60Hz, 24bit per pixel, uncompressed
Video-1	HDMI	HDMI 1.3 compatible up to 10.2Gbps	HDMI 1.3 compatible up to 10.2Gbps	HDMI 1.3 compatible up to 10.2Gbps
Video-2	Display Port	Dual-mode Display Port	Dual-mode Display Port	NA
Audio		HDMI 1.3 specified	HDMI 1.3 specified	HDMI 1.3 specified
Cascade Port	HDMI	HDMI 1.3 compatible up to 10.2Gbps	NA	NA
System Cable	Type	CAT5e/CAT6/CAT7 UTP, STP or FTP	CAT5e/CAT6/CAT7 UTP, STP or FTP	CAT5e/CAT6/CAT7 UTP, STP or FTP
System Cable	Connector	RJ45	RJ45	RJ45
System Cable	Max Length	100m/330ft	100m/330ft	100m/330ft
HDMI	DDC	HDMI standard, 5V	HDMI standard, 5V	HDMI standard, 5V
HDMI	Connector	HDMI Receptacle, Type A	HDMI Receptacle, Type A	HDMI Receptacle, Type A
Ethernet	Port	RJ45	RJ45	RJ45
Ethernet	Speed	100Mbps	100Mbps	100Mbps
Serial/RS232	Connector	DB9F	DB9F	DB9M
Monitor	Connector	NA	NA	3.5mm phone jack
Power	Connector	1.65mm DC Power Jack, Standard polarity	1.65mm DC Power Jack, Standard polarity	1.65mm DC Power Jack, Standard polarity
Power	Consumption	12w	5w	7w
Power	Supply	12V/2A	12V/2A	12V/2A
Led		Power, Ethernet, System	Power, Ethernet, System	Ethernet, System
MTBF		400,000hrs	400,000hrs	400,000hrs
Operation	Temperature	0°C to 40°C / 32°F to 104°F	0°C to 40°C / 32°F to 104°F	0°C to 40°C / 32°F to 104°F
Storage	Temperature	-40°C to 85°C / -40°F to 185°F	-40°C to 85°C / -40°F to 185°F	-40°C to 85°C / -40°F to 185°F
Dimensions	(wxdxh)	214mm x 140mm x 26mm	139mm x 140mm x 40mm	190mm x 123mm x 27mm
Mounting	Compatibility	NA	NA	VESA

Specifications are subject to change without notice.

All nominal levels are at ±10%


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