DIGITAL VIEW®

RM-DN5

USER GUIDE

Version 1.0

Revision History

Amendment Date	Version
February 2009	V1.0

Table of Contents

1 Introduction

The RM-DN5 is an embedded high definition video media player. The board is ideally suited for fanless solid state media player products for market applications such as digital signage, retail promotion systems and information displays in places such as museums.

With the RM-DN5 it is easy to create a unique and powerful media solution with a wide range of interactive options as well as command, control and monitoring using RS-232.

This brief guide explains how to set up the RM-DN5 media player board. It is intended for system integrators looking to build a media player or complete display and media player system.

A few of the key features:

- Suitable for fanless system designs with CF card storage
- Full hi-definition (HD) to 1080p
- Media support includes:
  - MPEG-1, MPEG-2, MPEG-4 (H.264, VC1), WMV, MOV
  - MPEG still
  - JPEG, BMP, GIF
- Range of outputs including:
  - HDMI
  - DVI
  - Component (YPbPr)
  - ARGB (VGA)
  - Composite
  - S-Video
  - Audio on HDMI
  - Coaxial audio (SPDIF)
  - Direct LCD panel connection
- Dedicated button interface
- External communication and control through RS-232
- USB update

USAGE NOTE

Unless the RM-DN5 has been customized it will be the same as used in the Digital View media players:

- ViewStream 500 (VS-500) : A stand-alone media player
- RemotePlayer 500 (RP-500) : A network enabled media player

Note: Reference to these models and related documentation should provide a good basis for understanding the operation and capabilities of the RM-DN5 media player board. For details about custom options please contact Digital View.

2 System Design

IMPORTANT NOTE: Whist the RM-DN5 does make it easy to build a media player based system it is intended for use by qualified system builders and integrator; the manufacturer accepts no liability for damage or injury caused by the use of this product. It is the responsibility of the system builder or integrator using the RM-DN5 and related parts to:

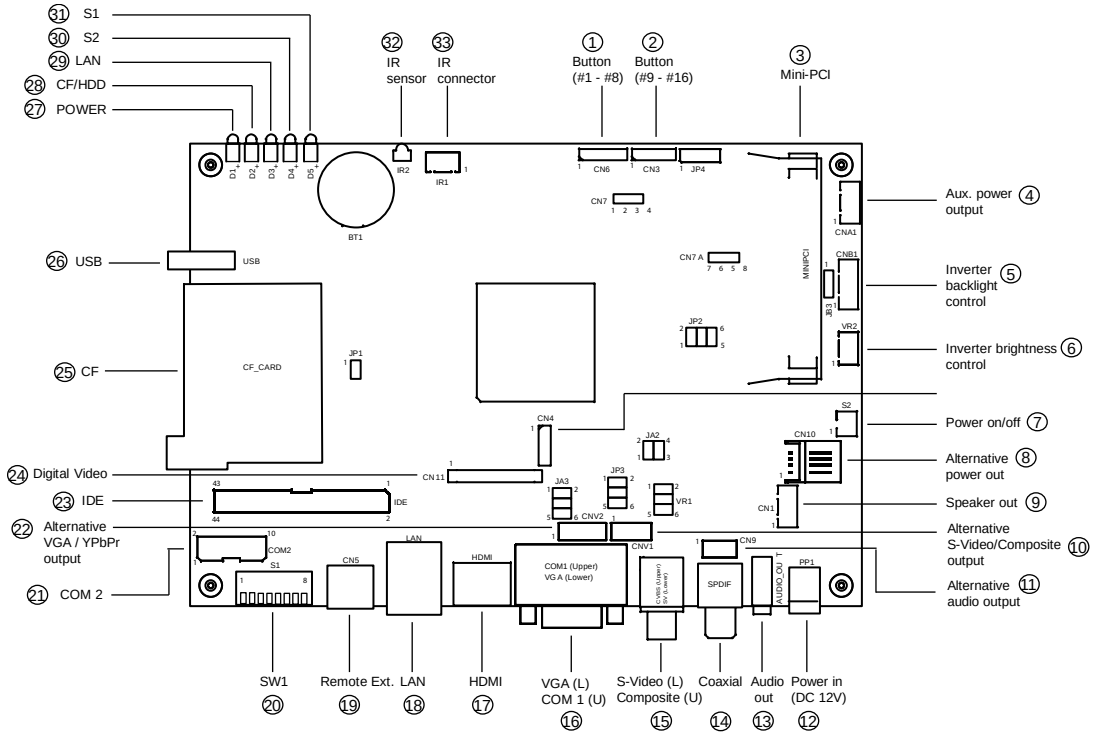
- Ensure that all necessary and appropriate safety measures are taken.
- Obtain relevant regulatory approvals.
- Check power settings to all component parts before connection.

DISCLAIMER: There is no implied or expressed warranty regarding this material.

2.1 Familiarization

The RM-DN5 media player board has a number of accessories, internal connectors headers, external type connectors, setup switch and indicator lamps. Before any system design commences it is important to understand the purpose of all these and the system options they enable – please review the board itself together with the notes and relevant tables as detailed throughout this user guide:

RM-DN5:



Summary:

For detailed pin-outs on all connectors see the tables in Section 5 below

3 Connection Overview

CAUTION: Never connect or disconnect parts of the system when the system is powered up as this may cause serious damage.

3.1 Prepare for connection

Connection and usage are straightforward. However, during assembly, care needs to be taken regarding the following:

- Ensure parts, especially power and signal cables, match the system. If you are making your own cables & connectors refer carefully to the video monitor specifications and the "Connectors, Pin outs & Jumpers" section in this user guide to ensure the correct pin-to-pin wiring.
- Ensure cables have been correctly connected and that connections are secure.
- Screws and fasteners need to be secure, consider using locking glue if appropriate.
- Switches and jumpers are set correctly.
- The output signal is compatible with display equipment.
- Legal & safety requirements have been met with particular attention to the likely operating environment. Although the RM-DN5 is designed to be fanless in normal conditions some installations and environments may require additional cooling.

3.2 Basic connection for RM-DN5

The following summarizes a simple connection:

- Set the DIP switch (S1) for the required output resolution and one of the following outputs (see Section 4 for details):

  HDMI / DVI
  Component video (YPbPr)
  VGA
  S-Video / Composite

- Connect the video and audio extension cables from the RM-DN5 to the monitor.

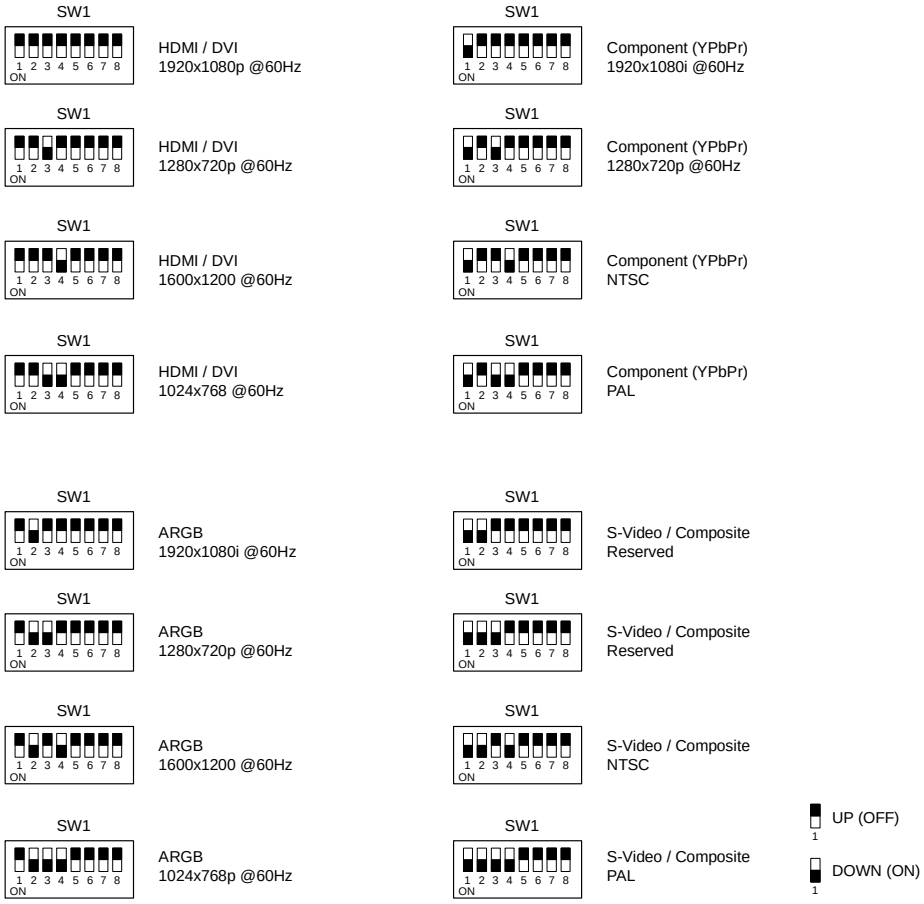
- CAUTION: Before connecting power ensure all parts are suitably insulated and there is no risk of short circuit or electrocution. Connect the power supply (DC 12V @ 1.2A minimum. - ensure correct polarity) to the RM-DN5 power input (PP1).

- Connect the on/off switch cable (p/n:426680401-3) or short Pin1-2 at S2 for "Auto power on"
- Ensure there is a CF card installed with compatible media loaded.
- If the optional buttons are being used connect them to CN5

4 System Notes

The following outlines various issues related to the RM-DN5 and making a complete system:

- **DIP Switch settings** – To define and select the source of output and resolution.



- **Remote Ext.** - Using the standard switch mount (p/n: 416101300-3) - 8 momentary buttons for OSD config and video playback control (standard functions (in simple play mode) being: Play, Stop, Pause, Next Track, Volume decrease, Volume increase, Mute). An optional function control device is a custom-made switch mount connected to the switches and buttons connectors (CN6 and CN3) with a maximum of 16 momentary buttons

- **Remote Ext. cable -** The cables (p/n: 426631800-3) to the switches and buttons connector should be of suitable quality and length so that impedance does not affect performance. Generally lengths up to 1 meter (3 feet) should be acceptable.

- **LED -** The power LED indicator shows power is being supplied to the RM-DN5. The CF/HDD status LED indicates the read/write status of CF card or HDD.

- **RS-232 port** – This serial port supports RS-232 communications for accessories, monitoring and control. The baud rate must be set to (9600, n,8,1) and record suffix is set to CR (0DH).

- **USB –** USB Host. Use a USB flash drive for content update without removing the CF card. The RM-DN5 will reset power when the USB stick is detected inserting into the USB connector or removing from the USB connector. (For the details of USB content update, please refer to the Application note.)

- **S-Video/Composite output –** Video - displays video signals with either Composite or S-video. The PAL/NTSC switch should be set correctly.

- **Audio output –** Audio - Stereo output. Master volume is controlled through OSD with switch mount buttons.

- **Coaxial audio out –** It supports SPDIF AC3 stream pass through but requires firmware and audio content compatible.

- **VGA out –** Supports VGA or YPbPr. Both Component video and VGA signal are sharing the same connector. A YPbPr extend cable (P/N:426004800-3) is required for Component video (YPbPr) connection.

  Note: Displaying HD video format (1080p/720p) on VGA may not be supported by all monitors. If the display looks reasonable but not perfect please use the OSD settings of the monitor to adjust image position and tuning. (sometimes called *Phase*, *H. size*, *H. Freq*, etc) It may also be necessary to adjust image size.

- **HDMI out –** Supports HDMI or DVI. Both HDMI and DVI signal are sharing the same HDMI connector. A DVI adapter (P/N:212201190-3) is required for DVI connection.

- **Infra-red (IR) -** Supports IR control with DV remote control handset (P/N:559000104-3). The IR sensor and cable kit (P/N:446010401-3) are required. The IR control functions are shown as below.

- **Buttons and Touch screen (segment type) –** A number of related accessories are available providing enhanced functionality such as user buttons and touch screen.

A) Mechanical buttons

- Standard MV-switchmount (P/N:416101300-3) for 1-8 buttons when connected to the button connector CN6 via the standard switchmount cable (P/N:426451100-3) or connected to the Remote Ext. socket (CN5) via the standard cable (P/N:426631800-3).

- Custom made switchmount for 1-16 buttons when connected to the buttons connector CN6 and CN3 via the standard switchmount cable (P/N:426451100-3)

- Custom made switchmount for 1-8 buttons when connected to the Remote Ext. socket (CN5) for alternative remote control buttons via the standard cable (P/N:426631800-3).

B) Touch screen segments

- The RM-DN5 when connected with a LCD interface controller can output videos on to LCD screen. Button control can be performed via touch screen for panel sizes of 6.4", 7", 8", 10", 12", 15", 17" and 20"

- There is one type of button pattern layouts on the touch screen available: 8 buttons

  (For any special button layout, please contact local sales office.)

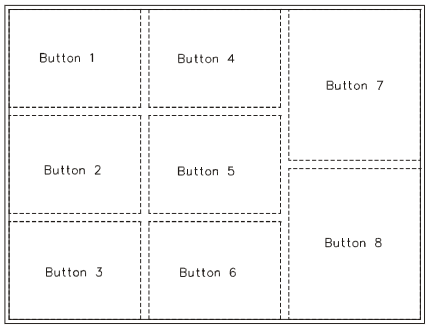


Fig. 1 8-buttons for LCD touch screen

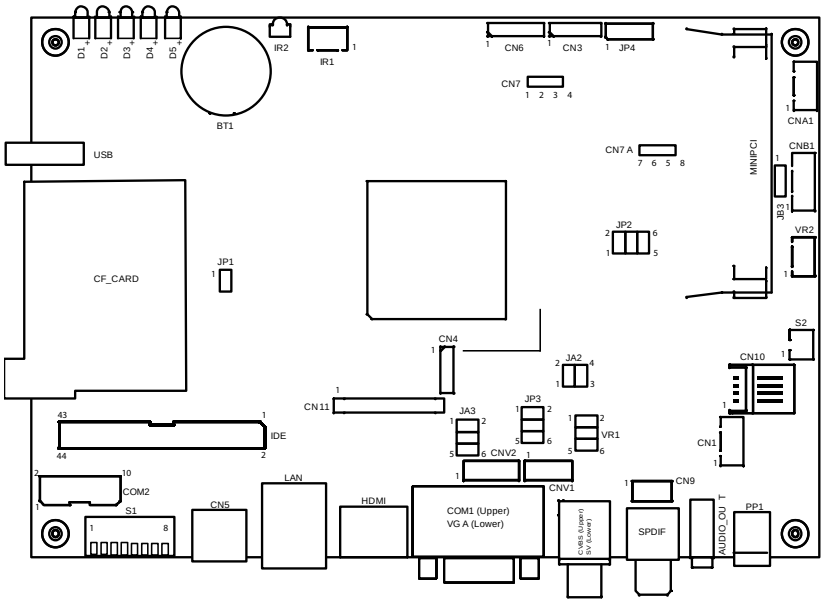
C) Button function settings

- Whether the buttons are of the mechanical type (on the standard switchmount or custom made) or the touch screen segment type, each button function can be programmed with **the DV Studio Software program** to perform a VCD player mode function or specific track select function**. (See DV Studio Software user manual**).

- The DV Studio Software program is separately provided

- **Service & Warranty Forfeit:** The warranty will be invalid if rework is performed on the RM-DN5. The RM-DN5 is not user serviceable or repairable.

5 Connectors, pinouts & jumpers



The various connectors are:

Ref	Purpose	Description
CN3	Switches and buttons connector (#9 - #16)	Hirose 1.25mm, 9-pin, DF13-9P-1.25DSA
CN4	Reserved	Hirose 1.25mm, 8-pin, DF13-9P-1.25DSA
CN5	Remote Ext. (#1 - #8)	MINI DIN 8-way
CN6	Switches and buttons connector (#1 - #8)	Hirose 1.25mm, 9-pin, DF13-9P-1.25DSA
CN9	Alternative audio output	JST B4B-PH-K
CN10	Alternative power out connector	JS-1116-04WS
CN11	Digital video out	IL-FHR-45S-HF
CNA1	Auxiliary power out	JST B4B-XH-A
CNB1	Inverter backlight control	JST B5B-XH-A
CNV1	Alternative S-Video/Composite video output	JST B5B-PH-K
CNV2	Alternative VGA/YPbPr output	JST B6B-PH-K
CF_CARD	CF card connector	CF-CARD, 25x2Ppin 3M CF-II socket
IDE	IDE connector	22x2 header (2mm pitch)
USB	USB connector	USB, A type USB connector, 4-way
MINIPCI	Mini-PCI	Mini PCI socket
HDMI	HDMI out	HDMI (Type A) receptacle
LAN	Network connector	8-ways RJ-45 connector
VGA	VGA/YPbPr out	DB-15F Connector
CVBS	Composite video out	RCA jack (yellow)
SV	S-Video out	Mini DIN 4-way
SPDIF	Coaxial audio out	RCA jack (orange)
AUDIO_OUT	Audio out	Stereo Phone Jack
COM1	RS-232	DB-9M Connector
COM2	Reserved	5x2 header (2.54mm pitch)
PP1	Main power input	DC power jack, 2.5mm diameter (Center +)
S1	DIP switch	8 Pos Piano type DIP switch
S2	Power On/Off switch connector	JST B2B-XH-A
VR1	External volume control	3x2 header (2.54mm pitch)

IR1	IR Connector	JST B3B-XH-A
BT1	Battery for Real time clock	CR2032 Type
JP1	Master / Slave	1x2 header (2mm pitch)
JP2	WiFi USB	3x2 header (2mm pitch)
JP3	Line out/Speaker out selection	3x2 header (2mm pitch)
JA2	5V logic	2x2 header (2mm pitch)
JA3	Panel power	3x2 header (2mm pitch)
JB3	Backlight control polarity	1x3 header (2mm pitch)

Details:

CN3 – Switches and buttons (#9 - #16)

PIN	SYMBOL	DESCRIPTION
1	SW9	Button 9
2	SW10	Button 10
3	SW11	Button 11
4	SW12	Button 12
5	SW13	Button 13
6	SW14	Button 14
7	SW15	Button 15
8	SW16	Button 16
9	GND	Ground

CN4 - Reserved

CN5 – Remote Ext.

PIN	SYMBOL	DESCRIPTION
1	SW1	Button 1
2	SW2	Button 2
3	SW3	Button 3
4	SW4	Button 4
5	SW5	Button 5
6	SW6	Button 6
7	SW7	Button 7
8	SW8	Button 8

The shielding of connector is grounded.

CN6 – Switches and buttons (#1 - #8)

PIN	SYMBOL	DESCRIPTION
1	SW1	Button 1
2	SW2	Button 2
3	SW3	Button 3
4	SW4	Button 4
5	SW5	Button 5
6	SW6	Button 6
7	SW7	Button 7
8	SW8	Button 8
9	GND	Ground

CN9 - Alternative audio output

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	AUDIO_L	Audio left channel output
3	GND	Ground
4	AUDIO_R	Audio right channel output

CN10 - Alternative power out

PIN	SYMBOL	DESCRIPTION
1	VCC	+5V out
2	GND	Ground
3	GND	Ground
4	+12V	+12V out

CN11 - Digital video out

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	IDCK+	Pixel clock
3	GND	Ground
4	V0_HS	Horizontal Sync
5	V0_VS	Vertical Sync
6	GND	Ground
7	V0_PA0	Red Data bit 0
8	V0_PA1	Red Data bit 1
9	V0_PA2	Red Data bit 2
10	V0_PA3	Red Data bit 3
11	V0_PA4	Red Data bit 4
12	GND	Ground
13	V0_PA5	Red Data bit 5
14	V0_PA6	Red Data bit 6
15	V0_PA7	Red Data bit 7
16	GND	Ground
17	V0_PA8	Red Data bit 8
18	V0_PA9	Red Data bit 9
19	V0_PA10	Red Data bit 10
20	V0_PA11	Red Data bit 11
21	V0_PA12	Red Data bit 12
22	GND	Ground
23	V0_PA13	Red Data bit 13
24	V0_PA14	Red Data bit 14
25	V0_PA15	Red Data bit 15
26	GND	Ground
27	V0_PA16	Red Data bit 16
28	V0_PA17	Red Data bit 17
29	V0_PA18	Red Data bit 18
30	V0_PA19	Red Data bit 19
31	V0_PA20	Red Data bit 20
32	GND	Ground
33	V0_PA21	Red Data bit 21
34	V0_PA22	Red Data bit 22
35	V0_PA23	Red Data bit 23
36	GND	Ground
37	V0_VLD	Display Enable
38	NC	No connection
39	LCD_PW	Panel Power Supply (3.3V/5V)

40	LCD_PW	Panel Power Supply (3.3V/5V)
41	LCD_PW	Panel Power Supply (3.3V/5V)
42	NC	No connection
43	LCD_ON	TFT power control
44	VCC	+5V
45	VCC	+5V

CNA1 - Auxiliary power out to backlight

PIN	SYMBOL	DESCRIPTION
1	AUX 12V	+12V out
2	GND	Ground
3	GND	Ground
4	AUX 5V	+5V out

CNB1 - Inverter backlight control

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	VBKL	Backlight power supply
3	BLCTRL	Backlight On/Off control signal
4	BVR_WIP	Backlight nrightness VR pin WIP
5	BVR_A	Backlight brightness VR pin A

CNV1 - Alternative S-Video/Composite video output

PIN	SYMBOL	DESCRIPTION
1	CHROMA	S-Video : Chroma out
2	LUMA	S-Video : Luma out
3	GND	Ground
4	GND	Ground
5	CVBS	Composite video out

CNV2 - Alternative VGA / YPbPr output

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	H_SYNC	Horizontal Sync Output
3	V_SYNC	Vertical Sync Output
4	B (Pb)	Analog Blue (Component Pb)
5	G (Y)	Analog Green (Component Y)
6	R (Pr)	Analog Red (Component Pr)

CF_CARD – Compact Flash card connector

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	D3	Data bit 3
3	D4	Data bit 4
4	D5	Data bit 5
5	D6	Data bit 6
6	D7	Data bit 7
7	/CE1	Card enable 1
8	GND	Ground
9	GND	Ground

10	GND	Ground
11	GND	Ground
12	GND	Ground
13	VCC	+5V
14	GND	Ground
15	GND	Ground
16	GND	Ground
17	GND	Ground
18	A2	Address bit 2
19	A1	Address bit 1
20	A0	Address bit 0
21	D0	Data bit B3
22	D1	Data bit B4
23	D2	Data bit B5
24	IOCS16	IOCS16
25	/CD2	Card detect pin 2
26	/CD1	Card detect pin 1
27	D11	No connection
28	D12	No connection
29	D13	No connection
30	D14	No connection
31	D15	No connection
32	/CE2	Card enable 2
33	GND	Ground
34	/RD	Memory read strobe
35	/WR	Memory write strobe
36	/WE	No connection
37	IRQ	Interrupt request
38	VCC	+5V
39	/CSEL	Chip SEL
40	NC	No connection
41	RESET	System reset
42	IORDY	IO Ready
43	NC	No connection
44	NC	No connection
45	/DASP	DASP
46	/PDIAG	PDIAG
47	D8	No connection
48	D9	No connection
49	D10	No connection
50	GND	Ground

IDE – IDE connector

PIN	SYMBOL	DESCRIPTION
1	-RESET	Reset
2	GND	Ground
3	SID07	Data bit 7
4	SID08	Data bit 8
5	SID06	Data bit 6
6	SID09	Data bit 9
7	SID05	Data bit 5
8	SID10	Data bit 10
9	SID04	Data bit 4
10	SID11	Data bit 11
11	SID03	Data bit 3
12	SID12	Data bit 12
13	SID02	Data bit 2
14	SID13	Data bit 13
15	SID01	Data bit 1
16	SID14	Data bit 14
17	SID00	Data bit 0

18	SID15	Data bit 15
19	GND	Ground
20	NC	NC
21	DMA_REQ	DMA Request
22	GND	Ground
23	-SIOW	Write Strobe
24	GND	Ground
25	-SIOR	Read Strobe
26	GND	Ground
27	IDE_RDY	IDE Ready
28	GND	Ground
29	-DMA_ACK	DMA Acknowledge
30	GND	Ground
31	IRQ14	Interrupt Request 14
32	-IOCS16	Pull down internally
33	IDEA0	Address bit 0
34	NC	No connection
35	IDEA1	Address bit 1
36	IDEA2	Address bit 2
37	-IDE_CS0	IDE chip select 0
38	-IDE_CS1	IDE chip select 1
39	HDDLED	Active LED
40	GND	Ground
41	VCC	Logic Power +5V
42	VCC	Motor Power +5V
43	GND	Ground
44	NC	No connection

USB - USB connector

PIN	SYMBOL	DESCRIPTION
1	UVCC	USB - VCC
2	D-	-VE USB Data
3	D+	+VE USB Data
4	GND	Ground

HDMI – HDMI out

PIN	SYMBOL	DESCRIPTION
1	DATA2+	TMDS Date 2+
2	DATA2S	TMDS Data 2 Shield
3	DATA2-	TMDS Data 2-
4	DATA1+	TMDS Data 1+
5	DATA1S	TMDS Data 1 Shield
6	DATA1-	TMDS Data 1-
7	DATA0+	TMDS Data 0+
8	DATA0S	TMDS Data 0 Shield
9	DATA0-	TMDS Data 0-
10	CLK+	TMDS Clock+
11	CLKS	TMDS Clock Shield
12	CLK-	TMDS Clock -
13	CEC	CEC
14	NC	Reserved
15	SCL	SCL
16	SDA	SDA
17	CEC / GND	DDC/CEC Ground
18	+5V	+5V Power
19	HPDET	Hot Plug Detect

LAN – Network connector

PIN	SYMBOL	DESCRIPTION
1	TX-	NETWORK TRANSMIT DATA
2	TX+	NETWORK TRANSMIT DATA
3	RX+	NETWORK RECEIVE DATA
4	CMT4	NETWORK USE
5	CMT4	NETWORK USE
6	RX-	NETWORK RECEIVE DATA
7	CMT3	NETWORK USE
8	CMT3	NETWORK USE
9	GND	Ground
10	GND	Ground

VGA - VGA / YPbPr out

PIN	SYMBOL	DESCRIPTION
1	R (Pr)	Analog Red (Component Pr)
2	G (Y)	Analog Green (Component Y)
3	B (Pb)	Analog Blue (Component Pb)
4	GND	Ground
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	NC	No connection
10	GND	Ground
11	NC	No connection
12	NC	No connection
13	H_SYNC	Horizontal sync
14	V_SYNC	Vertical sync
15	NC	No connection

CVBS - Composite video Out

PIN	SYMBOL	DESCRIPTION
1	CENTER	Center pin, composite out, 0.7Vp-p
2	GND	Ground

SV - S-Video Out

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	GND	Ground
3	LUMA_OUT	Luma Out
4	CHROMA_OUT	Chroma Out

SPDIF – Coaxial audio out

PIN	SYMBOL	DESCRIPTION
1	CENTER	Center pin, audio out
2	GND	Ground

AUDIO_OUT - Audio out

PIN	SYMBOL	DESCRIPTION
1	FRONT_LEFT	Audio left output
2	MIDDLE_RIGHT	Audio right output
3	REAR_GND	Ground

COM1 - RS-232

PIN	SYMBOL	DESCRIPTION
1	DCD	Data carrier detect
2	RXD	Receive data
3	TXD	Transmit data
4	DTR	Data terminal ready
5	GND	Signal ground
6	DSR	Data set ready
7	RTS	Request to send
8	CTS	Clear to send
9	RI	Ring indicator

COM2 - Reserved

PP1 - Main power input

PIN	SYMBOL	DESCRIPTION
1	+12_CENTER	+12V DC in center pin
2	GND	Ground

S1 – DIP switch (8-pos)

S2 – Power On/Off switch connect

PIN	SYMBOL	DESCRIPTION
1	12V_IN	+12V input
2	12V_OUT	+12V output

IR1 – Infra-red

PIN	SYMBOL	DESCRIPTION
1	GND	Ground
2	VCC	+5V
3	IR	IR Data

JA2 – 5V Logic power

PIN	DESCRIPTION	JUMPER SETTIINGS
1-3, 2-4	Close * *(Factory default)	

JA3 – Panel power

PIN	DESCRIPTION	JUMPER SETTIINGS
1-3, 2-4	Close for 5V	
3-5, 4-6	Close for 3V* *Factory default	

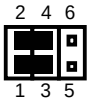
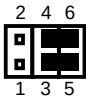
JB3 – Backlight control polarity

PIN	DESCRIPTION	JUMPER SETTIINGS
1-2	Close (High, ON) * *Factory default	
2-3	Close (Low, ON)	

JP1 – Master / Slave

PIN	DESCRIPTION	JUMPER SETTIINGS
1-2	Open (Slave)* *Factory default	
1-2	Close (Master)	

JP2 – WiFi USB

PIN	DESCRIPTION	JUMPER SETTIINGS
1-3, 2-4	Open (+5V output disable)	
3-5, 4-6	Close (+5V output enable)* *Factory default	

JP3 – Line out / Speaker out selection (on AUDIO_OUT)

PIN	DESCRIPTION	JUMPER SETTIINGS
1-3, 2-4	Close (Line out enable)* *Factory default	
3-5, 4-6	Close (Speaker out enable)	

VR1 – External volume control

PIN	DESCRIPTION	JUMPER SETTIINGS
1-3, 2-4	Close (Factory default)	
1-3, 2-4	Open (for connection with 47K VR ext. cable (p/n:426890500-3))	

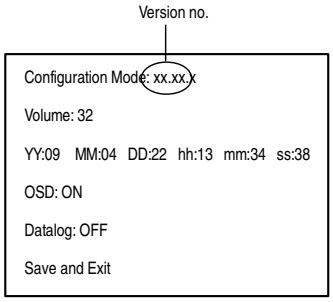
6 Operating Setup

Ensure the RM-DN5 system is ready for use in accordance with preceding sections. With the player system ready for use the following section outlines various configuration settings.

6.1 OSD Configuration

In OSD configuration mode, you may need either external buttons or 8-segmented touch screen to operate.

- Hold button 8 and power On until the OSD menu screen is shown as follows:



- Press button 8 to select or press button 7 or button 6 for up/dn.
- Press button 7 to confirm save and exit.

6.2 Start up

Two start-up modes (Start track mode and Sleep mode) can be selected when exporting a playlist to CF Card using DV Studio Plus software.

6.2.1 Start track mode

If start track mode is selected in playlist, the pre-defined started track will be played first after boot-up. For example, if track #5 is defined as the start track, then the RM-DN5 will play track #5 after start up. (The default start track is the first track in playlist)

Step by step:

- Plug in the external power supply
- Insert Compact Flash Card containing DV Studio Software exported ".pll / .prj" and other media files. (e.g. .mpg, .mp3, .jpg)
- Switch the power 'on/off' switch to 'on'.
- The track #5 (started track) will be played first.
- Once the track #5 is finished, the first track in playlist will be followed and played.

6.2.2 Sleep mode

If sleep mode is selected in a playlist, a blank screen will be shown at the beginning until the pre-defined button has been pressed. For example, if button# 3 is defined in sleep mode, after boot-up the RM-DN5 will play a blank screen until the button #3 is pressed.

Step by step:

- Plug in the external power supply
- Insert CompactFlash Card containing DV Studio Software exported ".pll / .prj" and other media files. (e.g. .mpg, .mp3, .jpg)
- Switch the power 'on/off' switch to 'on'.
- Press 'button #3'.
- The first track will be played.

Note: Special specific track playback activated by an assigned button can also be performed in sleep mode - contact Digital View for details.

6.3 Loop Playback

The RM-DN5 will play in auto-loop play mode, so long as none of the function buttons are pressed.

(NOTE: Loop playback is the standard playback setting of the RM-DN5 but the track playback sequence can be changed as required: contact local sales office.)

7 Playback Operation

7.1 Playback modes

There are two playback modes in RM-DN5 – "Playlist mode" and "Simple play mode".

7.1.1 Playlist mode

When operating in playlist mode, both the project file (*.prj) and the playlist file (*.pll) must be present on the Compact Flash card. These are used to control the sequence for all video tracks.

The project and playlist file are created using the Digital View **DV Studio Plus** software which is available for download from the Digital View website. Using this software, you can set simple sequences or complex sequences including "jump track" or "next track" actions. DV Studio can also program buttons with different functions such as "play", "stop", "pause", "mute", "previous", "next" and "volume".

7.1.2 Simple play mode

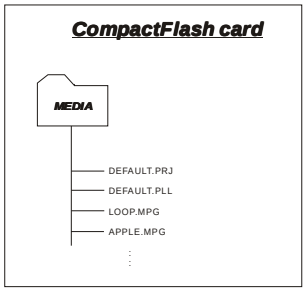
In simple play mode, the user just copies all video files (.mpg/.avi/.mov) or JPEG files (.jpg) onto the CF card in a folder called Media. The RM-DN5 will play these files in alphanumeric sequence.

For JPEG files, the play time can be set by the last digit of the filename. (For example: APPLE5.jpg, where "5" means the track will be displayed for 5 seconds.) *Note: Do not use the same filename for both MPEG and JPEG.*

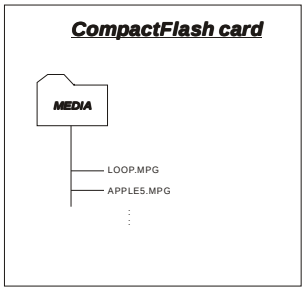
Note:

(1) Make sure all capital letters in filename defined in playlist are consistent with the filename on the CF card. All filenames should be in 8.3 format (i.e. xxxxxxxx.xxx) and avoid using any illegal characters like "~", "_", "-", etc

(2) All files (including project file and playlist file) must be placed under a folder named "Media" on Compact Flash card. For example:



Playlist mode



Simple play mode

7.2 Operating functions

The following shows the default button operation in "Simple Play mode". (This requires a button switch-mount or 8-segments touch screen connected.)

PLAY (Button 1)	• Resumes playback of videos from track 1 after STOP has been pressed. • Resumes playback of the track from the point that it has been set to PAUSE. • Playback is reset back to the beginning of the specific track which is being played at the time the PLAY button is pressed.
STOP (Button 2)	• When STOP is pressed the video stops playing and a blank screen is displayed.
PAUSE (Button 3)	• When PAUSE is pressed playback will pause and the current image will remain screen. • Press Pause again or PLAY to resume normal playback from the position where it was paused.
REPEAT (Button 4)	• When REPEAT is pressed the current track loop back on itself continuously. • To disable the repeat mode press REPEAT, PLAY, PREVIOUS TRACK or NEXT TRACK . When the track plays to the end it will playback the next track (and etc.) as normal.
NEXT TRACK (Button 5)	• The NEXT TRACK function can be activated only when a track is already playing. When NEXT TRACK is pressed the current video stops playing and jumps directly to the start of the next track.
VOLUME - (Button 6)	• Decreases audio output volume setting.
VOLUME + (Button 7)	• Increases audio output volume setting.
MUTE (Button 8)	• When MUTE is pressed, all the tracks will have no sound. • Press MUTE again to resume the normal sound in all tracks.

Note : The buttons can be re-defined by DV Studio Plus* software if operating in playlist mode.

*DV Studio Plus software can be found and downloaded from www.digitalview.com

7.3 Formatting Compact flash card

It is recommended that CF cards are re-formatted with FAT32 again before use.

Formatting procedure for Windows:

- Double click the **My Computer** icon on your Windows desktop.
- Right-click the drive name of card reader.
- Click **Format**. The format dialog box appears.
- Click **Start**.

Notes:

☞ *CF cards should be formatted using FAT32 before first use.*

☞ *All media files on the CF must be in a folder name "media".*

☞ *Filenames must be alpha-numeric characters only, not '~', '_', '-', '!', '@', '^', etc.*

7.4 Exporting Project and Playlist

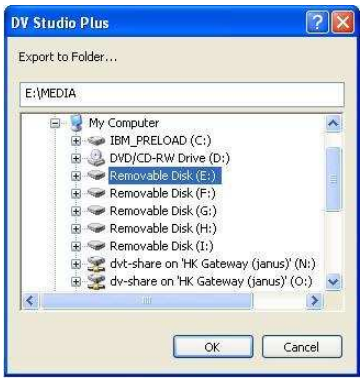
Use DV Studio Plus* software to export your project file (.prj) and playlist file (.pll). Make sure the CF card is formatted with FAT32 and the CF card reader is connected and the driver is well installed. The CF card reader is auto-detected as the 'Removable Disk"

*DV Studio Plus software can be found and downloaded from www.digitalview.com

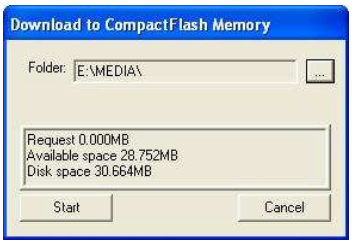
- Open **DV Studio Plus** software.
- Click **Project** from the menu and select **Open Project**.

- In the **Project** pull down menu, select **Export** and click **Local Drives**

- Click  to select destination drive (i.e. Removable Disk).
- Enter the file path including a **Media** folder to export on CF card (e.g. E:\MEDIA), then click **OK**



- Click **Start** to export.

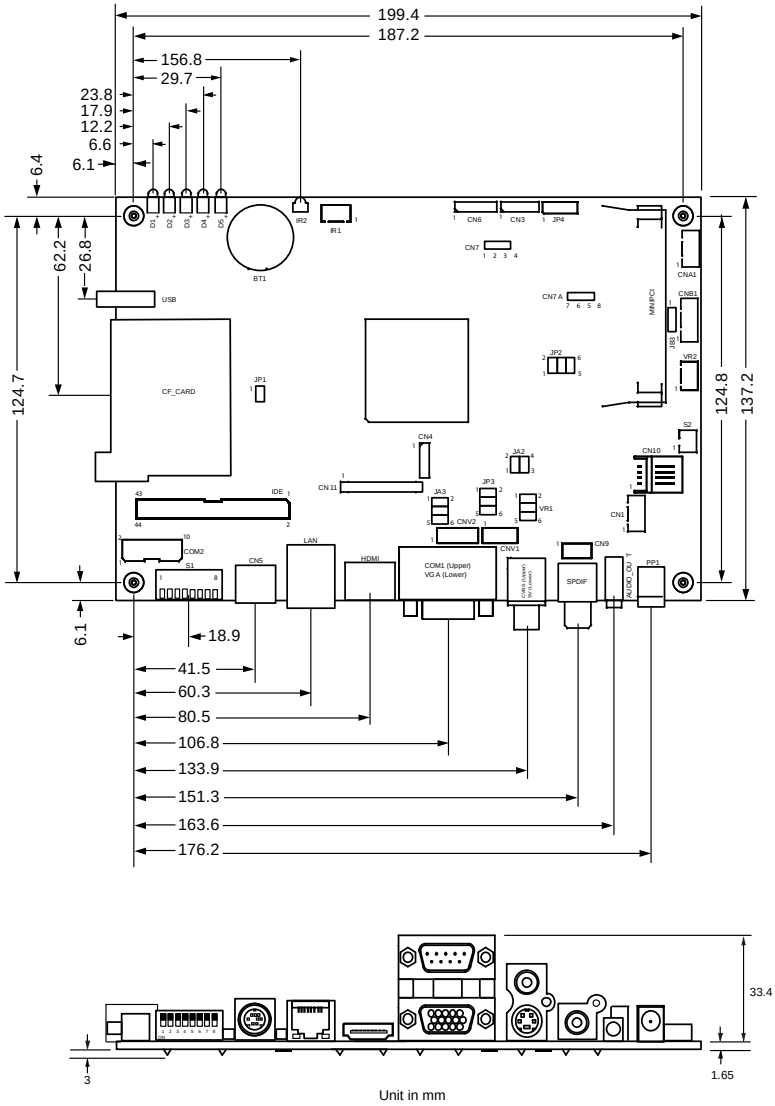


7.5 USB update

The RM-DN5 USB port provides the ability to connect a USB memory stick directly and to read and write data to and from the Compact Flash card using the automatic USB update capability. *(Please refer to Application Note* for details)*

*Application Notes can be found and downloaded from www.digitalview.com

8 Dimension



Unit in mm

The maximum thickness of the board is 38mm without add-on board (measured from bottom of PCB to top of components, including any underside components & leads). We recommend clearances of:

- 5mm from bottom of PCB - if mounting on a metal plate we also recommend a layer of suitable insulation material is added to the mounting plate surface.
- 10mm above the components
- 3~5mm around the edges

Any of the holes shown above can be used for mounting the PCB, they are 3.2mm in diameter.

CAUTION: Ensure adequate insulation is provided for all areas of the PCB with special attention to high voltage parts. (e.g. the inverter)

9 Specification

Playable format	MPEG-1 (.mpg) Encoding bit rate: 1.15Mbit/s MPEG-2 (.mpg) Encoding bit rate: 5Mbit/s MPEG-4 DivX (.avi) Encoding bit rate: 2Mbit/s AVC/H.264 (.mp4/.wmv/.mov) Encoding bit rate: 10-15Mbit/s JPEG (.jpg) Note: Depending on the features desired, customer/purchaser may be required to obtain a video codec license with the relevent organizations.
Storage media	Compact Flash memory card Note: High-speed CF cards (100x or above) is recommended
Video output resolution	HDMI / DVI – 1080i/p, 720p, 1600x1200, 1024x768 YPbPr – 1080i, 720p, 480p, 576p VGA - 1080i/p, 720p, 1600x1200, 1024x768 Composite / S-Video - 720x576(PAL), 720x480(NTSC)
Audio line out	3.2V p-p max. 5kohm
Speaker out	1.5W @4ohm stereo
Audio volume	Controlled through OSD with switches attached or IR
Playback functions	Play / Stop / Pause / Repeat / Previous track / Next track / Volume / Mute Loop playback / Sequence play / Startup mode / Sleep mode
Touch screen functions	Support Analog touch glass (4-wires) and ITO (segment type) touch glass
External I/O ports	RS-232 (9600, N-8-1) USB (content upload) Infra-red (use with DV IR handset, P/N:559000104-3) Remote Ext. (for button & touch)
LEDs	Power LED (Green) Status LED (Green)
Real time clock	Battery-backup RTC
Aux. power out	+5V DC (fuse protection), +12V DC (fuse protection)
Power requirement	Regulated DC 12V input (2.5mm center positive)
Power consumption	500mA @ 12V
Environmental	Operating temperature : 0°C to 50°C Relative humidity : 5%-95% relative humidity (Non-condensing)
Dimensions	199 (W) x 137 (D) x 38(H) mm
Weight (net)	240g

WARRANTY

The products are warranted against defects in workmanship and material for a period of three (3) year from the date of purchase provided no modifications are made to it and it is operated under normal conditions and in compliance with the instruction manual.

The warranty does not apply to:

- Product that has been installed incorrectly, this specifically includes but is not limited to cases where electrical short circuit is caused.
- Product that has been altered or repaired except by the manufacturer (or with the manufacturer's consent).
- Product that has subjected to misuse, accidents, abuse, negligence or unusual stress whether physical or electrical.
- Ordinary wear and tear.

Except for the above express warranties, the manufacturer disclaims all warranties on products furnished hereunder, including all implied warranties of merchantability and fitness for a particular application or purpose. The stated express warranties are in lieu of all obligations or liabilities on the part of the manufacturer for damages, including but not limited to special, indirect consequential damages arising out of or in connection with the use of or performance of the products.

CAUTION

Whilst care has been taken to provide as much detail as possible for use of this product it cannot be relied upon as an exhaustive source of information. This product is for use by suitably qualified persons who understand the nature of the work they are doing and are able to take suitable precautions and design and produce a product that is safe and meets regulatory requirements.

SAFETY INSTRUCTION

Do not use this product near water, for example, near a bathtub, wash bowl, kitchen sink, laundry tub, in a wet basement or near a swimming pool.

LIMITATION OF LIABILITY

The manufacturer's liability for damages to customer or others resulting from the use of any product supplied hereunder shall in no event exceed the purchase price of said product.

LICENSING REQUIREMENTS

Depending on the features desired, customer/purchaser may be required to obtain a license with the relevant organizations.

TRADEMARKS

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RM-DN5

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