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Bespoke Electronic Design & Manufacturing in the UK

9 Channel Switch Interface for the Denon® V300/V310 player

Technical Data

DVD-D9RC+ interface
Firmware revision 1.00

Features

- **Ultra low power consumption from the connected player**
- **Simple connection to Denon® V300/V310 player serial (RS232) port**
- **Standard DVD-D9RC+ version provides UP/DOWN /LEFT/RIGHT and ENTER (3 other versions also available from your distributor)**
- **Screw terminals for quick connection to Normally Open (NO) switch contacts**
- **Anti-bounce on all switch inputs**
- **Enclosure lugs provide simple secure fixing**

Description

The DVD-D9 interfaces permit nine Normally Open (NO) momentary action switches the control of a Denon® V300/V310 player.

The DVD-D9 range emulate a standard external control device by issuing PlayC, PlayT and RC commands that control the action performed by the player.
The DVD-D9RC+ issues cursor UP/DOWN/LEFT/RIGHT, ENTER and number buttons 1-4 the same as the IR remote control.

Other versions are also available from your distributor, the DVD-D9CH issues PlayC commands for DVD media, the DVD-D9DA issues PlayT commands for CD-DA & VCD media and the DVD-D9RC issues cursor UP/DOWN, ENTER and buttons 1-6 the same as the IR remote control.

Applications

The DVD-D9 range is primarily for use within a kiosk environment where input is required from the kiosk control buttons or from an Anti-Vandal button plate such as the DVD-nBUT. The devices are especially designed to connect to any type of momentary action switch and can therefore be used to control the DVD player in a number diverse applications.

Custom designed firmware is available for this product, please contact your distributor.

DVD ACCESSORIES

Selection Guide

Description	Part Number
Remote control switch interface +	DVD-D9RC+

Distributed by :
D&M Professional
Kingsbridge House, Padbury Oaks
575-583 Bath Road, Longford
Middlesex UB7 0EH
United Kingdom

Tel: +44 1753 680023
Fax: +44 1753 686020
Email: sales@dm-pro.eu

Power requirements

The DVD-D9 range are powered from the serial port RTS line of the connected DVD player. The maximum current draw is 6mA.

Switch Inputs

The DVD-D9 switch interface consists of a series of nine double terminal blocks to which any Normally Open (NO) momentary switch can be connected.
Contacts may be wired up to 100 metres away from the DVD-D9 without degrading the performance of the device.

DVD-D9 interface

The DVD-D9 interface connection is a standard DB9 male as specified within the V300/V310 player specification.
Serial communication protocol is 9600 Baud, 1 Start bit, 8 Data bits, 1 Stop bits, No parity for all control commands. All I/O is RS232 and TTL compatible.

DVD control protocol

The DVD-D9 communicates with the player using the player control protocol . This protocol takes the form of ASCII command strings of format:

[PC,RC,44]\r

\r – Carriage return

These strings allow the PlayC (Play Chapter), PlayT (Play Title/Track) or RC (Remote control) commands to be issued to the player in response to an external button on the DVD-D9 being pressed.

See button function tables at the end of the document.

NOTE: For further information on the DVD-D9CH, DVD-D9DA or DVD-D9RC please see the relevant datasheet.

DVD-D9 interface

Function	DB9 Male
RTS	8
RXD	3
TXD	2
Ground	5
All other connection are N/C	

Electrical Characteristics ($T_A = 25^oC$ Typical)

Parameter	Minimum	Maximum	Units	Notes
Supply Voltage (RTS)	4.5	9	V	
Supply Current	-	6	mA	
Switch resistance	-	100	Ω	
Switch de-bounce time	-	50	mS	
RXData high level	GND	0.8	V	
RXData low level	2.4	VCC	V	
Terminal wire thickness	0.5	1.3	mm^2	

Absolute Maximum Ratings

Parameter	Minimum	Maximum	Units
Supply Voltage (RTS)	-0.5	+10	V

Environmental

Parameter	Minimum	Maximum	Units
Operating Temperature	0	70	**^oC**
Storage Temperature	-10	80	**^oC**
Humidity	0	80	**%**
Dimensions	See below		
Weight	150g		
Immunity & emissions	EMC compliance to 89/336/EEC		

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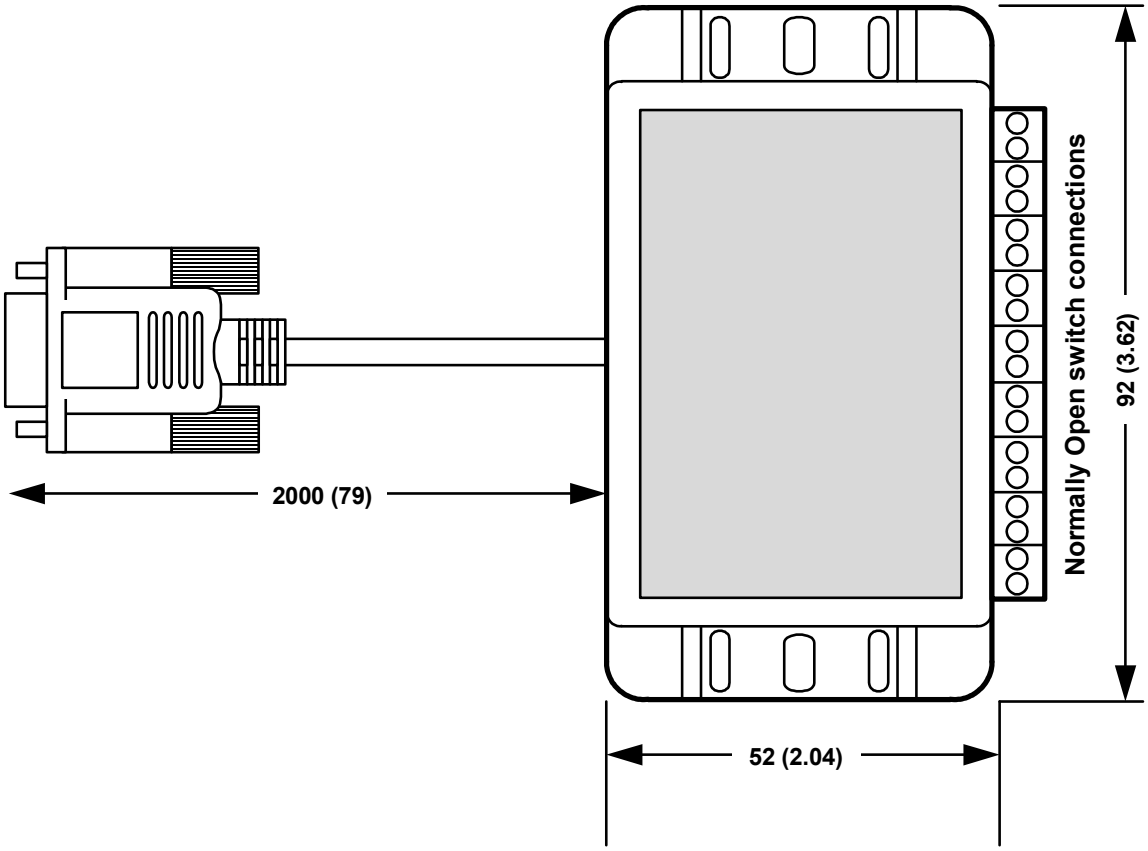
Mechanical Specifications – Units millimetres (inches)



Installation

1. Ensure power to the Denon DN-V300/V310 player is switched OFF.
2. Insert the lead on the DVD-D9RC+ into the I/O connector on the rear of the Denon DN-V300/V310 player and secure with the integral screw-locks.
3. Connect a Normally Open (NO) momentary action button across each of the inputs you wish to use (Note: each double terminal block is one input) using a pair of wires or multi-conductor cable to a maximum length of 50 metres using a small flat blade screwdriver.
   (NB. For a ready-made aluminium button plate with sealed anti-vandal buttons see the Designer Systems DVD-nBUT solution)
4. Site the DVD-D9 in a location that will not put undue strain on the terminals.
5. Switch ON the Denon DN-V300/V310 player and test by pressing each of the wired in buttons cross referencing with the table below. Should the installation not function, switch OFF immediately and check all connections.

Switch input No.	Function
1	Button ENTER
2	Button arrow UP
3	Button arrow DOWN
4	Button arrow LEFT
5	Button arrow RIGHT
6	Button 1
7	Button 2
8	Button 3
9	Button 4

Notes:

- The DVD-D9RC+ must NEVER be connected to voltage bearing circuits; damage to the unit and the Denon DN-V300/V310 player will result and will invalidate the Warranty.

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WEEE Consumer Notice

This product is subject to Directive 2002/96/EC of the European Parliament and the Council of the European Union on Waste of Electrical and Electronic Equipment (WEEE) and, in jurisdictions adopting that Directive, is marked as being put on the market after August 13, 2005, and should not be disposed of as unsorted municipal/public waste. Please utilise your local WEEE collection facilities in the disposition and otherwise observe all applicable requirements. For further information on the requirements regarding the disposition of this product in other languages please visit www.designersystems.co.uk

RoHS Compliance

This product complies with Directive 2002/95/EC of the European Parliament and the Council of the European Union on the Restriction of Hazardous Substances (RoHS) which prohibits the use of various heavy metals (lead, mercury, cadmium, and hexavalent chromium), polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE).

Declaration of Conformity

Apparatus name / model number DVD-D9

Conformity via Generic Standard EN50081-1
Generic Standard EN50082-1

Conformity criteria For use only within commercial, residential and light industrial applications

We certify that the apparatus identified above conforms to the requirements of Council Directive 89/336/EEC & 73/23/EEC

Signed. **Date** 1/10/99

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Manufacturer Designer Systems, 15 Andrew Place, Truro, Cornwall TR1 3HZ, United Kingdom

Description of apparatus DVD control device

Having made this declaration the CE mark is affixed to this product, its packaging, manual or warranty.

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