



Application Note

iPlayer 2 RS-232 Serial Protocol

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The iPlayer 2 has an RS-232 serial port that allows for show selection and brightness control. The port is primarily intended for use by the Controller Keypad, but it can also be used by other external controllers.

Electrical

The RS-232 serial port connection on the iPlayer 2 is a DB9F connector, labeled "SERIAL." The pinout of the DB9F connector is:

2	Transmit data
3	Receive data
4	+5 VDC
5	Ground

The other pins are unconnected.

Note that +5 VDC is provided on pin 4 (normally the DTR pin). Other devices can use this voltage provided they draw no more than 50 mA.

If the voltage on pin 4 is not desired it can be disabled by removing jumper header JP1. JP1 is on the printed circuit board, located just behind the DB9F connector.

Protocol

The serial protocol is 9600 baud, 8 data bits, no parity, 1 stop bit. There is no flow control.

Each command to the iPlayer-2 consists of 5 characters. The first character is always "X". The next two characters are the ASCII representation of a hexadecimal command byte. The last two characters are a hexadecimal data byte. The hex characters are upper case ("0" – "9", "A" – "F").

Replies from the iPlayer-2 are also in this format, but begin with "Y" instead of "X".

Characters are not echoed by the iPlayer-2 when they are received.

Illegal characters or badly formatted packets are ignored with no error indication.

iPlayer 2 Commands

Note: *dd* is used to represent a hexadecimal byte.

X00 <i>dd</i>	Set Mode Sets the current operating mode to <i>dd</i> . Not currently used.
X0100	Lights Off Turns all lights off.
X02 <i>dd</i>	Set Absolute Intensity Sets the global brightness level to <i>dd</i> (00 = off, FF = full on).
X03 <i>dd</i>	Set Relative Intensity Raises or lowers the global brightness level by <i>dd</i> (<i>dd</i> is 2's complement, so "02" increases by 2, "FE" decreases by 2). Brightness is pegged between 0 and 255.
X04 <i>dd</i>	Set Show Starts show with trigger number <i>dd</i> playing from the beginning. The trigger number must be in the range 1 through 225 (E1).

Replies from iPlayer 2

Y00 <i>dd</i>	Returns current mode
Y0100	Entered off mode
Y02 <i>dd</i>	Returns current intensity level
Y03 <i>dd</i>	Not sent
Y04 <i>dd</i>	Returns current show
Y0F <i>dd</i>	Error occurred, show number in data byte This is most often returned when the selected show is not available (so the keypad knows to blink the LED).

If an iPlayer-2 is in Multi-Universe/Master mode, it may also send out "X" packet commands to other units. It will also send out periodic "T" characters (the frame sync trigger). The "T"s can occur at any point (even in the middle of a packet) and should be ignored when parsing the packet.