

# InFocus

## Technical Documentation

### Introduction:

RS-232 is a communication protocol that can be used to send commands to and retrieve status information from the MondoPad and other RS-232 enabled devices. This is often used in conjunction with a control system capable of managing several other systems such as audio, lighting, and video switching systems. Simpler RS-232 implementations require nothing more than a personal computer, null modem serial cable, hex capable communication software and the MondoPad.

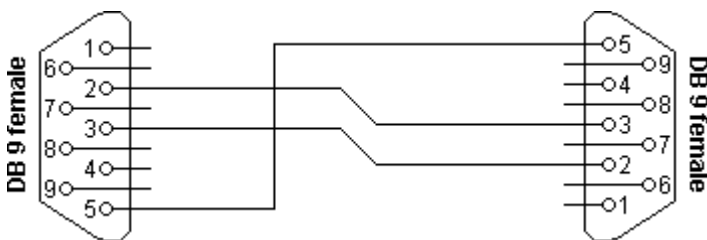
### Configuration:

Setting	Value
Bits per second	9600 baud rate
Data Bits	8
Parity	None
Stop bits	1
Flow Control	None

### Required Cable:

Null modem cable – female to female DB9 connector (9-pin serial)

### Connector Pin-out:



Connector 1	Connector 2	Function
2	3	Transmit/Receive Data
3	2	Receive/Transmit Data
5	5	Signal Ground

### Minimum timing requirements:

- 300ms between commands
- 10ms character delay
- 20 second delay after a Power Off is initiated
- 1 second delay after a source change is initiated

## Get structure and commands:

The commands and structure below are used to Read or “Get” data from a MondoPad over RS232.

### Send Command Structure

Name	Header	Length	ID 1	ID 2	Command Type	Command 1	Command 2	CR
Byte order	1	2	3	4	5	6	7	8

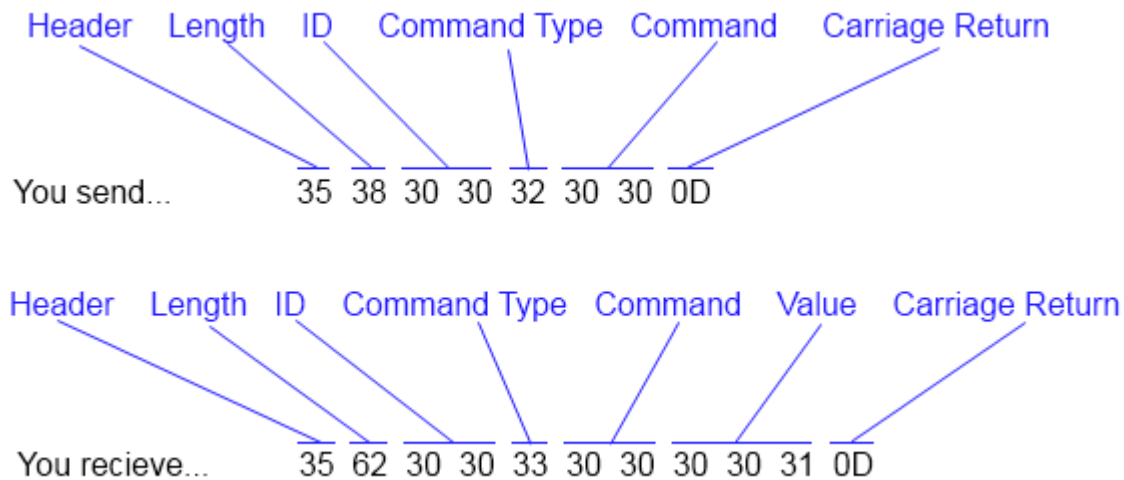
### Valid Reply Structure

Name	Header	Length	ID 1	ID 2	Command Type	Command 1	Command 2	Value1	Value2	Value3	CR
Byte order	1	2	3	4	5	6	7	8	9	10	11

### Not Valid Reply Structure

Name	Header	Length	ID 1	ID 2	Command Type	CR
Byte order	1	2	3	4	5	6

For example, say a MondoPad is powered on and you send the Get Power status command:



Since the Value is 001, this indicates the MondoPad is On. If the response value was 000, the MondoPad would be Off. If you use an invalid command for the 6<sup>th</sup> and 7<sup>th</sup> octets, you would get 35 36 30 30 33 36 0D

In the command table below, the actual Get command has a gray background and the possible valid responses have a white background. All the commands are listed in ASCII.

Responses with a value of “XXX” have a range of possibilities which are listed in the Valid Responses Column (example, Get Brightness has possible values of 000 – 100 (30 30 30 – 31 30 30))

Get Command ----- Valid Responses	ASCII Character											HEX											
	Header	Length	ID1	ID2	Command Type	Command 1	Command2	Value1	Value2	Value3	CR	Header	Length	ID1	ID2	Command Type	Command 1	Command2	Value1	Value2	Value3	CR	
	Get Power status	5	8	0	0	2	0	0				cr	35	38	30	30	32	30	30				0D
000 : STBY	5	b	0	0	3	0	0	0	0	0	cr	35	62	30	30	33	30	30	30	30	30	30	0D
001 : ON	5	b	0	0	3	0	0	0	0	1	cr	35	62	30	30	33	30	30	30	30	31	0D	
Get Input select	5	8	0	0	2	0	1				cr	35	38	30	30	32	30	31				0D	
000 : HDMI1	5	b	0	0	3	0	1	0	0	0	cr	35	62	30	30	33	30	31	30	30	30	0D	
001 : HDMI2	5	b	0	0	3	0	1	0	0	1	cr	35	62	30	30	33	30	31	30	30	31	0D	
003 : VGA	5	b	0	0	3	0	1	0	0	3	cr	35	62	30	30	33	30	31	30	30	33	0D	
006 : YPbPr	5	b	0	0	3	0	1	0	0	6	cr	35	62	30	30	33	30	31	30	30	36	0D	
008 : AV	5	b	0	0	3	0	1	0	0	8	cr	35	62	30	30	33	30	31	30	30	38	0D	
009 : DP1	5	b	0	0	3	0	1	0	0	9	cr	35	62	30	30	33	30	31	30	30	39	0D	
Get Audio Input Select	5	8	0	0	2	0	2				cr	35	38	30	30	32	30	32				0D	
000 : Audio 1	5	b	0	0	3	0	2	0	0	0	cr	35	62	30	30	33	30	32	30	30	30	0D	
001 : Audio 2	5	b	0	0	3	0	2	0	0	1	cr	35	62	30	30	33	30	32	30	30	31	0D	
003 : HDMI 1	5	b	0	0	3	0	2	0	0	3	cr	35	62	30	30	33	30	32	30	30	33	0D	
004: HDMI 2	5	b	0	0	3	0	2	0	0	4	cr	35	62	30	30	33	30	32	30	30	34	0D	
006 : PC	5	b	0	0	3	0	2	0	0	6	cr	35	62	30	30	33	30	32	30	30	36	0D	
008: PC Speaker	5	b	0	0	3	0	2	0	0	8	cr	35	62	30	30	33	30	32	30	30	38	0D	
Get Keyboard Control	5	8	0	0	2	0	3				cr	35	38	30	30	32	30	33				0D	
000 : Disable	5	b	0	0	3	0	3	0	0	0	cr	35	62	30	30	33	30	33	30	30	30	0D	
001 : Enable	5	b	0	0	3	0	3	0	0	1	cr	35	62	30	30	33	30	33	30	30	31	0D	
Get Brightness	5	8	0	0	2	1	0				cr	35	38	30	30	32	31	30				0D	
000 ~ 100	5	b	0	0	3	1	0	X	X	X	cr	35	62	30	30	33	31	30	X	X	X	0D	
Get Contrast	5	8	0	0	2	1	1				cr	35	38	30	30	32	31	31				0D	
000 ~ 100	5	b	0	0	3	1	1	X	X	X	cr	35	62	30	30	33	31	31	X	X	X	0D	
Get Sharpness	5	8	0	0	2	1	2				cr	35	38	30	30	32	31	32				0D	
000 ~ 100	5	b	0	0	3	1	2	X	X	X	cr	35	62	30	30	33	31	32	X	X	X	0D	
Get Gamma Selection	5	8	0	0	2	1	c				cr	35	38	30	30	32	31	43				0D	
000 : NATIVE	5	b	0	0	3	1	c	0	0	0	cr	35	62	30	30	33	31	43	30	30	30	0D	
001 : 2.2	5	b	0	0	3	1	c	0	0	1	cr	35	62	30	30	33	31	43	30	30	31	0D	
002 : 2.4	5	b	0	0	3	1	c	0	0	2	cr	35	62	30	30	33	31	43	30	30	32	0D	
Get Volume	5	8	0	0	2	5	0				cr	35	38	30	30	32	35	30				0D	
000 ~ 100	5	b	0	0	3	5	0	X	X	X	cr	35	62	30	30	33	35	30	X	X	X	0D	
Get Speaker	5	8	0	0	2	5	4				cr	35	38	30	30	32	35	34				0D	
000 : Internal	5	b	0	0	3	5	4	0	0	0	cr	35	62	30	30	33	35	34	30	30	30	0D	
001 : External	5	b	0	0	3	5	4	0	0	1	cr	35	62	30	30	33	35	34	30	30	31	0D	
Get Mute	5	8	0	0	2	5	5				cr	35	38	30	30	32	35	35				0D	
000: OFF	5	b	0	0	3	5	5	0	0	0	cr	35	62	30	30	33	35	35	30	30	30	0D	
001: ON (mute)	5	b	0	0	3	5	5	0	0	1	cr	35	62	30	30	33	35	35	30	30	31	0D	
Get PIP Size	5	8	0	0	2	6	0				cr	35	38	30	30	32	36	30				0D	
000 : Small	5	b	0	0	3	6	0	0	0	0	cr	35	62	30	30	33	36	30	30	30	30	0D	
001 : Middle	5	b	0	0	3	6	0	0	0	1	cr	35	62	30	30	33	36	30	30	30	31	0D	

002 : Large	5	b	0	0	3	6	0	0	0	2	cr	35	62	30	30	33	36	30	30	30	32	0D
Get PIP Mode	5	8	0	0	2	6	1				cr	35	38	30	30	32	36	31				0D
000 : OFF	5	b	0	0	3	6	1	0	0	0	cr	35	62	30	30	33	36	31	30	30	30	0D
001 : PIP	5	b	0	0	3	6	1	0	0	1	cr	35	62	30	30	33	36	31	30	30	31	0D
002 : POP	5	b	0	0	3	6	1	0	0	2	cr	35	62	30	30	33	36	31	30	30	32	0D
003 : PBP-1	5	b	0	0	3	6	1	0	0	3	cr	35	62	30	30	33	36	31	30	30	33	0D
004 : PBP-2	5	b	0	0	3	6	1	0	0	4	cr	35	62	30	30	33	36	31	30	30	34	0D
Get PIP H-Position	5	8	0	0	2	6	4				cr	35	38	30	30	32	36	34				0D
000 or 100	5	b	0	0	3	6	4	X	X	X	cr	35	62	30	30	33	36	34	X	X	X	0D
Get PIP V-Position	5	8	0	0	2	6	5				cr	35	38	30	30	32	36	35				0D
000 or 100	5	b	0	0	3	6	5	X	X	X	cr	35	62	30	30	33	36	35	X	X	X	0D
Get IR Control status	5	8	0	0	2	9	2				cr	35	38	30	30	32	39	32				0D
000: Normal	5	b	0	0	3	9	2	0	0	0	cr	35	62	30	30	33	39	32	30	30	30	0D
001: Lock	5	b	0	0	3	9	2	0	0	1	cr	35	62	30	30	33	39	32	30	30	31	0D

## Set structure and commands:

The command structure below is used to set a data value or activate a function on a MondoPad over RS232

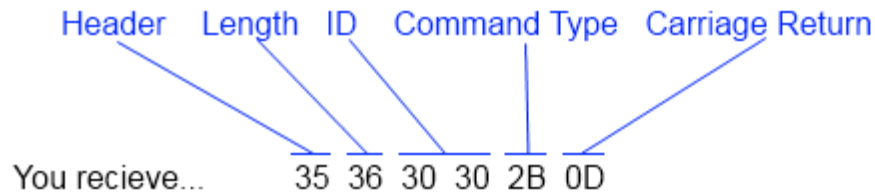
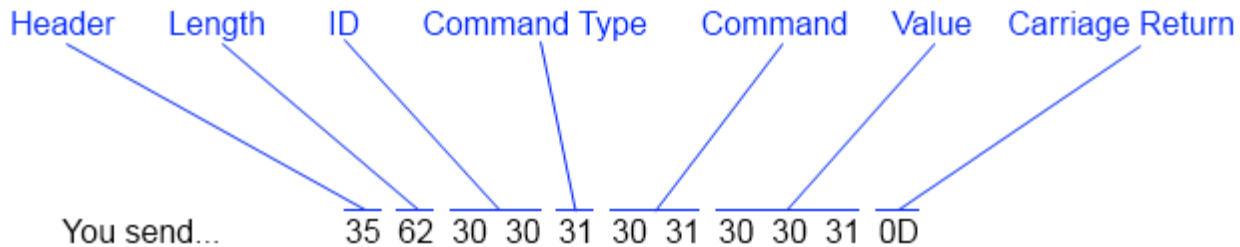
### Set Command Structure

Name	Header	Length	ID 1	ID 2	Command Type	Command 1	Command 2	Value1	Value2	Value3	CR
Bytes order	1	2	3	4	5	6	7	8	9	10	11

### Reply structure

Name	Header	Length	ID 1	ID 2	Command Type	CR
Bytes order	1	2	3	4	5	6

For example, say a MondoPad you want to change the source to HDMI 2:



If you send an invalid command or value, you will get the Invalid response 35 36 30 30 2D 0D.

In the table below the commands are alternated in gray/white backgrounds for easy readability.

Commands with a value of "XXX" have a range of possibilities which are listed in the Set Command Column (example, Brightness has possible values of 000 – 100 (30 30 30 – 31 30 30))

Set Command	ASCII Character											HEX										
	Header	Length	ID1	ID2	Command Type	Command 1	Command2	Value1	Value2	Value3	CR	Header	Length	ID1	ID2	Command Type	Command 1	Command2	Value1	Value2	Value3	CR
Power Off	5	b	0	0	1	0	0	0	0	0	CR	35	62	30	30	31	30	30	30	30	30	0D
Power On	5	b	0	0	1	0	0	0	0	1	CR	35	62	30	30	31	30	30	30	30	31	0D
Input - HDMI1	5	b	0	0	1	0	1	0	0	0	CR	35	62	30	30	31	30	31	30	30	30	0D
Input - HDMI2	5	b	0	0	1	0	1	0	0	1	CR	35	62	30	30	31	30	31	30	30	31	0D
Input - VGA	5	b	0	0	1	0	1	0	0	3	CR	35	62	30	30	31	30	31	30	30	33	0D
Input - YPbPr	5	b	0	0	1	0	1	0	0	6	CR	35	62	30	30	31	30	31	30	30	36	0D
Input - AV	5	b	0	0	1	0	1	0	0	8	CR	35	62	30	30	31	30	31	30	30	38	0D
Input - DP1	5	b	0	0	1	0	1	0	0	9	CR	35	62	30	30	31	30	31	30	30	39	0D
Audio Input - Audio 1	5	b	0	0	1	0	2	0	0	0	CR	35	62	30	30	31	30	32	30	30	30	0D
Audio Input - Audio 2	5	b	0	0	1	0	2	0	0	1	CR	35	62	30	30	31	30	32	30	30	31	0D
Audio Input - HDMI 1	5	b	0	0	1	0	2	0	0	3	CR	35	62	30	30	31	30	32	30	30	33	0D
Audio Input - HDMI 2	5	b	0	0	1	0	2	0	0	4	CR	35	62	30	30	31	30	32	30	30	34	0D
Audio Input - PC	5	b	0	0	1	0	2	0	0	6	CR	35	62	30	30	31	30	32	30	30	36	0D
Audio Input - PC Speaker	5	b	0	0	1	0	2	0	0	8	CR	35	62	30	30	31	30	32	30	30	38	0D
Keyboard Control Disable	5	b	0	0	1	0	3	0	0	0	CR	35	62	30	30	31	30	33	30	30	30	0D
Keyboard Control Enable	5	b	0	0	1	0	3	0	0	1	CR	35	62	30	30	31	30	33	30	30	31	0D
Brightness, 000~100	5	b	0	0	1	1	0	X	X	X	CR	35	62	30	30	31	31	30	X	X	X	0D
Contrast, 000~100	5	b	0	0	1	1	1	X	X	X	CR	35	62	30	30	31	31	31	X	X	X	0D
Sharpness ,000~100	5	b	0	0	1	1	2	X	X	X	CR	35	62	30	30	31	31	32	X	X	X	0D
Gamma - Native	5	b	0	0	1	1	c	0	0	0	CR	35	62	30	30	31	31	63	30	30	30	0D
Gamma - 2.2	5	b	0	0	1	1	c	0	0	1	CR	35	62	30	30	31	31	63	30	30	31	0D
Gamma - 2.4	5	b	0	0	1	1	c	0	0	2	CR	35	62	30	30	31	31	63	30	30	32	0D
Volume, 000~100	5	b	0	0	1	5	0	X	X	X	CR	35	62	30	30	31	35	30	X	X	X	0D
Speaker Internal	5	b	0	0	1	5	4	0	0	0	CR	35	62	30	30	31	35	34	30	30	30	0D
Speaker External	5	b	0	0	1	5	4	0	0	1	CR	35	62	30	30	31	35	34	30	30	31	0D
Mute Off	5	b	0	0	1	5	5	0	0	0	CR	35	62	30	30	31	35	35	30	30	30	0D
Mute On	5	b	0	0	1	5	5	0	0	1	CR	35	62	30	30	31	35	35	30	30	31	0D
PIP Size - Small	5	b	0	0	1	6	0	0	0	0	CR	35	62	30	30	31	36	30	30	30	30	0D
PIP Size - Middle	5	b	0	0	1	6	0	0	0	1	CR	35	62	30	30	31	36	30	30	30	31	0D
PIP Size - Large	5	b	0	0	1	6	0	0	0	2	CR	35	62	30	30	31	36	30	30	30	32	0D
PIP Mode - Off	5	b	0	0	1	6	1	0	0	0	CR	35	62	30	30	31	36	31	30	30	30	0D
PIP Mode - PIP	5	b	0	0	1	6	1	0	0	1	CR	35	62	30	30	31	36	31	30	30	31	0D
PIP Mode - POP	5	b	0	0	1	6	1	0	0	2	CR	35	62	30	30	31	36	31	30	30	32	0D
PIP Mode - PBP-1	5	b	0	0	1	6	1	0	0	3	CR	35	62	30	30	31	36	31	30	30	33	0D
PIP Mode - PBP-2	5	b	0	0	1	6	1	0	0	4	CR	35	62	30	30	31	36	31	30	30	34	0D
PIP Position Left Top	5	b	0	0	1	6	4	0	0	0	CR	35	62	30	30	31	36	34	30	30	30	0D
PIP Position Right Top	5	b	0	0	1	6	4	1	0	0	CR	35	62	30	30	31	36	34	31	30	30	0D
PIP Position Left Bottom	5	b	0	0	1	6	5	0	0	0	CR	35	62	30	30	31	36	35	30	30	30	0D
PIP Position Right Bottom	5	b	0	0	1	6	5	1	0	0	CR	35	62	30	30	31	36	35	31	30	30	0D
IR Control Normal	5	b	0	0	1	9	2	0	0	0	CR	35	62	30	30	31	39	32	30	30	30	0D
IR Control Lock	5	b	0	0	1	9	2	0	0	1	CR	35	62	30	30	31	39	32	30	30	31	0D