

**D-BOX**

**RS-232 / UDP / TCP IP**

**REMOTE CONTROL  
COMMUNICATION PROTOCOL**

Technical Support : 1-888-442-3269 ext. 264

Fax : 450-442-3230

E-mail : [techsupport@d-box.com](mailto:techsupport@d-box.com)

Visit us at: [www.d-box.com](http://www.d-box.com)

## TABLE DES MATIERES

INTRODUCTION .....	3
HARDWARE INTERFACE .....	3
TRANSMISSION FORMAT .....	3
PROTOCOL ORGANIZATION .....	4
COMMAND STRUCTURE .....	4
RESPONSE STRUCTURE .....	4
COMMAND SET .....	5
COMMAND: WMODE.....	5
COMMAND: WAUST.....	5
COMMAND: WVOLM .....	5
COMMAND: WVOLA, WVOLB, WVOLC, WVOLD, WVOLL .....	5
COMMAND: WSPCA, WSPCB, WSPCC, WSPCD, WSPCL .....	6
COMMAND: WMUTE .....	6
COMMAND: WDISA, WDISB, WDISC, WDISD .....	6
COMMAND: WLVUP .....	6
COMMAND: RCTL .....	7
COMMAND: RMODE .....	7
COMMAND: RAUST.....	7
COMMAND: RDGST .....	7
COMMAND: RFILM .....	7
COMMAND: RALVL .....	7
COMMAND: RVOLM.....	8
COMMAND: RVOLA, RVOLB, RVOLC, RVOLD, RVOLL .....	8
COMMAND: RSPCA, RCPCB, RSPCC, RSPCD, RSPCL .....	8
COMMAND: RMUTE .....	8
COMMAND: RFLNB.....	8

## INTRODUCTION

The RS-232 remote control communication protocol has been designed for a Series IV Motion Controller. Such a remote (with a serial port) can be a personal computer or a dedicated system such as those made by any automation devices with RS-232 capabilities.

The UDP and TCP IP remote control use the same command as the RS-232 with a Ethernet connexion. Such a remote can be a personal computer, a cell phone or a tablet with a UDP/TCP communication program.

## HARDWARE INTERFACE

The electrical interface is EIA232. The DB-9 pinout is the same as on a regular PC. Therefore connecting the Series IV Motion Controller from a standard PC requires a Null-Modem cable.

PIN	FUNCTION
1	Carrier Detect (unused)
2	Rx
3	Tx
4	Data Terminal Ready (unused)
5	Ground
6	Data Set Ready (unused)
7	Request to Send (unused)
8	Clear to send (unused)
9	Ring indicator (unused)

## TRANSMISSION FORMAT

The transmission format is as follows for RS232:

PARAMETER	VALUE
Configuration	Full-Duplex
Baud Rate	19200
Nb Data Bits	8
Parity	None
Nb Stop Bits	1
Flow Control	None

The configuration is as follows for UDP and TCP/IP communication:

PARAMETER	VALUE
TCP Port	Full-Duplex
IP address	IP of the Motion Controller (Motion controller Series IV-BD Guide)
UDP Write Port	61556
UDP Read Port	61557

## PROTOCOL ORGANIZATION

The remote control sends commands to which the Motion Controller responds.

There are four exception cases:

1. If the command is not well formed (not properly framed between terminators, separators missing, etc.), the Motion Controller will ignore the command and not respond at all.
2. If the command is well formed, but the command mnemonic is not recognized, then the Motion Controller sends back a NAK, instead of the normal ETX.
3. If parameters are missing or otherwise not recognized, then the Motion Controller assumes a default value for each missing parameter.
4. If too many parameters are sent, the extra parameters are simply ignored.

For many commands a simple acknowledgement is sent back. This is the case of all the WRITE commands. The remote control does not absolutely need to monitor the responses. However, it is the only way to make sure that the Motion Controller has processed the command.

## COMMAND STRUCTURE

Commands are structured as follows:

ELEMENT	VALUE / FORMAT	SEQUENCE	HYPERTERMINAL
Start of block	STX (02h)	ALT + 02	☺
End of block	ETX (03h)	ALT + 03	♥
Record separator	RS (1Eh)	ALT + 030	▲

The **KineLink Board No** represents the actual KineLink DSP board to which the command is addressed and is always used after the Start of block (STX). It is optional in the command message and if absent, it defaults to zero. KineLink DSP boards are numbered from 0 to N-1 (if your system has more than one).

Commands and parameters are separated by a *Record-Separator* ASCII code (1Eh). There is no need for a separator before the first parameter and after the last parameter (the *End-of-Block* code is sufficient after the last parameter). If a parameter is absent or not recognized, the Motion Controller assumes the default value and if too many parameters are passed, the extra parameters are ignored.

Commands are represented by a 5-character mnemonic. The first letter (R or W) indicates if the command is a READ command (the remote control requests information from the Motion Controller), or a WRITE command (the remote control sends a command or parameter to the Motion Controller).

## RESPONSE STRUCTURE

For a recognized command mnemonic, responses are structured as follows:

ELEMENT	VALUE / FORMAT	REQUIRED	HYPERTERMINAL
Parameter(s)	Command-Dependent	No	data
Separator	RS (1Eh)	No	▲
End of Block	ETX (03h)	Yes	♥

For an unrecognized command mnemonic, the Motion Controller sends back a single NAK:

ELEMENT	VALUE / FORMAT	REQUIRED	HYPERTERMINAL
Negative acknowledge	NAK (15h)	Yes	§

## COMMAND SET

The following information applies to all command settings:

- Characters between “[” and “]” represent optional elements.
- The 3 types of separators are represented as: <STX>, <RS> and <ETX>. They should be replaced by the corresponding characters in the command or response line.
- When used, parameters are symbolized as <Parameter>.

### COMMAND: WMODE

**FUNCTION:** Changes the operation mode of the Motion Controller.

**USAGE:** <STX> WMODE <RS> <Parameter> <ETX>

**PARAMETERS:**

- 0: Audio Mode
- 1: Program Mode
- 2: Demo Mode

*Note: The parameter defaults to 0 (Audio Mode) when absent.*

**NORMAL RESPONSE:** <ETX>

### COMMAND: WAUST

**FUNCTION:** Changes the audio setup of the Motion Controller.

**USAGE:** <STX> WAUST<RS> <Parameter> <ETX>

**PARAMETERS:**

- 0: Soft
- 1: Action
- 2: Sport
- 3: Game

*Note: The parameter defaults to 0 (Soft) when absent.*

**NORMAL RESPONSE:** <ETX>

### COMMAND: WVOLM

**FUNCTION:** Changes the master volume level.

**USAGE :** <STX> WVOLM <RS> <Parameter> <ETX>

**PARAMETERS:**

The volume is expressed in dB (decibels) and should be set between -60 (minimum) and 0 (maximum).

Valid examples are “-1”, “-12”, “-31.5”.

*Note: The parameter defaults to 0 (maximum) when absent.*

**NORMAL RESPONSE:** <ETX>

### COMMAND: WVOLA, WVOLB, WVOLC, WVOLD, WVOLL

**FUNCTION:** Changes the volume level of the specific KineLink platform (A to D), or the output line (L).

**USAGE :** <STX> WVOLA <RS> <Parameter> <ETX>

<STX> WVOLB <RS> <Parameter> <ETX>

<STX> WVOLC <RS> <Parameter> <ETX>

<STX> WVOLD <RS> <Parameter> <ETX>

<STX> WVOLL <RS> <Parameter> <ETX>

**PARAMETERS :**

The volume is expressed in dB (decibels) and should be set between -60 (minimum) and 0 (maximum).

Valid examples are “-1”, “-12”, “-31.5”.

**NORMAL RESPONSE :** <ETX>

## COMMAND: WSPCA, WSPCB, WSPCC, WSPCD, WSPCL

**FUNCTION:** Changes the spectral control of the specific KineLink platform (A to D), or the output line (L).

**USAGE :** <STX> WSPCA <RS> <Parameter> <ETX>  
<STX> WSPCB <RS> <Parameter> <ETX>  
<STX> WSPCC <RS> <Parameter> <ETX>  
<STX> WSPCD <RS> <Parameter> <ETX>  
<STX> WSPCL <RS> <Parameter> <ETX>

**PARAMETERS:** The spectral control is expressed in dB (decibels) and should be set between -20 and +20. The default value is 0, which represents a flat response. A positive value between 0 and 20 reduces the vibrations by the specified amount in dB (0 to 20dB). A negative value between -20 and 0 reduces the motions by the specified amount in dB (0 to 20 dB).

Valid examples are “-1”, “-12”, “-31.5”.

**NORMAL RESPONSE:** <ETX>

## COMMAND: WMUTE

**FUNCTION:** Activates or deactivates the mute function.

**USAGE :** <STX> WMUTE<RS> <Parameter> <ETX>

**PARAMETERS :**

- 0 : Mute is deactivated
- 1 : Mute is activated

*Note : The parameter defaults to 0 (mute deactivated) when absent.*

**NORMAL RESPONSE:** <ETX>

## COMMAND: WDISA, WDISB, WDISC, WDISD

**FUNCTION:** Disables or enables the specific KineLink platform (A to D).

**USAGE :** <STX> WDISA <RS> <Parameter> <ETX>  
<STX> WDISB <RS> <Parameter> <ETX>  
<STX> WDISC <RS> <Parameter> <ETX>  
<STX> WDISD <RS> <Parameter> <ETX>

**PARAMETERS :**

- 0 : Platform is enabled
- 1 : Platform is disabled

*Note : The parameter defaults to 0 (no-disable) when absent.*

**NORMAL RESPONSE:** <ETX>

## COMMAND: WLWUP

**FUNCTION:** Activates the Live-Update from the CD or network.

**USAGE :** <STX> WLWUP<RS> <Parameter> <ETX>

**PARAMETERS:**

- 0 : CD-Update
- 1 : Web-Update

*Note : The parameter defaults to 0 (CD-Update) when absent.*

**NORMAL RESPONSE:** <ETX>

## COMMAND: WSTOP, WENTER, WCANCEL, WLEFT, WRIGHT, WUP

**FUNCTION:** Simulation of the front panel buttons

**USAGE:** <STX> WSTOP <ETX>  
<STX> WENTER <ETX>  
<STX> WCANCEL <ETX>  
<STX> WLEFT <ETX>  
<STX> WRIGHT <ETX>  
<STX> WUP <ETX>

**PARAMETERS:** N/A

**NORMAL RESPONSE:** N/A

### COMMAND: RCTL

**FUNCTION:** Requests the number of KineLink control boards in the system.

**USAGE:** <STX> RCTL <ETX>

**NORMAL RESPONSE:** <parameter> <ETX>

### COMMAND: RMODE

**FUNCTION:** Requests the operation mode of the Motion Controller.

**USAGE:** <STX> RMODE<ETX>

**PARAMETERS:**

- 0 : Audio Mode
- 1 : Program Mode
- 2 : Demo Mode

**NORMAL RESPONSE:** <parameter> <ETX>

### COMMAND: RAUST

**FUNCTION:** Requests the audio setup of the Motion Controller.

**USAGE:** <STX> RAUST <ETX>

**PARAMETERS:**

- 0 : Soft
- 1 : Action
- 2 : Sport
- 3 : Game

**NORMAL RESPONSE:** <Parameter> <ETX>

### COMMAND: RDGST

**FUNCTION:** Requests the digital signal status of the particular KineLink DSP board.

**USAGE:** <STX> RDGST <ETX>

**PARAMETERS:**

Parameter A:

- 0: No Signal
- 1: Signal Lock

Parameter B:

- 0: No Format Detected
- 1: Format Detected

Parameter C:

- 0: No Sync to Movie
- 1: Movie Sync is found

Parameter D:

- Describes the recognized ASCII string format (for instance "AC3 5.1")

**NORMAL RESPONSE:** <Parameter A> <RS> <Parameter B> <RS> <Parameter C> <RS> <Parameter D> <ETX> . Valid example: 1▲0▲0▲ AC3 5.1▼

### COMMAND: RFILM

**FUNCTION:** Requests the name of the recognized movie.

**USAGE:** <STX> RFILM <ETX>

**PARAMETERS:** N/A

**NORMAL RESPONSE:** <Movie title><ETX>

This represents the title of the movie. It can also be "Searching...", or "No Movie Found". The ASCII string is empty when the Motion Controller is in audio or demo mode, or when no active digital signal is detected.

### COMMAND: RALVL

**FUNCTION:** Requests the level of the line input signal on the particular KineLink DSP board.

**USAGE:** <STX> RALVL <ETX>

**PARAMETERS:** N/A

**NORMAL RESPONSE:** <Level><ETX>

The level is expressed in dB (-60 minimum and 0 maximum). It is sent back with one digit after the decimal point (example "-25.7").

### COMMAND: RVOLM

**FUNCTION:** Requests the master volume level.

**USAGE:** <STX> RVOLM <ETX>

**PARAMETERS:** N/A

**NORMAL RESPONSE:** <Volume><ETX>

The volume is expressed in dB (-60 minimum and 0 maximum).

### COMMAND: RVOLA, RVOLB, RVOLC, RVOLD, RVOLL

**FUNCTION:** Requests the volume level of the specific KineLink platform (A to D), or the output line (L).

**USAGE:** <STX> RVOLA <ETX>

<STX> RVOLB <ETX>

<STX> RVOLC <ETX>

<STX> RVOLD <ETX>

<STX> RVOLL <ETX>

**PARAMETERS:** N/A

**NORMAL RESPONSE:** <Volume><ETX>

The volume is expressed in dB (-60 minimum and 0 maximum).

### COMMAND: RSPCA, RCPCB, RSPCC, RSPCD, RSPCL

**FUNCTION:** Requests the value of the spectral control for a specific KineLink platform (A to D), or the output line (L).

**USAGE:** <STX> RSPCA <ETX>

<STX> RCPCB <ETX>

<STX> RSPCC <ETX>

<STX> RSPCD <ETX>

<STX> RSPCL <ETX>

**PARAMETERS:** N/A

**NORMAL RESPONSE:** <Spectral control><ETX>

The spectral control is expressed in dB. It is between -20 and +20. The default value is 0, which represents a flat response. A positive value between 0 and 20 reduces the vibrations by the specified amount in dB (0 to 20 dB). A negative value between -20 and 0 reduces the motions by the specified amount in dB (0 to 20 dB).

### COMMAND: RMUTE

**FUNCTION:** Requests the setting of the mute control.

**USAGE:** <STX> RMUTE <ETX>

**PARAMETERS:**

- 0: Mute is deactivated
- 1: Mute is activated

**NORMAL RESPONSE:** <Parameter> <ETX>

### COMMAND: RFLNB

**FUNCTION:** Requests the number of films in the database starting with the specified character.

**USAGE:** <STX> RFLNB <RS> <Parameter> <ETX>

**PARAMETERS:**

- "\*" : All titles in the list.
- "#" : Titles beginning with a number.
- "A-Z" : Titles beginning with a specific letter.

Valid example: <STX> RFLNB <RS> <A> <ETX>

*Note: The parameter defaults to "\*" (All titles) when absent.*

**NORMAL RESPONSE:** <Parameter> <ETX> representing the number of titles starting with the specified parameter in the database.