

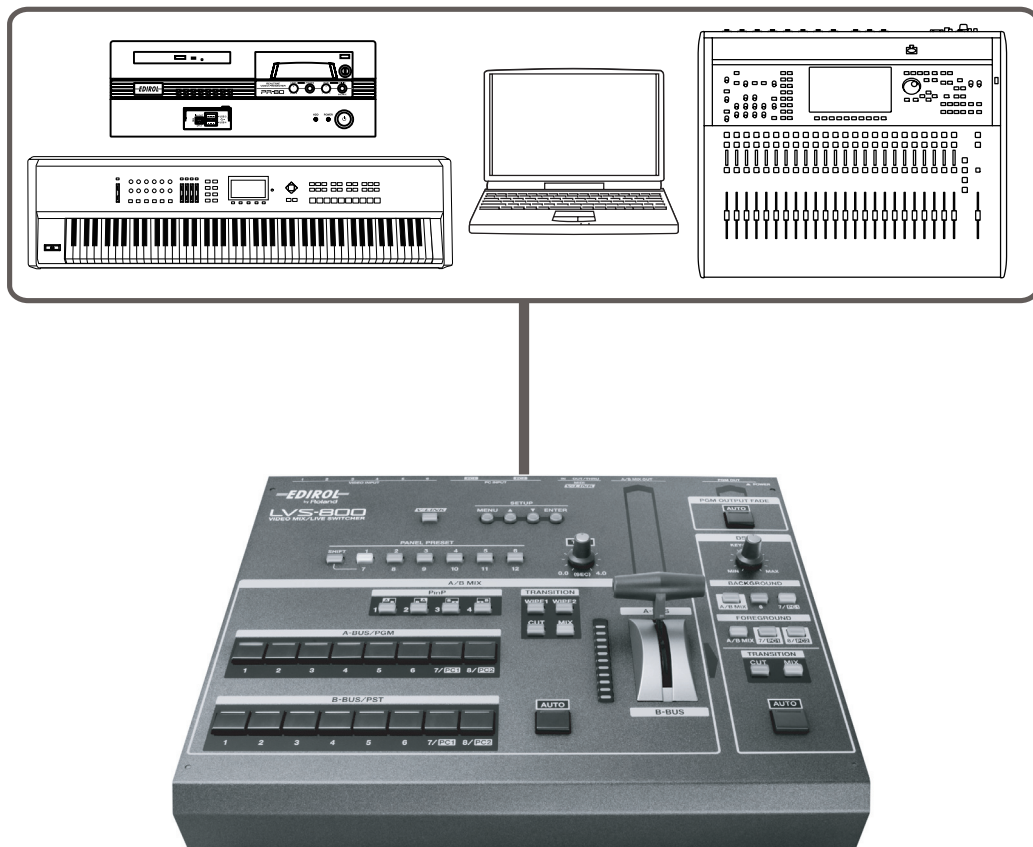
LVS-800

VIDEO MIX/LIVE SWITCHER

REMOTE CONTROL

Owner's Manual

This document describes various settings to remotely control the LVS-800 via V-LINK/MIDI and RS-232C. The LVS-800 can receive remote control commands from Roland's Musical Instruments, Music Production Devices, Video Presenters (PR series), touch panel devices and computers. The LVS-800 can also remotely control RSS V-Mixer.



Copyright © 2009 ROLAND CORPORATION

All rights reserved. No part of this publication may be reproduced in any form without the written permission of ROLAND CORPORATION.

Contents

Connecting Peripheral Devices	3
Connecting V-LINK/MIDI devices	3
Connecting Musical Instrument or Music Production Device	3
Connecting PR Series Video Presenter	3
Connecting to a RSS V-Mixer.....	3
Connecting with RS-232C devices	4
Things You Can Do with Remote Control.....	5
Control from V-LINK/MIDI devices (slave operation).....	5
Control from RS-232C devices (slave operation)	5
Control the RSS V-Mixer (master operation)	5
MIDI Implementation	6
1. MIDI messages received at MIDI IN	6
Channel Voice Message.....	6
System realtime messages	7
System Exclusive Message.....	8
2. MIDI messages transmitted from MIDI Out	8
Channel Voice message.....	8
3. Parameter Address Map	10
3-1. V-LINK Slave (Model ID = 00H 51H).....	10
3-2. V-LINK master (Model ID=00H 51H).....	11
4. Appendices	12
Decimal and hexadecimal conversion table	12
Examples of MIDI messages.....	12
Exclusive message examples and checksum calculation	12
Settings Transmitted/Received	
Using MIDI.....	13
Factory Setting of V-LINK.....	13
MIDI Implementation Chart	14
RS-232C Command Reference	15

Connecting Peripheral Devices

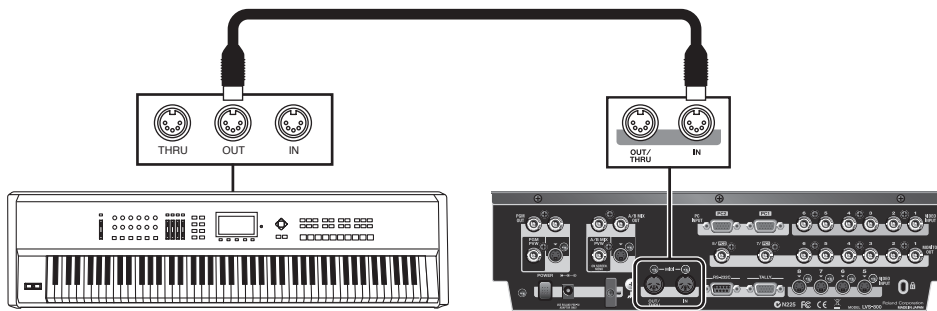
Connecting V-LINK/MIDI devices

Use MIDI IN and MIDI OUT/THRU connectors to connect a V-LINK compatible device or MIDI device.

Connecting Musical Instrument or Music Production Device

The LVS-800 receives the remote control commands (slave operation).

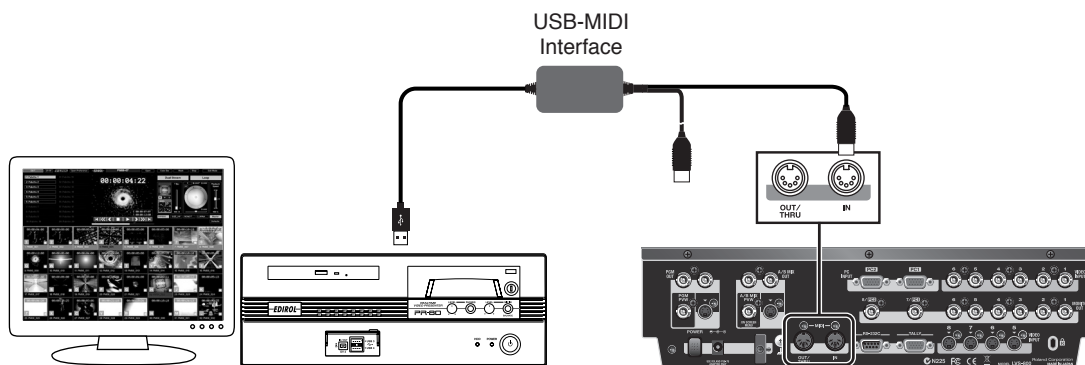
Connect the LVS-800's MIDI IN connector with MIDI OUT connector of Musical Instrument or Music Production Device.



Connecting PR Series Video Presenter

The LVS-800 can be controlled remotely by the EDIROL PR series of Video Presenters. (slave operation).

When you connect PR Series Video Presenter, USB-MIDI Interface like Cakewalk's or Edirol's UM series. Connect the LVS-800's MIDI IN connector with the MIDI OUT port of the USB-MIDI Interface.

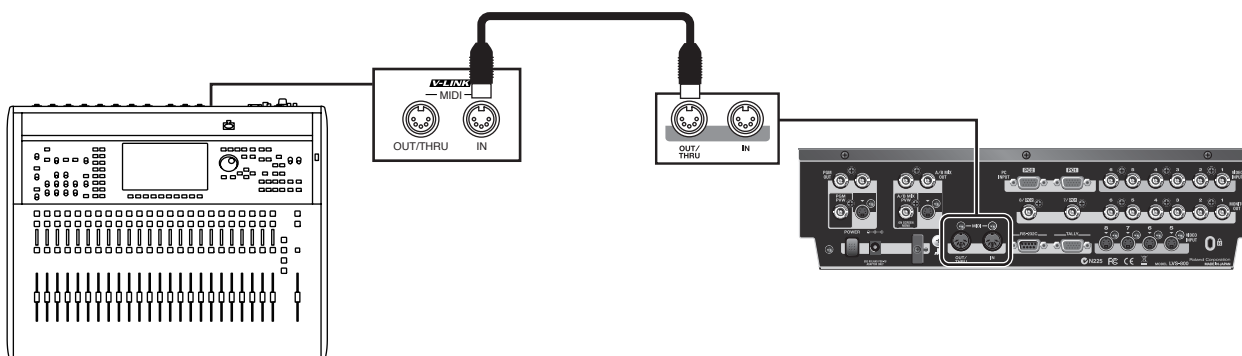


Connecting to a RSS V-Mixer

The LVS-800 can also transmit the remote control commands (master operation).

Connect LVS-800's MIDI OUT/THRU connector with the MIDI IN connector of the V-Mixer.

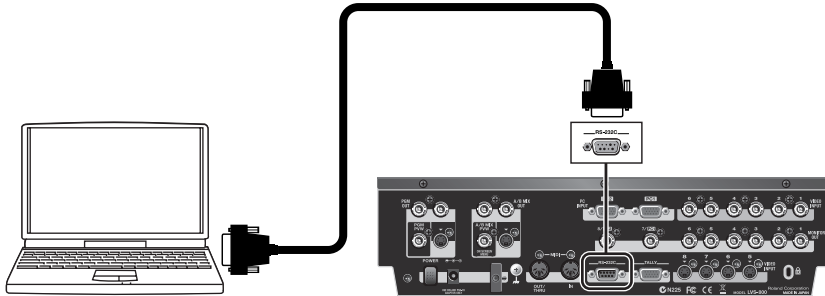
* You must switch MIDI Thru to MIDI Out. Select [Out] in [MIDI Out/Thru Switch] in the LVS-800 MIDI SETUP menu.



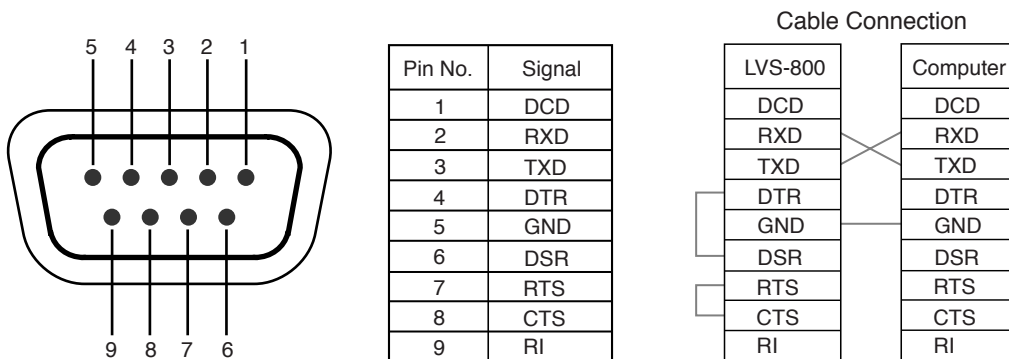
Connecting with RS-232C devices

The LVS-800 can receive remote control commands via RS-232C (slave operation).

Connect your RS-232C device (computer, touch panel device, etc.) to the LVS-800's RS-232C connector.



Here is the pin assignment of the LVS-800's RS-232C connector. Since the RS-232C connector is male, use a female plug on your crossover (or "null modem") cable when connecting from computer or similar RS-232C device.



Specifications of RS-232C connector

- Transmission Format: Start-stop synchronization (asynchronous), full duplex
- Transmission Rate: 9600 bps
- Parity: None
- Data Length: 8 bits
- Stop Bit Length: 1 bit
- Encoding: ASCII
- Flow Control: XON/XOFF

Things You Can Do with Remote Control

Control from V-LINK/MIDI devices (slave operation)

- Selection of input channels on A Bus and B Bus.
- Selection of DSK Foreground and Background channels.
- Controlling the Video Fader.
- Other operations controlled by the top panel buttons and dials.
- Seamless switching of playback video and live video if connected with PR-50/80.

MEMO

The V-LINK feature provides a quick and simple way to establish a link with a Roland musical instrument, music-production device or PR series Video Presenter. If you connect the LVS-800 with a V-LINK compatible device, you do not need to perform detailed setup for remote control. The V-LINK button on LVS-800 lights up when the V-LINK switch of the connected master device is turned on.

NOTE

The MIDI device ID of the LVS-800 must match the MIDI Device ID of connected master device when you perform V-LINK connection.

Control from RS-232C devices (slave operation)

- Selection of input channels on A Bus and B Bus.
- Selection of DSK Foreground and Background channels.
- Controlling the Video Fader.

Control the RSS V-Mixer (master operation)

You can control the fader levels of audio sources being sent to your V-Mixer so as audio changes coincide with video changes ("audio-follows-video").

The faders of your RSS V-Mixer will follow your switching and mixing operations on LVS-800.

This will automate the audio mixer operation when you handle multiple video sources that have audio outputs.

NOTE

You can remotely control faders of an RSS V-Mixer from the LVS-800 but you cannot control other dials/buttons.

NOTE

The MIDI device ID of LVS-800 and RSS V-Mixer must match.

MIDI Implementation

Model: LVS-800 Version: 1.00 Date: July. 31. 2009

Symbol	Item	Setting range
n:	MIDI channel	0H-FH(ch.1 - ch.16)
vv:	Control value	00H-7FH(0 - 127)
xx:	Switch on and off	00H-3FH(0 - 63):OFF 40H-7FH(64 - 127):ON

1. MIDI messages received at MIDI IN

* If MIDI Thru is ON, MIDI messages received at MIDI IN will be retransmitted without change from MIDI OUT.

Channel Voice Message

Control Change

* By making settings in MIDI Setup, you can use these messages to control a wide variety of things. The control changes that can be used are CC#1-5, 7-31 and 64-95.

Bank Select (controller numbers 0, 32)

Status	2nd Byte	3rd Byte
BnH	00H	mmH
BnH	20H	lIH

mm,lI=bank number : 00 00H - 7F 7FH (bank.1 - bank.16384)

* Processing of a Bank Select message is suspended until subsequent Program Change is received.

* Bank Select data that is received will be maintained until subsequent Bank Select is received.

* This selects the input for each channel.

Controls correspond to bank select messages as follows.

Bank Select MSB LSB	Program No.	Control
00H 00H (bank.1)	00H - 07H	A-BUS.INPUT 1 - 8
01H 00H (bank.129)	00H - 07H	B-BUS.INPUT 1 - 8
02H 00H (bank.257)	00H - 02H	BACKGROOUND A/B MIX, 6, 7/PC1
03H 00H (bank.385)	00H - 02H	FOREGROOUND A/B MIX, 7/PC1, 8/PC2

* A Bus and B Bus controls will be switched when operated in LVS mode.

Modulation (controller number 1)

Status	2nd byte	3rd byte
BnH	01H	vvH

Breath-type (controller number 2)

Status	2nd byte	3rd byte
BnH	02H	vvH

Foot-type (controller number 4)

Status	2nd byte	3rd byte
BnH	04H	vvH

Portamento Time (controller number 5)

Status	2nd byte	3rd byte
BnH	05H	vvH

Volume (controller number 7)

Status	2nd byte	3rd byte
BnH	07H	vvH

Balance (controller number 8)

Status	2nd byte	3rd byte
BnH	08H	vvH

Panpot (controller number 10)

Status	2nd byte	3rd byte
BnH	0AH	vvH

Expression (controller number 11)

Status	2nd byte	3rd byte
BnH	0BH	vvH

Effect Control 1 (controller number 12)

Status	2nd byte	3rd byte
BnH	0CH	vvH

Effect Control 2 (controller number 13)

Status	2nd byte	3rd byte
BnH	0DH	vvH

**General Purpose Controllers 1-4
(controller numbers 16-19)**

Status	2nd byte	3rd byte
BnH	10H-13H	vvH

Hold 1 (controller number 64)

Status	2nd byte	3rd byte
BnH	40H	xxH

Portamento (controller number 65)

Status	2nd byte	3rd byte
BnH	41H	xxH

Sostenuto (controller number 66)

Status	2nd byte	3rd byte
BnH	42H	xxH

Soft (controller number 67)

Status	2nd byte	3rd byte
BnH	43H	xxH

Legato (controller number 68)

Status	2nd byte	3rd byte
BnH	44H	xxH

Hold 2 (controller number 69)

Status	2nd byte	3rd byte
BnH	45H	xxH

Sound Controllers 1-10 (controller numbers 70-79)

Status	2nd byte	3rd byte
BnH	46-4FH	vvH

**General Purpose Controllers 5-8
(controller numbers 80-83)**

Status	2nd byte	3rd byte
BnH	50-53FH	vvH

Portamento Control (controller number 84)

Status	2nd byte	3rd byte
BnH	54H	vvH

Effect Depth 2-5 (controller numbers 92-95)

Status	2nd byte	3rd byte
BnH	5C-5FH	vvH

Program Change

Status	2nd byte
CnH	ppH

pp=program number : 00H - 7FH (prog.1 - prog.128)

* This selects the input channels, For more details, refer to the Bank Select parameters.

* If a non-selectable Program Change is received, it will be ignored.

Channel Pressure

Status	2nd byte
DnH	vvH

* Just as for Control Change messages, you can make settings in MIDI Setup to use Channel Pressure message to control wide variety of things.

Pitch Bend Change

Status	2nd byte	3rd byte
EnH	llH	mmH

mm,ll= pitch bend value : 00 00H - 40 00H - 7F 7FH (-8192 - 0 - +8191)

* Just as for Control Change messages, you can make settings in MIDI Setup to use Pitch Bend Change message to control wide variety of things.

System realtime messages**Active Sensing**

Status
FEH

* Once an Active Sensing message is received, the system will start monitoring the interval between all subsequent messages. If there is an interval of approximately 400 ms or longer between messages while monitoring, the system will perform reception error process and will stop then stop monitoring the message interval.

System Exclusive Message

Status	Data Byte	Status
F0H	41H, dev, 00H, 51H, 12H, aaH, bbH, ccH, ddH, ..., eeH, sum	F7H
Byte	Explanation	
F0H	Exclusive Status	
41H	ID number (Roland)	
dev	Device ID (dev:00H-1FH, 7FH, factory setting is 10H, 7FH or Broadcast)	
00H	Upper byte of model ID (V-LINK message)	
51H	Lower byte of model ID (V-LINK message)	
12H	Command ID (DT1)	
aaH	Upper byte of address	
bbH	Address	
ccH	Address	
ddH	Data : the actual data to be transmitted. Multi-byte data is transmitted in the order of address.	
:	:	
eeH	Data	
sum	Checksum	
F7H	EOX (end of exclusive)	

- * For details on setting address, size and checksum, refer to the "Exclusive message examples" (p.12).
- * Data exceeding 256 bytes must be divided into packets of 256 bytes or smaller for transmission. If a subsequent "Data Set 1" message is transmitted, and interval of 20 ms or longer must be left between packets.

2. MIDI messages transmitted from MIDI Out

- * If MIDI Thru is ON, MIDI messages received at MIDI IN are re-transmitted without change from MIDI OUT.
- * If MIDI Thru is ON, message from the LVS-800 itself will not be transmitted.

Channel Voice message

Control Change

- * The message assigned in MIDI Setup will be transmitted when you operate the panel. The control changes that can be used are CC#1 - 5, 7-31 and 64-95.

Bank Select (controller numbers 0, 32)

Status	2nd byte	3rd byte
BnH	00H	mmH
BnH	20H	llH

mm,ll=Bank number : 00 00H - 7F 7FH (bank.1 - bank.16384)

- * Sent in combination with Program Change message when an input selection is made.
- * The following controls correspond to each Bank Select message.

Bank Select MSB LSB	Program No.	Control
00H 00H (bank.1)	00H - 07H	A-BUS.INPUT 1 - 8
01H 00H (bank.129)	00H - 07H	B-BUS.INPUT 1 - 8
02H 00H (bank.257)	00H - 02H	BACKGROOUND A/B MIX, 6, 7/PC1
03H 00H (bank.385)	00H - 02H	FOREGROOUND A/B MIX, 7/PC1, 8/PC2

- * A Bus and B Bus controls will be switched when operated in LVS mode.

Modulation (controller number 1)

Status	2nd byte	3rd byte
BnH	01H	vvH

Breath-type (controller number 2)

Status	2nd byte	3rd byte
BnH	02H	vvH

Foot-type (controller number 4)

Status	2nd byte	3rd byte
BnH	04H	vvH

Portamento Time (controller number 5)

Status	2nd byte	3rd byte
BnH	05H	vvH

Volume (controller number 7)

Status	2nd byte	3rd byte
BnH	07H	vvH

Balance (controller number 8)

Status	2nd byte	3rd byte
BnH	08H	vvH

Panpot (controller number 10)

Status	2nd byte	3rd byte
BnH	0AH	vvH

Expression (controller number 11)

Status	2nd byte	3rd byte
BnH	0BH	vvH

Effect Control 1 (controller number 12)

Status	2nd byte	3rd byte
BnH	0CH	vvH

Effect Control 2 (controller number 13)

Status	2nd byte	3rd byte
BnH	0DH	vvH

**General Purpose Controllers 1-4
(controller numbers 16-19)**

Status	2nd byte	3rd byte
BnH	10H-13H	vvH

Hold 1 (controller number 64)

Status	2nd byte	3rd byte
BnH	40H	xxH

Portamento (controller number 65)

Status	2nd byte	3rd byte
BnH	41H	xxH

Sostenuto (controller number 66)

Status	2nd byte	3rd byte
BnH	42H	xxH

Soft (controller number 67)

Status	2nd byte	3rd byte
BnH	43H	xxH

Legato (controller number 68)

Status	2nd byte	3rd byte
BnH	44H	xxH

Hold 2 (controller number 69)

Status	2nd byte	3rd byte
BnH	45H	xxH

Sound Controllers 1-10 (controller numbers 70-79)

Status	2nd byte	3rd byte
BnH	46-4FH	vvH

**General Purpose Controllers 5-8
(controller numbers 80-83)**

Status	2nd byte	3rd byte
BnH	50-53FH	vvH

Portamento Control (controller number 84)

Status	2nd byte	3rd byte
BnH	54H	vvH

Effect Depth 2-5 (controller numbers 92-95)

Status	2nd byte	3rd byte
BnH	5C-5FH	vvH

Program Change

Status	2nd byte
CnH	ppH

pp=program number : 00H - 7FH (prog.1 - prog.128)

* Sent in combination with Bank Select message when an input selection is made.

Channel Pressure

Status	2nd byte
DnH	vvH

* Just as for Control Changes, the messages assigned in MIDI Setup will be transmitted when you operate the panel.

Pitch Bend Change

Status	2nd byte	3rd byte
EnH	llH	mmH

mm,ll=pitch bend value : 00 00H - 40 00H - 7F 7FH
(-8192 - 0 - +8191)

* Just as for Control Changes, the messages assigned in MIDI Setup will be transmitted when you operate the panel.

Data Set1 (DT1)

This is the message that transfers actual data, and is used to specify data for a device.

Status	Data bytes	Status
F0H	41H, dev, 00H, 51H, 12H, aaH, bbH, cCH, ddH, ..., eeH, sum	F7H

Byte	Explanation
F0H	Exclusive Status
41H	ID number (Roland)
dev	Device ID (dev:00H-1FH, 7FH, factory setting is 10H, 7FH or Broadcast)
00H	Upper byte of model ID (V-LINK message)
51H	Lower byte of model ID (V-LINK message)
12H	Command ID (DT1)
aaH	Upper byte of address
bbH	Address
cCH	Address
ddH	Data : the actual data to be transmitted. Multi-byte data is transmitted in the order of address.
:	:
eeH	Data
sum	Checksum
F7H	EOX (end of exclusive)

* For details on setting address, size and checksum, refer to the "Exclusive message examples" (p.12).

* Data exceeding 256 bytes must be divided into packets of 256 bytes or smaller for transmission. If a subsequent "Data Set 1" message is transmitted, and interval of 20 ms or longer must be left between packets.

3. Parameter Address Map

3-1. V-LINK Slave (Model ID = 00H 51H)

* Addresses marked with # are sent as two bytes ; an upper nibble (upper 4 bits) and lower nibble (lower 4 bits).

Examples) If the original data is BCH, 0BH is transmitted as the first byte.

The next byte transmitted is 0CH. For reception, this is ignored if two bytes are not received together.

* If --- os shown in the value field, the LVS-800 does not have a corresponding parameter. This will be ignored if received.

Start Address	Description
10H 00H 00H	V-LINK System Preference Area (See 3-2-1)
10H 10H 00H	V-LINK Clip Control Assignment Area (See 3-2-2)
10H 20H 00H	V-LINK Color Control Assignment Area (See 3-2-3)
10H 30H 00H	V-LINK Clip Control Preference Area (See 3-2-4)

3-1-1. System Preference

Address	Parameter Name	Sys.Ex.Value	Meaning of Value
10H 00H 00H	V-LINK Enabled	00H - 01H	OFF, ON
10H 00H 01H	V-LINK MIDI Rx Channel (Clip)	00H - 0FH	1 - 16 Ch.
10H 00H 02H	V-LINK MIDI Rx Channel (Color)	---	---
10H 00H 03H	V-LINK Note Message Enabled	---	---
10H 00H 04H	V-LINK Fast Control Enabled	---	---
10H 00H 05H	V-LINK MMC Control Mode	---	---
10H 00H 06H	V-LINK MTC Control Mode	---	---
10H 00H 07H	V-LINK Auto Mix Mode	00H - 01H	LVS Mode: OFF, ON

3-1-2. Clip Control Assignment

Address	Parameter Name	Sys.Ex.Value	Meaning of Value
#10H 10H 00H	V-LINK Rx Setting (Playback Speed)	---	---
#10H 10H 02H	V-LINK Rx Setting (Dissolve Time)	---	---
#10H 10H 04H	V-LINK Rx Setting (Audio Level)	---	---
#10H 10H 06H	V-LINK Rx Setting (T-Bar Control)	01H-05H,07H-1FH, 40H-5FH,D0H,E0H,FFH	Video Fader: Control Change, Channel Press, Pitch Bend, OFF
#10H 10H 08H	V-LINK Rx Setting (Dual Stream)	---	---
#10H 10H 0AH	V-LINK Reserved	---	---
#10H 10H 0CH	V-LINK Reserved	---	---
#10H 10H 0EH	V-LINK Reserved	---	---
#10H 10H 10H	V-LINK Rx Setting (Transition Select)	01H-05H,07H-1FH, 40H-5FH,D0H,E0H,FFH	Control Change, Channel Press, Pitch Bend, OFF
#10H 10H 12H	V-LINK Rx Setting (Transformer A)	---	---
#10H 10H 14H	V-LINK Rx Setting (Transformer B)	---	---
#10H 10H 16H	V-LINK Rx Setting (BPM Sync)	---	---

3-1-3. Color Control Assignment

Address	Parameter Name	Sys.Ex.Value	Meaning of Value
#10H 20H 00H	V-LINK Rx Setting (Color Cb)	---	---
#10H 20H 02H	V-LINK Rx Setting (Color Cr)	---	---
#10H 20H 04H	V-LINK Rx Setting (Brightness)	---	---
#10H 20H 06H	V-LINK Rx Setting (VFX A 1)	---	---
#10H 20H 08H	V-LINK Rx Setting (VFX A 2)	---	---
#10H 20H 0AH	V-LINK Rx Setting (VFX A 3)	---	---
#10H 20H 0CH	V-LINK Rx Setting (VFX A 4)	---	---
#10H 20H 0EH	V-LINK Reserved	---	---
#10H 20H 10H	V-LINK Reserved	---	---
#10H 20H 12H	V-LINK Reserved	---	---
#10H 20H 14H	V-LINK Reserved	---	---
#10H 20H 16H	V-LINK Rx Setting (VFX B 1)	---	---
#10H 20H 18H	V-LINK Rx Setting (VFX B 2)	---	---
#10H 20H 1AH	V-LINK Rx Setting (VFX B 3)	---	---
#10H 20H 1CH	V-LINK Rx Setting (VFX B 4)	---	---
#10H 20H 1EH	V-LINK Reserved	---	---
#10H 20H 20H	V-LINK Rx Setting (Output Fader)	01H-05H,07H-1FH, 40H-5FH,D0H,E0H,FFH	Output: Control Change, Channel Press, Pitch Bend, OFF

3-2. V-LINK master (Model ID=00H 51H)

* These messages marked with “#” are transmitted as two bytes, with the data divided into upper byte (upper 3 bits) and lower byte (lower 7 bits).

Example) If the original data is 028AH, a value of 05H is transmitted as the first byte. A value of 0AH is transmitted as the second byte.

* If --- is shown in the value field, the LVS-800 does not have corresponding parameter.

Start Address	Description
10H 00H 00H	V-LINK System Common Preference Area
20H 00H 00H	V-LINK Video System Preference Area
20H 20H 00H	V-LINK Audio Mixer Parameter Area

3-2-1 System Common Preference Area

Address	Parameter Name	Sys.Ex.Value	Meaning of Value
10H 00H 00H	V-LINK Enabled	00H - 01H	OFF, ON
10H 00H 01H	V-LINK MIDI Rx Channel (Clip)	---	---
10H 00H 02H	V-LINK MIDI Rx Channel (Color)	---	---
10H 00H 03H	V-LINK Note Message Enabled	---	---
10H 00H 04H	V-LINK Fast Control Enabled	---	---
10H 00H 05H	V-LINK MMC Control Mode	---	---
10H 00H 06H	V-LINK MTC Control Mode	---	---
10H 00H 07H	V-LINK Auto Mix Mode	---	---

3-2-2 Video System Preference Area

Address	Parameter Name	Sys.Ex.Value	Meaning of Value
20H 00H 00H	V-LINK Number of Video Mixer Inputs	---	---

3-2-3 Audio Mixer Parameter Area

Address	Parameter Name	Sys.Ex.Value	Meaning of Value
#20H 20H 00H	V-LINK Audio Mixer Master Level	0000H-0768H	Level 0.0 - 100.0%
#20H 21H 00H	V-LINK Audio Mixer Channel1 Level	0000H-0768H	Level 0.0 - 100.0%
#20H 21H 02H	V-LINK Audio Mixer Channel2 Level	0000H-0768H	Level 0.0 - 100.0%
#20H 21H 04H	V-LINK Audio Mixer Channel3 Level	0000H-0768H	Level 0.0 - 100.0%
#20H 21H 06H	V-LINK Audio Mixer Channel4 Level	0000H-0768H	Level 0.0 - 100.0%
#20H 21H 08H	V-LINK Audio Mixer Channel5 Level	0000H-0768H	Level 0.0 - 100.0%
#20H 21H 0AH	V-LINK Audio Mixer Channel6 Level	0000H-0768H	Level 0.0 - 100.0%
#20H 21H 0CH	V-LINK Audio Mixer Channel7 Level	0000H-0768H	Level 0.0 - 100.0%
#20H 21H 0EH	V-LINK Audio Mixer Channel8 Level	0000H-0768H	Level 0.0 - 100.0%

4. Appendices

Decimal and hexadecimal conversion table

(The letter “H” follows numbers in hexadecimal notation.)
 MIDI uses hexadecimal notation in 7-bit units to indicate data values, addresses and sizes within an exclusive message. Hexadecimal and decimal numbers correspond as follows.

Deci	Hexa	Deci	Hexa	Deci	Hexa	Deci	Hexa
0	00H	32	20H	64	40H	96	60H
1	01H	33	21H	65	41H	97	61H
2	02H	34	22H	66	42H	98	62H
3	03H	35	23H	67	43H	99	63H
4	04H	36	24H	68	44H	100	64H
5	05H	37	25H	69	45H	101	65H
6	06H	38	26H	70	46H	102	66H
7	07H	39	27H	71	47H	103	67H
8	08H	40	28H	72	48H	104	68H
9	09H	41	29H	73	49H	105	69H
10	0AH	42	2AH	74	4AH	106	6AH
11	0BH	43	2BH	75	4BH	107	6BH
12	0CH	44	2CH	76	4CH	108	6CH
13	0DH	45	2DH	77	4DH	109	6DH
14	0EH	46	2EH	78	4EH	110	6EH
15	0FH	47	2FH	79	4FH	111	6FH
16	10H	48	30H	80	50H	112	70H
17	11H	49	31H	81	51H	113	71H
18	12H	50	32H	82	52H	114	72H
19	13H	51	33H	83	53H	115	73H
20	14H	52	34H	84	54H	116	74H
21	15H	53	35H	85	55H	117	75H
22	16H	54	36H	86	56H	118	76H
23	17H	55	37H	87	57H	119	77H
24	18H	56	38H	88	58H	120	78H
25	19H	57	39H	89	59H	121	79H
26	1AH	58	3AH	90	5AH	122	7AH
27	1BH	59	3BH	91	5BH	123	7BH
28	1CH	60	3CH	92	5CH	124	7CH
29	1DH	61	3DH	93	5DH	125	7DH
30	1EH	62	3EH	94	5EH	126	7EH
31	1FH	63	3FH	95	5FH	127	7FH

- * Decimal expressions used for MIDI channel, bank select and program change are 1 greater than the decimal value shown on above table.
- * Hexadecimal values in 7-bit units can express a maximum of 128 levels in one byte data. If the data requires greater resolution, two or more bytes are used. For example, a value indicated by a hexadecimal expression in two 7-bits bytes Ågaa x 128 + bbÅh.

<Example 1> What is the decimal equivalent of 5AH ?
 From the above table, 5AH=90.

<Example 2> What is the decimal expression of the hexadecimal expression in two 7-bit bytes Åg12H 34HÅh ?
 From the above table, 12H=18 and 34H =52.
 Thus, 18 x 128 + 52 = 2356.

Examples of MIDI messages

<Example 1> CEH 49H
 CnH is the Program Change status, and n is the MIDI channel number.
 EH = 14, and 49H = 73. Thus, this is a Program Change message of MIDI CH= 15, program number 74 (in the GS sound map, Flute).

<Example 2> EAH 00H 28H
 EnH is the Pitch Bend Change status, and n is the MIDI channel number.
 The second byte (00H=0) is the lower byte of the pitch bend value, and the third byte (28H=40) is the upper byte. Since the pitch bend value is a signed value with 40H 00H (= 64 x 128 + 0 = 8192) corresponding to 0, the pitch bend value in this case is:

$$28H\ 00H - 40H\ 00H = 40 \times 128 + 0 - (64 \times 128 + 0) = 5120 - 8182 = -3072$$

If the Pitch Bend Sensitivity is set to two semitones, a pitch change of -8192 (00H 00H) would change the pitch by -200 cents, so in this case, a pitch bend of $-200 \times (-3072) / (-8192) = -75$ cents is being designated on MIDI channel 11.

Exclusive message examples and checksum calculation

Roland exclusive messages (RQ1, DT1) contain a checksum following the data (after F7), which can be used to check whether the message was received correctly. The checksum value is derived from the address and data (or size) of the transmitted exclusive message.

Calculating the checksum

(‘H’ is appended to hexadecimal numbers)

The checksum is a value that produces a lower 7 bits of zero when the address, size, and checksum itself are summed. If the exclusive message to be transmitted has an address of aaH bbH ccH and the data is ddH eeH, the actual calculation would be as follows:

$$\begin{aligned} aa + bb + cc + dd + ee &= \text{sum} \\ \text{sum} / 128 &= \text{quotient} \cdot \cdot \cdot \text{remainder} \\ 128 - \text{remainder} &= \text{checksum} \end{aligned}$$

<Example>
 Assigning Modulation as the control change that controls the transition effect time for the “Video Fader” of Tx/Rx Setting.

From the “Parameter address map,” the “Video Fader” of Tx/Rx Setting has a start address of 01H 10H 0CH, and the Modulation control change has a parameter value 00H 01H. Thus,

F0H 41H 10H 00H 51H 12H 10H 10H 06H 00H 01H ??H F7H
 (1) (2) (3) (4) (5) (6) (7) (8) (9)

- (1) Exclusive status (2) ID number (Roland) (3) Device ID (17)
- (4) Model ID (V-LINK) (5) Command ID (DT1) (6) Address
- (7) Data (8) Checksum (9) EOX

Next, we calculate the checksum.
 10H + 10H + 06H + 00H + 01H = 16 + 16 + 6 + 0 + 1 = 39 (sum)
 39 (sum) / 128 = 0 (quotient) 39 (remainder)
 Checksum = 128 - 39 (remainder) = 89 = 59H
 Thus, the message to be transmitted is
 F0H 41H 10H 00H 51H 12H 10H 10H 06H 00H 01H 59H F7H.

Settings Transmitted/Received Using MIDI

MIDI Channel

This sets the LVS-800's MIDI transmission and receiving channel.
The factory default setting is 1.

MIDI Out/Thru Switch

This sets the MIDI OUT/THRU connector function.
The factory default setting is Thru.

Device ID

This sets the ID for distinguishing devices when System Exclusive messages are received.
The factory default setting is 0x10.

Input A-Bus Assign

This controls the A Bus INPUT SELECT buttons.
The factory default setting is CC00 + CC32 + PC.

Input B-Bus Assign

This controls the B Bus INPUT SELECT buttons.
The factory default setting is CC00 + CC32 + PC.

Video Fader Assign

Controls the VIDEO FADER.
The factory default setting is CC#11.

A/B Transition Assign

This selects the TRANSITION type.
With the factory settings this is unassigned.
Values are 0-3, corresponding to the CUT, MIX, WIPE1, WIPE2.

PinP Assign

This selects the PinP type.
With the factory settings this is unassigned.
Values are 0-4, corresponding to the OFF, PinP1 ON, PinP2 ON, PinP3 ON, PinP4 ON.

DSK Background Assign

This controls the DSK Background buttons.
The factory default setting is CC00 + CC32 + PC*.

DSK Foreground Assign

This controls the DSK Foreground buttons.
The factory default setting is CC00 + CC32 + PC*.

DSK Transition Assign

This selects the DSK transition.
With the factory settings this is unassigned.
Values are 0-1, corresponding to the CUT, MIX.

DSK Key Level Assign

This controls the DSK key level.
The factory default setting is OFF.
Values are 0-127, corresponding to key level 0% - 100%.

PGM Output Fade Assign

This controls the PGM Output Fade.
The factory default setting is OFF.
Values are 0-127, corresponding to Fade 0% - 100%.

Transition Time Assign

This controls the Transition Time.
The factory default setting is CC#7 (volume).
Values are 0-127, corresponding to 0.0 sec - 4.0 sec.

Panel Preset Assign

This selects number of the Panel Preset.
With the factory settings this is unassigned.
Values are 0-11, corresponding Panel Preset 1 - 12.

Factory Setting of V-LINK

The factory setting of V-LINK (receipt of V-LINK ON message only) is as follows.

Parameter	Assign	Value
MIDI Channel	-	1
Input A-BUS Assign	CC00 + CC32 + PC*	Maintain Status
Input B-BUS Assign	CC00 + CC32 + PC*	Maintain Status
Video Fader Assign	CC#11(Expression)	Maintain Status
A / B Transition Assign	OFF	Maintain Status
PinP Assign	OFF	Maintain Status
DSK Background Assign	CC00 + CC32 + PC*	Maintain Status
DSK Foreground Assign	CC00 + CC32 + PC*	Maintain Status
DSK Fader Assign	OFF	Maintain Status
DSK Transition Assign	OFF	Maintain Status
DSK Key Level Assign	OFF	Maintain Status
PGM Output Fade Assign	OFF	Maintain Status
Transition Time Assign	CC#5(Portament Time)	Maintain Status
Panel Preset Assign	OFF	Maintain Status
Panel Mode	-	Maintain Status

* When V-LINK is off, V-LINK message will be ignored.

* Changing settings while V-LINK is on will not be saved.

* A Bus and B Bus controls will be switched when operated in LVS mode.

MIDI Implementation Chart

Date : Jul. 31. 2009

Model : LVS-800

Version : 1.00

Function...	Transmitted	Recognized	Remarks
Basic Channel Default Changed	1 1 - 16	1 1 - 16	
Mode Default Message Altered	Mode 3 × *****	Mode 3 × *****	
Note Number : True Voice	× ×	× ×	
Velocity Note ON Note Off	× ×	× ×	
After Touch Key's Ch's	× ○	× ○	Control various parameters
Pitch Bend	○	○	Control various parameters
Control Change	0, 32 ○ 1 - 5 ○ 7 - 31 ○ 64 - 95 ○	○ ○ ○ ○	Select A/B Input Control various parameters Control various parameters Control various parameters
Program Change : True #	○ 0 - 7	○ 0 - 7	Select A/B Input : 1 - 8
System Exclusive	○	○	V-LINK
Common : Song Pos : Song Sel : True	× × ×	× × ×	
Real-Time : Clock : Command	× ×	× ×	
Others : All sound OFF : Reset all controller : Local ON/OFF : All Notes OFF : Active Sensing : Reset	× × × × ○ ×	× × × × ○ ×	
Notes			

Mode 1 : OMNI ON, POLY
Mode 3 : OMNI OFF, POLY

Mode 2 : OMNI ON, MONO
Mode 4 : OMNI OFF, MONO

○ : Yes
X : No

RS-232C Command Reference

Channel selection or effects on LVS-800 can be controlled from a computer or other RS-232C device.

Overview of Commands

A command consists of an ASCII code sequence containing "stx," three uppercase letters of alphabet, and a semicolon (";"). The three letters of alphabet indicate the command type.

If the command has an argument, a colon (":") is inserted between the two letters of alphabet and the argument. When multiple arguments occur, they are separated by commas (",").

"stx"

This is the ASCII code signal name (code number 02H [hexadecimal]) and code that signals the command start.

","

This is the code used by the Presenter to separate the command and its argument.

","

This is the code used by the Presenter to simplify the end of a command.

<Example 1> When transmitting the A Bus input channel select command.

> Send ASCII code string stxINA;

<Example 2> When performing 4.0 sec A/B MIX AUTO .

> Send ASCII code string stxMAT:4.0;

Commands Transmitted from External Devices to LVS-800

* When transmitting commands to LVS-800 from external device, be sure that ACK is returned before transmitting the next command.

INA : A-BUS channel select

stxINA:a;

- a: channel number.
- 0-7:A Bus channel 1 - A Bus channel 8.
- Selects A Bus channel.
- ACK is returned from LVS-800 upon proper reception of the command.

INB : B-BUS channel select

stxINB:a;

- a: channel number.
- 0-7:B Bus channel 1 - B Bus channel 8.
- Selects B Bus channel.
- ACK is returned from LVS-800 upon proper reception of the command.

TRN : TRANSITION Button Select

stxTRN:a;

- a: number of A/B Mix Transition button.
- 0: CUT, 1: MIX, 2: WIPE1, 3: WIPE2.
- Selects Transition button.
- ACK is returned from LVS-800 upon proper reception of the command.

TBR : Video Fader position

stxTBR:a;

- a: Video Fader position.
- 0-255, 0: A Bus, 255: B Bus.
- Specifies Video Fader position.
- ACK is returned from LVS-800 upon proper reception of the command.

MAT : AUTO button setup

stxMAT:a;

- a: time (0.0 - 4.0 sec).
- Switching A Bus and B Bus with the time specified.
- ACK is returned from LVS-800 upon proper reception of the command.

PIP : On/off of PinP

stxPIP:a;

- a: PinP status
- 0-4, 0: OFF, 1-4: PinP buttons 1-4 ON.
- Selects OFF or ON of PinP buttons 1-4.
- ACK is returned from LVS-800 upon proper reception of the command.

INC : BACKGROUND channel select

stxINC:a;

- a: channel number.
- 0: A/B MIX, 1: channel 6, 2: channel 7.
- Selects DSK BACKGROUND channel.
- ACK is returned from LVS-800 upon proper reception of the command.

IND : FOREGROUND channel select

stxIND:a;

- a: channel number.
- 0: A/B MIX, 1: channel 7, 2: channel 8.
- Selects DSK FOREGROUND channel.
- ACK is returned from LVS-800 upon proper reception of the command.

DPS : DSK Video Fader position

stxDPS:a;

- a: DSK Video Fader position.
- 0-255, 0: 0% - 255: 100%.
- Specifies DSK's Video Fader position that is moving with AUTO button operation.
- ACK is returned from LVS-800 upon proper reception of the command.

DAT : DSK AUTO operation

stxDAT:a;

- a: time (0.0 - 4.0 sec).
- Performs DSK AUTO with the time specified.
- ACK is returned from LVS-800 upon proper reception of the command.

DTS : DSK TRANSITION button select

stxDTS:a;

- a: number of DSK TRANSITION button.
- 0: CUT, 1: MIX.
- Selects DSK Transition button.
- ACK is returned from LVS-800 upon proper reception of the command.

DKY : DSK Key Level

stxDKY:a;

- a: Key Level.
- 0-255, 0: MIN - 255: MAX.
- Specifies Key Level of DSK.
- ACK is returned from LVS-800 upon proper reception of the command.

DPI : On/off of DSK PinP

stxDPI:a;

- a: PinP setup
- 0-4, 0: OFF, 1-4: PinP pattern 1-4 ON.
- Selects OFF or ON of PinP pattern 1-4.
- ACK is returned from LVS-800 upon proper reception of the command.

FAD : PGM OUTPUT FADE status

stxFAD:a;

- a: Status of PGM OUTPUT FADE button.
- 0-255, 0: FADE MAX, 255: VIDEO MAX.
- Specifies fade status of PGM OUTPUT.
- ACK is returned from LVS-800 upon proper reception of the command.

FAT : PGM OUTPUT FADE button operation

stxFAT:a;

- a: time (0.0 - 4.0 sec).
- Performs PGM output fade with the time specified.
- ACK is returned from LVS-800 upon proper reception of the command.

TIM : TIME dial setup

stxTIM:a;l

- a: time (0.0 - 4.0 sec).
- Sets value of TIME dial.
- ACK is returned from LVS-800 upon proper reception of the command.

PSE : PANEL PRESET select

stxPSE:a;

- a: PANEL PRESET number.
- 0-11, PANEL PRESET 1-12.
- Selects PANEL PRESET.
- ACK is returned from LVS-800 upon proper reception of the command.

RST : LVS-800 reset

stxRST:a;

- Returns LVS-800 status to booting status.
- A Bus: ch 1, B Bus: ch 2, PinP: OFF, TRANSITION: MIX, BACKGROUND: A/B MIX, FOREGROUND: 7/PC1, DSK TRANSITION: MIX, PGM OUTPUT FADE: OFF.
- ACK is returned from LVS-800 upon proper reception of the command.

VER : Version Information

stxVER:a;

- Transmit this when you want to know LVS-800's version number. LVS-800 returns version number.
- For details of version number information, see "Commands Transmitted from LVS-800"(p.17).

ACS : Active Sensing Request

stxACS:a;

- Transmit this when you want to check LVS-800's status. ACK is returned when no operation is being performed on LVS-800.

XON : Flow Control

XON

XOFF : Flow Control

XOFF

Commands Transmitted from LVS-800 to External Devices

In the following, stx(02H), ACK(06H) and Xon(11H)/Xoff(13H) are control codes.

ACK : Acknowledgement of Proper Reception

ACK

- This is transmitted when a command is received properly.

ERR : Error Information

ERR

- a: Error Number.
- 0: Syntax error = Error in the syntax of the received command.
- 2: Busy error = LVS-800 is busy, command cannot be processed.
- 5: Out of range error = Number in received command is out of range.
- 20: Something error = Other error. Transmitted when LVS-800 is unable to process the command properly.

VER : Version Information

stxVER: "a", "b", "c"

- a: Model Name = LVS-800
- Version
- Reserved

This is transmitted when LVS-800 receives a VER command. The version information is transmitted in ASCII character strings.

XON : Flow Control

XON

XOFF : Flow Control

XOFF