

DJ2GO

UI and Communications Specification

Rev B

Introduction

The NUMARK DJ2GO Controller is a device that provides a control surface interface to software. The means of communication will be by MIDI messages over USB.

Scope

This document explains the function of each control, and describes the format of messages between the DJ2GO and the PC Host.

Glossary

DJ2GO: This is the name for the Numark Laptop DJ Controller to be used with DJ software.

Outbound: The term “outbound” is used to describe messages sent from the PC Host to the device, i.e. from the viewpoint of the PC Host.

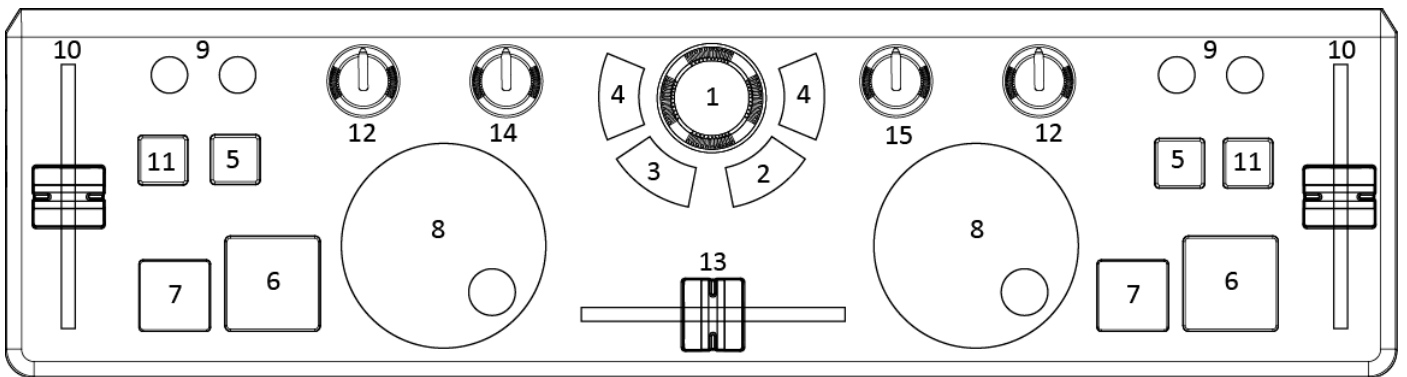
Inbound: The term “inbound” is used to describe messages sent from the device to the PC Host, i.e. from the viewpoint of the PC Host.

Midi and USB ID:

DJ2GO MIDI Vendor ID: 0x00 0x01 0x3F
DJ2GO MIDI Model ID: 0x27

DJ2GO USB Vendor ID: 0x15E4
DJ2GO USB Model ID: 0x0027

User Interface Summary



1. Track Select – detented encoder with at least 16 positions- for scrolling song lists in the DJ software
2. Enter Button – switch with rubber button – enters into files
3. Back Button - switch with rubber button – exits files
4. Load A/B - switch with rubber button – Places target song on deck
5. PFL - switch with rubber button and backlit switchable RED LED – Pressing targets cue music to the headphone. LED lights when function is active.
6. PLAY/PAUSE - switch with rubber button and backlit switchable GREEN LED – Starts and pauses tracks. LED lights when function is active.
7. CUE- switch with rubber button and backlit switchable RED LED – LED lights when function is active.
8. Jog Wheel – Optical encoder– used to adjust cue points and affect pitch bending
9. Pitch Bend – 2 switch with rubber button – Right button causes audio to speed up temporarily and left causes a slow down.
10. Pitch slider – 60mm slider pot with Detent for 0 position
11. Sync Button - switch with rubber button and backlit switchable GREEN LED – pressing forces deck into alignment with opposing deck. LED lights when function is active.
12. Deck Volume – 270 VR – controls volume of deck

Communications Protocol

All buttons should send Note MIDI messages when pressed. Encoders, wheels, faders and pots should send MIDI controller messages. All LEDs are controlled by the PC/Mac via MIDI note messages. See below for detail.

Communications from PC Host to device - “Outbound” messages

Device Enquiry

DJ2GO should support the standard MMC Device Enquiry message.

Format of Device Inquiry Request message from Host to Device

<i>byte number</i>	<i>value</i>	<i>description</i>
1	0xF0	MIDI System exclusive message start
2	0x7E	Non-Realtime Message
3	0x00	Channel to inquire. (Set to 0 for this protocol.)
4	0x06	Inquiry Message
5	0x01	Inquiry Request
6	0xF7	MIDI System exclusive message terminator

The DJ2GO Controller will respond to a Device Inquiry Request message with the following message:

Format of response from AD01 to Device Inquiry message

<i>byte number</i>	<i>value</i>	<i>description</i>
1	0xF0	MIDI System exclusive message start
2	0x7E	Non-Realtime Message
3	<MIDI Channel>	Common MIDI channel setting
4	0x06	Inquiry Message
5	0x02	Inquiry Response
6	0x00	Manufacturers ID Byte 1
7	0x01	Manufacturers ID Byte 2
8	0x3F	Manufacturers ID Byte 3
7	0x27	Product model ID

<i>byte number</i>	<i>value</i>	<i>description</i>
8	0x00	Number of data bytes to follow (most significant)
9	0x19	Number of data bytes to follow (least significant)
10	<Version1>	Software version major most significant
11	<Version2>	Software version major least significant
12	<Version3>	Software version minor most significant
13	<Version4>	Software version minor least significant
14	<DeviceID>	System Exclusive Device ID
15	<Serial1>	Serial Number first digit
16	<Serial2>	Serial Number second digit
17	<Serial3>	Serial Number third digit
18	<Serial4>	Serial Number fourth digit
19	<Manufacturing1>	Manufacturing Data byte 1
20	<Manufacturing2>	Manufacturing Data byte 2
21	<Manufacturing3>	Manufacturing Data byte 3
22	<Manufacturing4>	Manufacturing Data byte 4
23	<Manufacturing5>	Manufacturing Data byte 5
24	<Manufacturing6>	Manufacturing Data byte 6
25	<Manufacturing7>	Manufacturing Data byte 7
26	<Manufacturing8>	Manufacturing Data byte 8
27	<Manufacturing9>	Manufacturing Data byte 9
28	<Manufacturing10>	Manufacturing Data byte 10
29	<Manufacturing11>	Manufacturing Data byte 11
30	<Manufacturing12>	Manufacturing Data byte 12
31	<Manufacturing13>	Manufacturing Data byte 13
32	<Manufacturing14>	Manufacturing Data byte 14
33	<Manufacturing15>	Manufacturing Data byte 15
34	<Manufacturing16>	Manufacturing Data byte 16

<i>byte number</i>	<i>value</i>	<i>description</i>
35	0xF7	MIDI System exclusive message terminator

LED control

LEDs should turn on with a MIDI Note On message and turn off with a MIDI Note Off message. MIDI Note On messages with a velocity of 0 are equivalent to a Note off message.

Byte number	Value	description
1	0x90	MIDI Note-on on channel 0 (LED On)
2	<Control ID>	identifier for control surface object (“note number”)
3	data	control value (Non Zero)

Byte number	Value	description
1	0x80	MIDI Note-off on channel 0 (LED Off)
2	<Control ID>	identifier for control surface object (“note number”)
3	data	control value (Non Zero)

CONTROL	NOTE NUMBER
A CUE	0x33
A PLAY/PAUSE	0x3B
A SYNC	0x40
A PFL	0x65
B CUE	0x3C
B PLAY/PAUSE	0x42
B SYNC	0x47
B PFL	0x66

Communications from Device to PC Host - “Inbound” messages

These messages will be used to report control surface events from the device to the PC Host and as a response to requests from the PC host. Each message type will contain a Control Identifier field which will identify the control surface object to which the message pertains. Each message type will contain a data field which may contain information about either the new value of the control surface object or how it has changed since the last report.

Button Response

Buttons have two states and the transitions between these states will be reported using MIDI note-on (when the button is depressed) and note-off (when the button is released). The field normally associated with note number will be used to specify the Control ID.

Byte	Value	description
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number		
1	0x90	MIDI Note-on on channel 0 (Button Down)
2	<Control ID>	identifier for control surface object ("note number")
3	data	control value (Non Zero)

Byte number	Value	description
1	0x80	MIDI Note-off on channel 0 (Button Up)
2	<Control ID>	identifier for control surface object ("note number")
3	data	control value (Non Zero)

CONTROL	NOTE NUMBER
A CUE	0x33
A PLAY/PAUSE	0x3B
A SYNC	0x40
A PFL	0x65
A LOAD	0x4B
A PITCH BEND +	0x43
A PITCH BEND -	0x44
B CUE	0x3C
B PLAY/PAUSE	0x42
B SYNC	0x47
B PFL	0x66
B LOAD	0x34
B PITCH BEND +	0x45
B PITCH BEND -	0x46
BACK	0x59
ENTER	0x5A

Pots and Faders (absolute controllers)

The Pots and faders are absolute value controllers. MIDI CC messages are sent with a control ID of the pot/fader and the absolute value of the control (0-127).

byte number	value	description
1	0xB0	MIDI Controller on channel 0
2	<Control ID>	identifier for control surface object
3	data	control value

Control	Control ID
A VOLUME	0x08
B VOLUME	0x09
CROSSFADER	0x0A
A PITCH	0x0D
B PITCH	0x0E
Master Gain	0x17

Headphone Gain	0x0B
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Encoder and Wheels (relative controllers)

Some controls will report a relative change in their value. This will be done using a MIDI controller message. The field normally associated with controller number will be used to specify the Control ID. The field normally associated with controller value will be used to report the change in the control value.

MIDI Controller message

byte number	value	description
1	0xB0	MIDI Controller on channel 0
2	<Control ID>	identifier for control surface object
3	data	control change

Interpretation of MIDI Controller values

The value in the data field will indicate a relative change; values 01 to 63 describe a positive change and values 127 down to 64 describe a negative change.

data	value sent interpretation
0x00	No change occurred. Control is stationary.
0x01	The controller incremented its value by 1 since the last report
0x02	The controller incremented its value by 2 since the last report
...	...
0x3f	The controller incremented its value by 63 since the last report
0x40	The controller decremented its value by 64 since the last report
0x41	The controller decremented its value by 63 since the last report
...	...
0x7e	The controller decremented its value by 2 since the last report
0x7f	The controller decremented its value by 1 since the last report

Control	Control ID
BROWSE	0x1A
WHEEL A	0x19
WHEEL B	0x18