



N32B

N32B MIDI Implementation Manual

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Introduction

The N32B device is designed to provide extensive MIDI control capabilities. This manual covers the implementation details for MIDI System Exclusive (SysEx) messages used to interact with the device. It includes the structure of SysEx messages and descriptions of the supported commands.

SysEx Message Structure

A SysEx message is a special type of MIDI message used for sending data that can include parameter settings, presets, and other device-specific data. The general format of a SysEx message for the N32B is as follows:

0xF0, 0x20, <Command>, <Data1>, <Data2>, ..., 0xF7

- 0xF0: SysEx start byte
- 0x20: SHIK Manufacturer ID
- <Command>: Command byte specifying the action to be taken (see Commands section)
- <Data1>, <Data2>, ...: Additional data bytes depending on the command
- 0xF7: SysEx end byte

Commands

The following table lists the supported commands in different formats and their descriptions:

Command Description	Base 10	Hexadecimal	Binary
Set Knob Mode	1	0x01	0001
Save Preset	2	0x02	0010
Load Preset	3	0x03	0011
Send Firmware Version	4	0x04	0100
Sync Knobs	5	0x05	0101
Change Channel	6	0x06	0110
Set Thru Mode	8	0x08	1000
Send Snapshot	9	0x09	1001

Command Descriptions

Set Knob Mode (0x01)

Sets the mode of a specified knob. The knob index is zero-based.

Format:

0x01, <Knob Index>, <MSB>, <LSB>, <Macro A Channel>, <Macro B Channel>, <Macro A Output>, <Macro B Output>, <Macro A Min>, <Macro A Max>, <Macro B Min>, <Macro B Max>, <Properties>, <Knob Mode>

Parameters:

Parameter	Description	Range
Knob Index	Index of the knob	0-31
MSB	Most Significant Byte of value	0-127
LSB	Least Significant Byte of value	0-127
Macro A Channel	MIDI Channel for Macro A	0-15
Macro B Channel	MIDI Channel for Macro B	0-15
Macro A Output	Output setting for Macro A	0-3 (See Outputs Table)
Macro B Output	Output setting for Macro B	0-3 (See Outputs Table)
Macro A Min	Minimum value for Macro A	0-127
Macro A Max	Maximum value for Macro A	0-127
Macro B Min	Minimum value for Macro B	0-127
Macro B Max	Maximum value for Macro B	0-127
Properties	Contains flags and mode setting	0-15 (See Knob Properties)
Knob Mode	Mode of the knob	0-15 (See Knob Modes Table)

Save Preset (0x02)

Saves the current settings as a preset. The preset index is zero-based.

Format: 0x02, <Preset Index>

Parameters:

Parameter	Description	Range
Preset Index	Index of the preset to save	0-2

Load Preset (0x03)

Loads a specified preset. The preset index is zero-based.

Format: 0x03, <Preset Index>

Parameters:

Parameter	Description	Range
Preset Index	Index of the preset to load	0-2

Send Firmware Version (0x04)

Requests the firmware version of the device.

Format: 0x04

Sync Knobs (0x05)

Sends the current preset's knob settings.

Format: 0x05

Change Channel (0x06)

Changes the global MIDI channel. The channel is zero-based.

Format: 0x06, <Channel>

Parameters:

Parameter	Description	Range
Channel	Global MIDI channel	0-15

Set Thru Mode (0x08)

Sets the MIDI THRU behavior.

Format: 0x08, <Mode>

Parameters:

Parameter	Description	Range
Mode	Mode for the MIDI THRU behavior	0-5 (See Thru Mode Table)

Send Snapshot (0x09)

Sends a snapshot of the current settings.

Format: 0x09

Knob Properties

4-bit value as boolean flags:

Bit 0: Invert macro A (0/1)

Bit 1: Invert macro B (0/1)

Bit 2: Use macro A channel (0/1)

Bit 3: Use macro B channel (0/1)

Binary Structure of Properties Byte:

```
bit3 bit2 bit1 bit0
|      |      |      |
|      |      |      +-- Invert A
|      |      +----- Invert B
|      +----- Use own channel A
+----- Use own channel B
```

Example:

0110

Bit 0: Invert macro A = 0

Bit 1: Invert macro B = 1

Bit 2: Use macro A channel = 1

Bit 3: Use macro B channel = 0

Outputs Table

Output Description	Base 10	Hexadecimal	Binary
Output Off	0	0x00	00
Output TRS	1	0x01	01
Output USB	2	0x02	10
Output TRS & USB	3	0x03	11

Knob Modes

Mode Description	Base 10	Hexadecimal	Binary
Disable	0	0x00	0000
Standard	1	0x01	0001
Macro	2	0x02	0010
NRPN	3	0x03	0011
RPN	4	0x04	0100
HiRes	5	0x05	0101
Program Change	6	0x06	0110
Mono After Touch	7	0x07	0111
Poly After Touch	8	0x08	1000

Thru Mode Table

Mode Description	Base 10	Hexadecimal	Binary
Off	0	0x00	0000
TRS to TRS	1	0x01	0001
TRS to USB	2	0x02	0010
USB to USB	3	0x03	0011
USB to TRS	4	0x04	0100
Both directions	5	0x05	0101

Example SysEx Message Usage

Sending a Snapshot

To send a snapshot of the current settings, you would use the **Send Snapshot** command. The format for this message is as follows:

0xF0, 0x20, 0x09, 0xF7

Updating Knob Settings

To update the settings of a specific knob, you would use the **Set Knob Mode** command. Below is an example where the knob index is 3, MSB is 127, LSB is 64, Macro A Channel is 1, Macro B Channel is 2, Macro A Output is 1, Macro B Output is 0, Macro A Min is 0, Macro A Max is 127, Macro B Min is 0, Macro B Max is 127, Properties is 1, and Knob Mode is 2 (Macro):

0xF0, 0x20, 0x01, 0x03, 0x7F, 0x40, 0x01, 0x02, 0x01, 0x00, 0x00,
0x7F, 0x00, 0x7F, 0x01, 0x02, 0xF7