KEMPER PROFILER

MIDI Parameter Documentation 8.6

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Introduction

This document reflects the state of KEMPER PROFILER™ OS version 8.6.6 or higher.

The PROFILER features more than 800 parameters – far more than can be addressed by a standard MIDI controller message, where only 128 parameters can be reached. Therefore, the PROFILER supports the NRPN (Non-Registered Parameter Numbers) protocol in addition to the proprietary SYSEX protocol.

However, for the most commonly used functions, there are also MIDI commands with the standard controller range.

MIDI Commands

The PROFILER supports several simple MIDI Control Change (CC) commands that can be sent from third-party MIDI-devices, to control effects and load Slots in Performance Mode.

Continuous Controllers

CC #	Remarks
1	Wah Pedal
4	Pitch Pedal
7	Volume Pedal
10	Panorama
11	Morph Pedal
68	Delay Mix
69	Delay Feedback
70	Reverb Mix
71	Reverb Time
72	Gain
73	Monitor (Output) Volume

Table 1: MIDI CC continuous controllers

Switches

CC #	Value	Remarks
16	any	toggles all modules between on and off setting selects type "Empty" to disable a slot completely
17	any	toggles module A between on and off setting
18	any	toggles module B between on and off setting
19	any	toggles module C between on and off setting
20	any	toggles module D between on and off setting
22	any	toggles module X between on and off setting
24	any	toggles module MOD between on and off setting
26	any	toggles module DLY between on and off setting
27	any	toggles module DLY between on and off setting with tail
28	any	toggles module REV between on and off setting
29	any	toggles module REV between on and off setting with tail
30	1/0	sets Tap Tempo If your floorboard supports separate events on "pressing" and "releasing" a button, send 1 when "pressed" and 0 when "released". If the floorboard can only send one event, use value 0. When value 1 has been sent and no value 0 for 3 seconds, the Beat Scanner is being activated.
31	1/0	1: show Tuner 0: hide Tuner
33	0/1	0: Rotary Speaker slow 1: Rotary Speaker fast
34	0/1	0: Delay Infinity off 1: Delay Infinity on
35	0/1	0: Delay and Reverb Freeze off 1: Delay and Reverb Freeze on
47	[0,124]	**(Performance Mode only)** Preselected Performance index; can be set directly or scrolled via CC48/CC49. The Performance will be loaded when a Slot selection is being sent (CC50-54). If no Slot is selected, the "preselection mode" is being disabled after a few seconds. If the "preselection mode" is disabled, the active Performance number will be sent plus a Slot message (CC50-54)

48	1/0	**Performance Mode** increases Performance index; value triggers two different modes: • value 0, increase Performance n to n+1 • value 1 initially increases Performance by 1, after a timeout the PROFILER starts to scroll Performances upwards. Value 0 stops scrolling. **Browser Mode** value 0 selects the next Rig (current filter/sort applies), similar to "Rig Right"
49	1/0	**Performance Mode** decreases Performance index; value triggers two different modes: • value 0, increase Performance n to n-1 • value 1 initially decreases Performance index by 1, after a timeout the PROFILER starts to scroll Performances downwards; value 0 stops scrolling. **Browser Mode** value 0 selects the previous Rig (current filter/sort applies), similar to "Rig Left"
50	1	**Performance Mode** selects Slot 1 of current Performance **Browser Mode** selects 1st out of current 5 Rigs in list
51	1	**Performance Mode** selects Slot 2 of current Performance **Browser Mode** selects 2nd out of current 5 Rigs in list
52	1	**Performance Mode** selects Slot 3 of current Performance **Browser Mode** selects 3rd out of current 5 Rigs in list
53	1	**Performance Mode** selects Slot 4 of current Performance **Browser Mode only** selects 4th out of current 5 Rigs in list
54	1	**Performance Mode** selects Slot 5 of current Performance **Browser Mode** selects 5th out of current 5 Rigs in list
80	1/0	Emulates "push" (1) and "release" (0) of the Morph button

Table 2: MIDI CC switches

Responses

If the PROFILER is in Performance Mode, it will send back the current Performance number via CC47 and the appropriate Slot selection.

Example:

Floorboard (or another client)	PROFILER
B0 2F 03	*shows preselected Performance 4*
B0 31 00	*shows preselected Performance 5*
	B0 2F 04
B0 35 01	*selects and loads Performance 5, Slot 3*
	B0 35 01

Table 3: Example communication for Performance Mode preselection

NRPN Definition

NRPN supports 128 x 128 different parameters (which rounds up to an impressive total of 16384 parameters). NRPN also supports a parameter resolution of 16384 values (14-bit) compared to only 128 values (7-bit) with regular controller messages.

NRPN messages consist of a set of four controllers, sent in sequence. These four controllers are:

Decimal	Hex	Remark
99	$63	MSB* of the parameter number ("address page")
98	$62	LSB* of the parameter number ("address number")
06	$06	MSB* of the parameter value
38	$26	LSB* of the parameter value
*MSB: most significant byte, the upper 7-bit of the 14-bit number *LSB: least significant byte, the lower 7-bit of the 14-bit number		

Table 4: NRPN controller assignments

The MIDI specification requests that a manufacturer decides if the devices understand 7-bit or 14-bit values. All NRPN controllers in the PROFILER are, by definition, 14-bit value controllers, so you'll need to send both MSB Control Change (or CC) 06 and CC38, in that order, to apply a change. The actual value will be set once CC38 has been received. The PROFILER keeps the address selection present. So, if a pair of CC98+CC99 has been transmitted, it does not need to be sent again for a further value change on the same parameter.

To support generic, programmable floorboards/controllers that only support 7-bit values, PROFILER OS version 2.0.0 introduces CC119 ($77) to send a simple 7-bit value change instead of CC06 and CC38 combo. In this case, the values are mapped internally to the correspondent 14-bit value (e.g. value 127 is internally 16383, 64 is internally 8192).

Examples

"Reverb Mix" in module REV is at NRPN #6169, so MSB ("address page") is 61 ($3D) and LSB ("address number") is 69 ($45).

To send a 14-bit high resolution value to 8192:

```
$B0 $63 $3D
$B0 $62 $45
$B0 $06 $40
$B0 $26 $00
```

So, why $40 and $00? Because 8192 is $2000 and:

    a.   ($2000 SHR 7) AND $7F = $40   The upper 7 of 14 bits.

    b.   ($2000 AND $7F) = $00;   The lower 7 of 14 bits.

To send a 7-bit low resolution value (64 = $40), so the parameter is actually set at 8192:

```
$B0 $63 $3D
$B0 $62 $45
$B0 $77 $40
```

$B0 is the MIDI start byte for controllers at MIDI channel 1. You may use "running status" transmissions.

The PROFILER will listen to the MIDI channel that is set as the "MIDI Global Channel" in "System Settings". The standard setting is "OMNI", saying it responds to every channel[1].

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[1] When set to OMNI, make sure the floorboard only sends on one channel. Some floorboards send 16 program changes (one to each channel) which causes 16 real Rig switches then which might lag the PROFILER a bit.

MIDI Channel vs. Instance

The global MIDI reception channel can be set up on the "MIDI Settings" page in System Settings. Note, that the MIDI channel and the instance mentioned in the SYSEX definition are not the same. The instance in the PROFILER is always 0, since it has only one part ("mono timbral"). Assuming the global MIDI channel is set to 5, NRPN controller messages are only received on MIDI channel 5 but processed in instance 0.

Parameter Types

There are two types of parameters in the PROFILER with the following properties:

Continuous Parameters (e.g. Gain, Volume)

- These are fractional numbers and will always cover the whole value range.

- These will be smoothed upon reception of multiple continuous values. Thus, high resolution (14-bit) values are not necessary for a smooth parameter movement - only for accurate target values.

Switch or Section Parameters (e.g. Type, On/Off Switches)

- Are integer numbers and will start counting from the least significant bit.

- Values out of range will activate the highest value in the range but should not be used due to future compatibility.

- Switches are "off" at the value 0 (zero) and "on" at value 1 (one).

- If a 14-bit value is being used to set a controller to "On", then the MSB byte is $00, the LSB byte is $01.

Parameter List

Rig Settings (Address Page 4 (0x04))

0 Tempo bpm

1 Rig Volume

2 Tempo Enable

3 Panorama

4 Transpose   *range 28 - 100*

68 Volume Pedal Location   *values 0 - 4 in selection order*

69 Volume Pedal Range

71 Parallel Path Enable

72 Parallel Path Mix

73 Rig Spillover Off

74 DLY+REV Routing

Input Section (Address Page 9 (0x09))

3 Noise Gate Intensity

4 Clean Sense

5 Distortion Sense

Amplifier (Address Page 10 (0x0A))

2 On/Off

3 Amp Volume

4 Gain

6 Definition

7 Clarity

8 Power Sagging

9 Pick

10 Compressor

11 Tube Shape

12 Tube Bias

15 Direct Mix

Equalizer (Address Page 11 (0x0B))

4 Bass

5 Middle

6 Treble

7 Presence

8 Position: Pre/Post

Cabinet (Address Page 12 (0x0C))

2 On/Off

4 High Shift

5 Low Shift

6 Character

7 Pure Cabinet

8 KEMPER Kone Imprint Select   *values 0 - 18 Speaker Imprints™ in selection order, 126 Full-Range, 127 Global Imprint*

Effect Module A (Address Page 50 (0x32))

0 Type   *values see Appendix B*

3 On/Off

4 Mix

6 Volume

7 Stereo

8 Wah Manual / Frequency Shifter Delay Pitch

9 Wah Peak

10 Wah Pedal Range

12 Wah Pedal Mode   *range 0 - 5 according to selection*

13 Wah Touch Attack / KEMPER Fuzz Impedance LP

14 Wah Touch Release

15 Wah Touch Boost / Delay Cross Feedback

16 Distortion Drive / Reverb Formant Mix

17 Distortion Tone / Reverb Mid Frequency

18 KEMPER Fuzz Octa / Compressor Intensity / Noise Gate Threshold / Auto Swell Compressor

19 Compressor Attack / Legacy Delay Bandwidth / Legacy Reverb Bandwidth

20 KEMPER Fuzz Transistor Shape / Modulation Rate Phaser, Phaser Vibe and Flanger / Auto Swell / Widener Tune

21 KEMPER Drive Definition / KEMPER Fuzz Transistor Tone / Modulation Depth / Micro Pitch Detune / Double Tracker Looseness / Widener Intensity

22 Modulation Feedback / Formant Reverb Vowel

23 KEMPER Drive Slim Down / KEMPER Fuzz Definition / Modulation Crossover / Octaver Low Cut

24 Modulation Hyper Chorus Amount

25 Modulation Manual / Reverb Formant Offset / Spring Reverb Spectral Balance

26 Modulation Peak Spread / Wah Phaser Peak Spread / Reverb Formant Peak

27 Modulation Stages / Wah Phaser Stages / Legacy Reverb Room Size

30 Rotary Speed (Slow/Fast)

31 Rotary Distance

32 Rotary Low-High-Balance

33 Compressor Squash / Legacy Delay Frequency / Legacy Reverb Mid Frequency

34 Graphic EQ Gain 80 Hz

35 Graphic EQ Gain 160 Hz

36 Graphic EQ Gain 320 Hz

37 Graphic EQ Gain 640 Hz

38 Graphic EQ Gain 1250 Hz

39 Graphic EQ Gain 2500 Hz

40 Graphic EQ Gain 5000 Hz

41 Graphic EQ Gain 10000 Hz

42 Studio EQ / Metal EQ / Metal DS Low Gain / Acoustic Simulator Body

43 Studio EQ Low Frequency

44 Studio EQ / Metal EQ / Metal DS High Gain /Acoustic Simulator Sparkle

45 Studio EQ High Frequency

46 Studio EQ Mid1 / Metal EQ / Metal DS Middle Gain / Acoustic Simulator Bronze

47 Studio EQ Mid1 / Metal EQ / Metal DS Middle Frequency

48 Studio EQ Mid1 Q-Factor

49 Studio EQ Mid2 Gain / Acoustic Simulator Pickup

50 Studio EQ Mid2 Frequency

51 Studio EQ Mid2 Q-Factor

52 Wah Peak Range

53 Ducking

54 Mix 2 (Pitch Mix / Octaver Mix / Delay Mix Serial / Crystal Mix / Space Intensity)

55 Voice Balance / Delay Balance

56 Voice 1 Pitch / Toe Pitch / Transpose Pitch / Quad Delay Voice Pitch 4 / Delay Crystal 1 Pitch

57 Voice 2 Pitch / Heel Pitch / Quad Delay Voice Pitch 3 / Wah Formant Pitch Shift / Delay Crystal 2 Pitch

58 Pitch Detune / Detune except Micro Pitch

60 Smooth Chords

61 Pure Tuning

62 Voice 1 Interval / Quad Delay Voice 4 Interval   *values according to selection*

63 Voice 2 Interval / Quad Delay Voice 3 Interval   *values according to selection*

64 Key   *values according to selection*

65 Formant Shift Freeze

66 Formant Shift Offset

67 Equalizer Low Cut

68 Equalizer High Cut / Reverb High Cut

69 Mix 3 (delay and reverb effects)

70 Mix Pre/Post (delay / reverb effects and effect loop)

71 Delay Time / Delay 1 Time / Reverb Room Size / Reverb Attack Time / Spring Reverb Spring Size

72 Delay 2 Time / Reverb Predelay Time

73 Delay 2 Ratio / Quad Delay Delay 3 Ratio / Rate Flanger Oneway / Phaser Oneway

74 Quad Delay 2 Ratio / Delay Ratio Serial

75 Quad Delay 1 Ratio

76 Delay Note Value 1 / Quad Delay Note Value 4

77 Delay Note Value 2 / Quad Delay Note Value 3 / Reverb Predelay Note Value

78 Quad Delay Note Value 2 / Note Value Serial

79 Quad Delay Note Value 1

80 To Tempo (delay and reverb effects) / Equalizer Steep Low

81 Delay Volume 4

82 Delay Volume 3

83 Delay Volume 2

84 Delay Volume 1

85 Delay Panorama 4

86 Delay Panorama 3

87 Delay Panorama 2

88 Delay Panorama 1

89 Voice Pitch 2 / Crystal Pitch

90 Voice Pitch 1

91 Voice 3 Interval   *values according to selection*

92 Voice 4 Interval   *values according to selection*

93 Delay Feedback / Delay Feedback 1 / Reverb Decay Time

94 Infinity Feedback

95 Infinity

96 Feedback 2 / Feedback Serial / Reverb Low Boost / Echo Reverb Feedback / Ionosphere Reverb Buildup

97 Delay Feedback Sync

98 Delay Low Cut / Reverb Low Decay

99 Delay High Cut / Reverb High Decay / Reverb High Damp / KEMPER Fuzz True Impedance at PROFILER Stage

100 Delay Cut More / Equalizer Steep High / Full OC HP/LP / upper and lower effect loop at PROFILER Stage

101 Modulation (delay and reverb effects)

102 Delay Chorus

103 Delay Flutter Intensity / Reverb Modulation (standard reverbs)

104 Delay Flutter Rate / Reverb Early Diffusion / Spring Reverb Dripstone

105 Delay Grit / Reverb Brass / Spring Reverb Distortion (Dwell)

106 Reverse Mix

107 Input Swell (delay and reverb effects)

108 Smear

109 Ducking Pre/Post

Effect Module B (Address Page 51 (0x33))

Same parameters and address numbers as effect module A

Effect Module C (Address Page 52 (0x34))

Same parameters and address numbers as effect module A

Effect Module D (Address Page 53 (0x35))

Same parameters and address numbers as effect module A

Effect Module X (Address Page 56 (0x38))

Same parameters and address numbers as effect module A

Effect Module MOD (Address Page 58 (0x3A))

Same parameters and address numbers as effect module A

Effect Module DLY (Address Page 60 (0x3C))

Same parameters and address numbers as effect module A

Effect Module REV (Address Page 61 (0x3D))

Same parameters and address numbers as effect module A

User Scales (Address Page 118 (0x76)

0 User Scale 1 Step 0*

1 User Scale 1 Step 1*

2 User Scale 1 Step 2*

3 User Scale 1 Step 3*

4 User Scale 1 Step 4*

5 User Scale 1 Step 5*

6 User Scale 1 Step 6*

7 User Scale 1 Step 7*

8 User Scale 1 Step 8*

9 User Scale 1 Step 9*

10 User Scale 1 Step 10*

11 User Scale 1 Step 11*

12 User Scale 2 Step 0*

13 User Scale 2 Step 1*

14 User Scale 2 Step 2*

15 User Scale 2 Step 3*

16 User Scale 2 Step 4*

17 User Scale 2 Step 5*

18 User Scale 2 Step 6*

19 User Scale 2 Step 7*

20 User Scale 2 Step 8*

21 User Scale 2 Step 9*

22 User Scale 2 Step 10*

23 User Scale 2 Step 11*

All User Scale steps have value range 26 – 99.

Looper and Effect Module Freeze (Address Page 125 (0x7D))

88 Looper Record / Playback / Overdub

89 Looper Stop*

90 Looper Trigger*

91 Looper Reverse*

92 Looper Half Speed*

93 Looper Cancel/Reactivate Overdub*

94 Looper Erase Loop*

To simulate functionality of Remote/Stage Looper buttons correctly, send value 1 for push button and value 0 for release button.

107 Effect Module A Freeze

108 Effect Module B Freeze

109 Effect Module C Freeze

110 Effect Module D Freeze

111 Effect Module X Freeze

113 Effect Module MOD Freeze

114 Effect Module DLY Freeze

115 Effect Module REV Freeze

System / Global (Address Page 127 (0x7F))

0 Main Output Volume

1 Headphone Output Volume

2 Monitor Output Volume

3 Direct Output / Send 1 Volume

4 S/PDIF Output Volume

8 Monitor Cab. Off

12 Main Output EQ Bass

13 Main Output EQ Middle

14 Main Output EQ Treble

15 Main Output EQ Presence

16 Output Filer Low Cut

17 Monitor Output EQ Bass

18 Monitor Output EQ Middle

19 Monitor Output EQ Treble

20 Monitor Output EQ Presence

21 Output Filter High Cut

32 Aux In >Main

33 Aux In >Monitor

34 Aux In >Headph.

36 Space Intensity

37 Space Routing

38 KEMPER Kone Mode

39 KEMPER Kone Bass Boost

40 KEMPER Kone Imprint Select   *range 0 - 18 according to collection*

41 KEMPER Kone Directivity

42 KEMPER Kone Sweetening

44 Input Source   *range 0 - 3 according to selection*

50 Pure Cabinet Enable

51 Pure Cabinet Level (Global)

52 Looper Volume

53 Looper Location

59 Aux In >Mono

SYSEX Definition

General Message Layout

The KEMPER PROFILER can also be addressed via MIDI SYSEX. A PROFILER SYSEX message comprises the following parts:

$F0	$00 $20 $33	$00	$7F	Message	$F7
SYX	ACCESS/KEMPER Manufacturer ID	Product Type $00 = KEMPER PROFILER	Device ID $7F = OMNI (See System page)	the actual message	EOX

Table 5: structure of a KEMPER PROFILER SYSEX message

The message itself starts with a function code plus additional bytes, depending on the given function code.

Function Code	Functionality
$01	Single Parameter Change
$02	Multi Parameter Change
$03	String Parameter
$04	BLOB
$05	*reserved*
$06	Extended Parameter Change
$07	Extended String Parameter Change
$08	Morphed Multi Parameter Changed
$41	Request Single Parameter Value
$42	Request Multi Parameter Values
$43	Request String Parameter
$47	Request Extended String Parameter
$7C	Request Parameter Value as Rendered String
$7E	*reserved*
$7F	*reserved*

Table 6: function codes for KEMPER PROFILER SYSEX messages

Single Parameter Change

The "message" part for a single parameter change for parameter with 14bit NRPN address:

Function Code	Instance	Controller MSB	Controller LSB	Value MSB	Value LSB	*Value2 MSB	*Value2 MSB
The function code ($01)	Addresses the instance of the parameter. The PROFILER only supports one instance which is always 0.	The upper 7-bit of the 14-bit NRPN address.	The lower 7-bit of the 14-bit NRPN address.	The upper 7-bit of the 14-bit value.	The lower 7-bit of the 14-bit value.	The upper 7-bit of morphed value.	The lower 7-bit of morphed value.

Table 7: message part for single parameter change

Example: To set the value of module A Mix to 50% the controller $1904 (6404) needs to be set to a value of $4000 (8192):

F0	00	20	33	02	7F	01	00	4A	04	40	00	F7

Since the introduction of the Morphing feature, there is a second value (called "B Value") that spans a range within which a controller can morph. So, the message can be optionally extended by another 14 bit value. This example sets the parameter to be morphable from center value to maximum.

F0	00	20	33	02	7F	01	00	19	04	40	00	7F	7Ff	F7

Multi Parameter Change

To change a whole bunch of parameters you can send multiple values for a whole range of parameters by using function code $02 and repeating the value MSB/LSB bytes in a message:

Function Code	Instance	Controller MSB	Controller LSB	Value MSB	Value LSB	Value MSB*	Value LSB*
The function code for a single parameter change is $02	Addresses the instance of the parameter. The PROFILER only supports one instance which is always 0.	The upper 7-bit of the 14-bit NRPN address.	The lower 7-bit of the 14-bit NRPN address.	The upper 7-bit of the 14-bit value.	The lower 7-bit of the 14-bit value.	The upper 7-bit of the 14-bit value of the next NRPN address.	The lower 7-bit of the 14-bit value of the next NRPN address.
						Repeat with Value MSB/LSB for more values (up to 128 values)	

Table 8: message part for a multi parameter change

Example: To set the values for all (numeric) module A parameters (starting with $1900) send:

F0	00	20	33	02	7F	02	00	19	00	00	03	00	01	4C	04	..	..	F7

Morphed Multi Parameter Change

To change a whole bunch of parameters you can send multiple values for a whole range of parameters by using function code $08 and repeating the value MSB/LSB bytes in a message:

Function Code $08	Instance (always 0)	Controller MSB	Controller LSB	Value MSB	Value LSB	Morphed MSB*	Morphed LSB*
				(Repeat until block is complete)		(Repeat until block is complete) must be the same number of uint16_T as before in "Value"	

Table 9: message part for a morphed multi parameter change

String Parameter Change

A number of parameters present text ("string") values. These string parameters have their own batch of controller numbers. They exist in parallel to the numeric parameters. E.g. there is one numeric controller 6400 ("Stomp 1/Type") and a string controller 6400 which represents the textual name of a preset loaded in Stomp 1.

The string controllers can be encoded using function code $03 and character bytes using ASCII encoding:

Function Code	Instance	Controller MSB	Controller LSB	Characters…	$00
The function code for text value: $03	Addresses the instance of the parameter. The PROFILER only supports one instance which is always 0.	The upper 7-bit of the 14-bit NRPN address (string controller)	The lower 7-bit of the 14-bit NRPN address.	A 7-bit value representing an ASCII character. Concatenate as many characters being necessary. Use only valid characters (see Appendix A (valid ASCII characters))	A null byte ($00) terminating the string.

Table 10: message part for a string parameter change

Example: to set the string "Hello" as current Rig Name (string #0001) send:

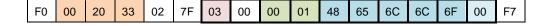| F0	00	20	33	02	7F	03	00	00	01	48	65	6C	6C	6F	00	F7

BLOB Parameter Change

A number of parameters present binary objects ("BLOBs"). These BLOB parameters have their own batch of controller numbers. They exist in parallel to the numeric and string parameters.

The content of a BLOB is, by definition, "hands off" and should not be altered.

Function Code	Instance	Controller MSB	Controller LSB	Start MSB	Start LSB	Size MSB	Size LSB	Content
The function code for text value: $04	Addresses the instance of the parameter. The PROFILER only supports one instance which is always 0.	The upper 7-bit of the 14-bit NRPN address (BLOB controller)	The lower 7-bit of the 14-bit NRPN address.	The upper 7-bit of the 14-bit start offset	The lower 7-bit of the 14-bit start offset	The upper 7-bit of the 14-bit size	The lower 7-bit of the 14-bit size	N times a 7-bit value where N is the number given in the size attribute.

Table 11: message part for a BLOB parameter

Currently, only a start offset of 0 (null) is supported. If the content size doesn't match the announced size, the message will be ignored.

Extended Parameter/Extended String Parameter Change

The "extended" function codes $06/$07 are equal to those for $02/$03, except that the controller number and value are not encoded in 2, but in 5 bytes – this allows an address range of 2^{31} and a value range of 2^{32} for numeric controllers. The encoding is Big Endian, and additional bits are ignored. The encoding looks like this:

Given a 32-bit value:

Bits 24-31	Bit 16-23	Bit 8-15	Bit 0-7
MSB			LSB

Figure 1: 32 bit values and their bytes

Will be encoded to 5 bytes:

	MSB							LSB
	7	6	5	4	3	2	1	0
Byte 0:	_	_	_	_	7	6	5	4
Byte 1:	_	3	2	1	0	7	6	5
Byte 2:	_	4	3	2	1	0	7	6
Byte 3:	_	5	4	3	2	1	0	7
Byte 4:	_	6	5	4	3	2	1	0

Figure 2: 32 bit numbers encoded to 5 MIDI data bytes

This way, bit 7 (MSB) is kept clear for MIDI transmission.

Request Single Parameter

The function code $41 can be used to request a single numeric value for an NRPN parameter. The requested value will be sent back with function code $01.

Function Code	Instance	Controller MSB	Controller LSB
The function code for a single parameter request is $41	Addresses the instance of the parameter. The PROFILER only supports one instance which is always 0.	The upper 7-bit of the 14-bit NRPN address.	The lower 7-bit of the 14-bit NRPN address.

Table 12: message part for a single parameter request

Example: Request the value of Delay Volume $4a04 (9476):

F0	00	20	33	02	7F	41	00	4A	04	F7

If a parameter is requested that does not exist, the request will be ignored and nothing will be sent back.
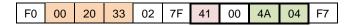
Request Multi Parameter

The function code $42 can be used to request a number of numeric values for an NRPN parameter block. The requested value will be sent back with function code $02. You might notice that there is no size attribute defined. The response covers all parameters of the requested unit. Expect up to 128 values.

Function Code	Instance	Controller MSB	Controller LSB
The function code for a single parameter request is $42	Addresses the instance of the parameter. The PROFILER only supports one instance which is always 0.	The upper 7-bit of the 14-bit NRPN address.	The lower 7-bit of the 14-bit NRPN address.

Table 13: message part for a multi parameter request

Example: Request the current values for the delay effect (starting with controller 9472[2]).

F0	00	20	33	02	7Ff	42	00	4A	00	F7

If the controller does not exist, or the request does not address the first controller number in a unit, the request will be ignored. No data will be sent back.

---

[2] The KEMPER PROFILER only responds to requests that encode the first controller number of a parameter block. Others might be ignored, or the result might cover the whole block. You cannot request "snippets" of a unit.

Request String Parameter

The function code $43 can be used to request a textual value for a string parameter. The requested text value will be sent back with function code $03.

Function Code	Instance	Controller MSB	Controller LSB
The function code for a single parameter request is $43	Addresses the instance of the parameter. The PROFILER only supports one instance which is always 0.	The upper 7-bit of the 14-bit NRPN address.	The lower 7-bit of the 14-bit NRPN address.

Table 14: message part for a string parameter request

Example: Request the current values for the current Rig name:

F0	00	20	33	02	7F	43	00	00	01	F7

Request Extended String Parameter

The function code $47 can be used to request a textual value for a string parameter. The requested text value will be sent back with function code $07 or $03[3]. The controller number will be encoded with 5 bytes (instead of 2). Encoding can be found on Page 35.

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[3] If the encoded controller number is lower than 16384 (the range of 14-bit) the response might use function code $03.
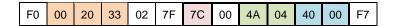
Request Parameter Value as Rendered String

Function code $7C is a bit special, as it allows you to retrieve the string representation for a specific value of a parameter. *Caution: this function can be costly in terms of CPU time.*

Function Code	Flags	Controller MSB	Controller LSB	Value MSB	Value LSB
The function code $7C	*reserved*	The upper 7-bit of the 14-bit NRPN address.	The lower 7-bit of the 14-bit NRPN address.	The upper 7-bit of the 14-bit value.	The lower 7-bit of the 14-bit value.

Table 15: message part for a string render request

Example: To request the character string for a value of 8192 for Delay Volume, send:

F0	00	20	33	02	7F	7C	00	4A	04	40	00	F7

The response will look like this:

F0	00	20	33	02	7F	3C	00	4A	04	40	00	3C	30	2E	30	3E	00	F7
												<	0	.	0	>		

Function code of the response is $3C. After the flags, the controller MSB/LSB and value MSB/LSB, the actual string is then available, terminated by a zero-byte. In this case, the rendered string is "<0.0>".

Appendix A (valid ASCII characters)

Valid characters for strings parameters ("tags"). For Rig and Author Names no space shall be followed by another space.

Character	ASCII Code
A-Z	$41-$5A
a-z	$61-$7A
0-9	$30-$39
!	$21
$	$24
&	$26
'	$27
(SPACE)	$20

Character	ASCII Code
(	$28
)	$29
*	$2A
+	$2B
-	$2D
.	$2E
/	$2F

Character	ASCII Code
\	$5C
=	$3D
:	$3A
;	$3B
_	$5F
#	$23
?	$3F

Table 16: ASCII characters allowed in tags

Appendix B (list of Effect Types)

Effect Type	Value MSB	Value LSB	combined
empty	0	0	0
Wah Wah	0	1	1
Wah Low Pass	0	2	2
Wah High Pass	0	3	3
Wah Vowel Filter	0	4	4
Wah Phaser	0	6	6
Wah Flanger	0	7	7
Wah Rate Reducer	0	8	8
Wah Ring Modulator	0	9	9
Wah Freq Shifter	0	10	10
Pedal Pitch	0	11	11
Wah Formant Shifter	0	12	12
Pedal Vinyl Stop	0	13	13
Bit Shaper	0	17	17
Octa Shaper	0	18	18
Soft Shaper	0	19	19
Hard Shaper	0	20	20
Wave Shaper	0	21	21
Kemper Drive	0	32	32
Green Scream	0	33	33
Plus DS	0	34	34
One DS	0	35	35
Muffin	0	36	36
Mouse	0	37	37
Kemper Fuzz	0	38	38
Metal DS	0	39	39
Full OC	0	42	42
Compressor	0	49	49
Auto Swell	0	50	50
Noise Gate 2:1	0	57	57
Noise Gate 4:1	0	58	58
Space	0	64	64

Vintage Chorus	0	65	65
Hyper Chorus	0	66	66
Air Chorus	0	67	67
Vibrato	0	68	68
Rotary Speaker	0	69	69
Tremolo	0	70	70
Micro Pitch	0	71	71
Phaser	0	81	81
Phaser Vibe	0	82	82
Phaser Oneway	0	83	83
Flanger	0	89	89
Flanger Oneway	0	91	91
Graphic Equalizer	0	97	97
Studio Equalizer	0	98	98
Metal Equalizer	0	99	99
Acoustic Simulator	0	100	100
Stereo Widener	0	101	101
Phase Widener	0	102	102
Delay Widener	0	103	103
Double Tracker	0	104	104
Treble Booster	0	113	113
Lead Booster	0	114	114
Pure Booster	0	115	115
Wah Pedal Booster	0	116	116
Loop Mono	0	121	121
Loop Stereo	0	122	122
Loop Distortion	0	123	123
Transpose	1	1	129
Chromatic Pitch	1	2	130
Harmonic Pitch	1	3	131
Analog Octaver	1	4	132
Dual Chromatic	1	9	137
Dual Harmonic	1	10	138
Dual Crystal	1	11	139
Dual Loop Pitch	1	12	140
Legacy Delay	1	17	145
Single Delay	1	18	146
Dual Delay	1	19	147

Two Tap Delay	1	20	148
Serial TwoTap Delay	1	21	149
Crystal Delay	1	22	150
Loop Pitch Delay	1	23	151
Freq Shifter Delay	1	24	152
Rhythm Delay	1	33	161
Melody Chromatic	1	34	162
Melody Harmonic	1	35	163
Quad Delay	1	36	164
Quad Chromatic	1	37	165
Quad Harmonic	1	38	166
Legacy Reverb	1	49	177
Natural Reverb	1	50	178
Easy Reverb	1	51	179
Echo Reverb	1	52	180
Cirrus Reverb	1	53	181
Formant Reverb	1	54	182
Ionosphere Reverb	1	55	183
Spring Reverb	1	65	193

Table 17: Effect Type values